# AMENDMENT TO THE RECORD OF DECISION

Town of Salina Landfill Site
Subsite of the Onondaga Lake Superfund Site
Town of Salina, Onondaga County, New York

New York State Department of Environmental Conservation
and
United States Environmental Protection Agency

September 2010

## DECLARATION FOR THE AMENDMENT TO THE RECORD OF DECISION

## SITE NAME AND LOCATION

Town of Salina Landfill Site, Subsite of the Onondaga Lake Superfund Site, Town of Salina, Onondaga County, New York

Superfund Site Identification Number: NYD986913580
EPA Operable Unit 8

## STATEMENT OF BASIS AND PURPOSE

This amendment to the Record of Decision (AROD) documents the New York State Department of Environmental Conservation's (NYSDEC's) and the United States Environmental Protection Agency's (EPA's) selection of a modified remedy for the Town of Salina Landfill Subsite (Site), which is chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601 *et seq.*, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300; and the New York State Environmental Conservation Law and Title 6 of the Official Compilation of New York State Codes, Rules and Regulations (NYCRR) Part 375. This decision document explains the factual and legal basis for selecting the modified remedy for the Site. The attached index (*see* Appendix III) identifies the items that comprise the Administrative Record upon which the selection of the modified remedy is based.

The New York State Department of Health was consulted on the planned modified remedy and concurs with the selected modified remedy.

## ASSESSMENT OF THE SITE

The response action selected in this AROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

## DESCRIPTION OF THE SELECTED MODIFIED REMEDY

The major components of the selected modified remedy include the following:

- Excavation of the landfilled wastes located south of Ley Creek, including the 30 feet of waste encroaching the southern bank of Ley Creek and the northern bank of the Old Ley Creek Channel waste;

- Excavation of waste in the northeastern corner of the landfill area to the north of Ley Creek to the center of that landfill area to allow a diminished footprint;

- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;

- Excavation of waste 30 feet into the northern banks of Ley Creek;

- Excavation of contaminated sediments in the western drainage ditch;

- Off-Site treatment/disposal at a Toxic Substances Control Act-compliant facility of all excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 milligrams per kilogram (mg/kg);

- Consolidation of the excavated sediments, soils, and wastes that have PCB concentrations less than 50 mg/kg on the landfill area north of Ley Creek;

- Construction of 6 NYCRR Part 360 cap over the landfill area north of Ley Creek;

- Installation of a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain its utilities without damaging a geomembrane cap;

- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements;

- Based on the evaluation of trench and pre-treatment requirements, if necessary, construction of a groundwater/leachate collection trench north of Ley Creek and construction of a pre-treatment facility;

- After pre-treatment (if necessary), treatment of the collected leachate and groundwater at the County's Metropolitan Syracuse Wastewater Treatment Plant;

- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;

- Engineered drainage controls and fencing, as appropriate;

- Implementation of institutional controls (such as environmental easements) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;

- Operation and maintenance of the on-Site treatment plant and groundwater/leachate collection trench(es), if these remedy components are necessary, and maintenance of the Part 360 cap;

- If any portion of the Site is redeveloped, NYSDEC and NYSDOH will require that an evaluation be completed to determine the potential for soil vapor intrusion to occur in any future constructed buildings, including provision for implementing actions recommended to address exposures; and

- Long-term monitoring.

The environmental benefits of the selected modified remedy may be enhanced by consideration, during the remedial design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green policy[1]. This will include consideration of green remediation technologies and practices.

The Town of Salina will need to certify the continued effectiveness of the institutional and engineering controls on a yearly basis in an annual report. The certification will need to indicate that the required long-term monitoring is being conducted, identify the required institutional and engineering controls, indicate whether they remain effective for the protection of public health and the environment, and indicate whether they should remain in place.

Before installing the multilayer cap, the subgrade will be graded to promote drainage and exhibit final slopes between 4% and 33%. The entire cap will then be seeded.

Currently, the limits of the landfill waste encroach on the banks of Ley Creek in several locations. Landfilled waste will be pulled back 30 feet from the northern bank of Ley Creek prior to the installation of the groundwater/leachate collection trenches[1]. The landfilled waste will be removed from the southern bank of Ley Creek and 30 feet from the northern banks of Old Ley Creek Channel (OLCC) as the part of the waste relocation from the south section of the landfill to the northern central section of the Site. This landfilled waste will be removed and disposed properly at a permitted off-Site facility if it is characterized as hazardous waste. If it is not characterized as hazardous waste, then the waste will be consolidated onto the landfill. Based on a 2010–2011 groundwater study, the groundwater/leachate collection trenches may need to be installed along the northern bank of Ley Creek at the new limits of the waste. As a result of the waste relocation south of Ley Creek, a collection trench along the northern side of OLCC may not be needed. If monitoring data indicates a different flow gradient, then the need for a groundwater collection trench along the north side of the OLCC will be evaluated. Site preparation prior to trench construction will include clearing, grubbing, and removal of trees along the northern and southern banks of Ley Creek. Erosion controls, including silt fencing and/or hay bales will be installed to prevent soil and silt runoff from entering the creek. The existing slopes along the banks will be regraded to provide a suitable work pad for construction of the trench. Contaminated material cut from the banks will be placed under the cap (contingent upon the results of the PCB testing noted above).

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[1] If necessary, the northern collection trench will be approximately 2,800 feet long.

The groundwater/leachate collection trench(es), if required, will be keyed into the clay layer that acts as an aquitard between the shallow and deep aquifers at the Site. Where the clay layer is not present or is of insufficient thickness, the leachate collection trench(es) will be keyed into the dense glacial till. Additional investigation of the permeability of the glacial till will be conducted during the remedial design phase. If the glacial till is determined to not be a sufficiently low permeability material, then additional measures (*e.g.*, installation of sheet piling downgradient of the collection trench(es)) may be implemented to ensure that groundwater flow will not bypass the collection trenches.

Pending further evaluation during design, it is anticipated that the trenches will be installed using the bio-polymer slurry construction technique, which eliminates the need for shoring, dewatering, and personnel working in the trench. A barrier liner will be installed on the downgradient side of the trenches to prevent the inflow of uncontaminated water from Ley Creek. A perforated high density polyethylene pipe will be installed at the bottom of the trenches and a porous media (such as large diameter gravel) will be backfilled. The trenches will be designed such that collected water will flow by gravity through conveyance piping to existing manholes located on the northwestern and eastern parts of the Site. From these manholes, the water will be treated at an on-Site treatment plant.

After the installation of the trench(es), the downgradient work areas will be graded for proper drainage and covered with 0.5 foot of topsoil. All areas disturbed by the construction will be revegetated. The trenches will be constructed and buffer areas and the banks of Ley Creek and OLCC will be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608, Use and Protection of Waters.

The 48-inch abandoned sewer line that runs across the Site will be exposed, broken, and sealed with concrete (or some other suitable material) at the eastern and western borders of the Site, to prevent it from serving as a conduit to convey contaminated groundwater off-Site. In addition, a slip liner will be installed in the 48-inch corrugated metal pipe culvert located in the eastern part of the Site to prevent contaminated groundwater from leaking into the pipe and discharging to Ley Creek.

Sediments in the western drainage ditch will be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek. Analysis of the northern drainage ditch in 2009 indicated that no further action was necessary. All other drainage ditches will be completely removed as part of the waste relocation and consolidation efforts.

During the preliminary remedial design, delineation and evaluation of any wetlands on or adjacent to the Site or impacted by the Site consistent with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*; 40 CFR Part 6, Appendix A: "Statement of Procedures on Floodplain Management and Wetlands Protection," Executive Order 11990: "Protection of Wetlands," and EPA's 1985 "Statement of "Policy on Floodplains/Wetlands Assessments for CERCLA Actions" will be performed. Also, since remedial activities will take place within the 100- or 500-year floodplain, a floodplain assessment consistent with Executive Order 11988, "Floodplain Management," and 40

CFR Part 6, Appendix A will be performed to minimize or avoid the adverse effects of a 500-year event, as well as to protect against the spread of contaminants and the long-term disabling of remedial treatment systems due to flooding events. In addition, the substantive requirements of 6 NYCRR Part 502, Floodplain Management Criteria for State Projects will also need to be met.

The selected modified remedy will be designed to not inhibit or impair National Grid's operations on the Site. Coordination with National Grid to identify the location of all of its utility lines, structures and facilities will be done in order to identify design requirements for uninterrupted access by National Grid and to ensure safe construction of the selected modified remedy. The Town of Salina and National Grid entered into an agreement in August 2010 to enhance and/or relocate National Grid's utility lines on-Site and to insure that the modified remedy would be protection of human health and the environment.

The Town of Salina and Onondaga County entered into an agreement to use the County's Metropolitan Syracuse Wastewater Treatment Plant (METRO) to treat the collected contaminated groundwater/leachate. The collected leachate and groundwater will be pre-treated on-Site and conveyed to METRO in lieu of undergoing complete treatment at an on-Site treatment facility and discharged to Ley Creek.

Because the selected modified remedy will result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site undergo a statutorily-mandated review every five years. As part of any such review, groundwater monitoring results and Site modeling will be utilized to assess the effects of natural attenuation[2] to attain Maximum Contaminant Levels (MCLs)[3] in the two 30-foot buffer areas associated with Ley Creek and in the buffer area north of OLCC, and to otherwise confirm that the modified remedy remains protective. If justified by the review, additional remedial actions may be implemented.

## DECLARATION OF STATUTORY DETERMINATIONS

The selected modified remedy meets the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. §9621, in that it: 1) is protective of human health and the environment; 2) meets a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements under applicable federal and state laws or justifies grounds for their waiver; 3) is cost-effective; and 4) utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. In

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2 Natural attenuation is a variety of physical, chemical and biological processes which, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and groundwater. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction.

3 Drinking-water standards.

keeping with the statutory preference for treatment that reduces toxicity, mobility, or volume of contaminated media, as a principal element of the modified remedy, the contaminated groundwater will be collected and treated.

Because this remedy will result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site undergo a statutorily-mandated review every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation to attain MCLs downgradient of the groundwater/leachate collection trenches. If justified by the review, additional remedial actions may be implemented.

## ROD DATA CERTIFICATION CHECKLIST

The AROD contains the modified remedy selection information noted below. More details may be found in the Administrative Record file for this Site.

- Chemicals of concern and their respective concentrations (see AROD, pages 10-15);
- Baseline risk presented by the chemicals of concern (see AROD, pages 16-17);
- Cleanup levels established for chemicals of concern and the basis for these levels (see AROD, pages 10-15);
- How source materials constituting principal threats are addressed (see AROD, page 15);
- Current and reasonably-anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and AROD (see AROD, pages 16);
- Potential land and groundwater use that will be available at the Site as a result of the selected modified remedy (see AROD, page 16);
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the modified remedy cost estimates are projected (see AROD, page 32); and
- Key factors that led to selecting the modified remedy (*i.e.*, how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (see AROD, pages 32-33).

**AUTHORIZING SIGNATURES**

Dale A. Desnoyers, Director
Division of Environmental Remediation
New York State Department of Environmental Conservation

Sept. 30, 2010
Date

Walter E. Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency

Sept. 29, 2010
Date

# AMENDMENT TO THE RECORD OF DECISION
# DECISION SUMMARY

Town of Salina Landfill Site
Subsite of the Onondaga Lake Superfund Site
Town of Salina, Onondaga County, New York

New York State Department of Environmental Conservation
and
United States Environmental Protection Agency

September 2010

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## SITE NAME, LOCATION, AND DESCRIPTION

In 1994, Onondaga Lake, its tributaries and the upland hazardous substance sites which have contributed or are contributing contamination to the Lake was added to the EPA's Superfund National Priorities List (NPL). The Town of Salina Landfill[4] is contributing such contamination and, therefore, is considered a "Subsite" of the Onondaga Lake NPL site.

The Town of Salina Landfill Site, approximately 55 acres in size, is located in the Town of Salina, Onondaga County, New York. It is designated a Class 2 Inactive Hazardous Disposal Waste Site by NYSDEC (New York Registry No. 7-34-036). The Site is bounded by the New York State Thruway to the north and by Route 11 (Wolf Street) to the east. An Onondaga County Resource Recovery Agency Transfer Station is located immediately to the west of the landfill. Ley Creek, a Class B stream, runs through the approximate eastern half of the Site and along the southern border of the approximate western half of the Site. The eastern half of the Site is bounded to the south by the banks of a separate tributary, known as Old Ley Creek Channel (OLCC). A portion of Ley Creek was moved in the early 1970s to its current location. Landfilled materials have been identified in both north of Ley Creek and south of Ley Creek in the land area located between the current Ley Creek and the OLCC, (*i.e.*, north and south of Ley Creek)[5]. (See Figure 1.)

The sediments, surface waters and banks of Ley Creek downstream of the Route 11 bridge are known as the "Lower Ley Creek Site." The sediments, surface waters, and banks of the OLCC are a separate Class 2 New York State inactive hazardous waste disposal site known as the "Old Ley Creek Channel Site" (Site Number 734074). Investigations at the Lower Ley Creek and Old Ley Creek Channel sites are currently underway.

Access to the Town of Salina Landfill has historically been gained from Route 11. In the past, trespassers could enter the Site on foot or by vehicle. The Town has attempted to limit access to the Site by installing a locked gate at the Site entrance and placing barriers across the dirt access road. It has also placed signs indicating that no dumping is allowed on-Site.

A 48-inch abandoned sewer line runs across the Site. A 48-inch corrugated metal pipe (CMP) culvert is located in the eastern part of the Site, and drainage ditches are located along the western, northern, and eastern borders of the Site (see Figure 1). Storm water from the Site drains to Ley Creek via the drainage ditches and the culvert.

The land containing the Site is currently owned by five parties. The Town of Salina owns 29 acres of the Site, comprising approximately the western half of the Site. The eastern part of the Site (from the Town's property line to west of Route 11) is privately owned. East

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4 Superfund Site Identification Number: NYD986913580.

5 The landfills are unlined.

Plaza, Inc. owns the portion of the Site located between the current Ley Creek and old Ley Creek. Onondaga County owns a strip of land trending east-west across the Site. Niagara Mohawk owns a strip of land trending east-west across the Site. The Onondaga County Resource Recovery Agency owns the property immediately west of the Site.

The Salina Landfill is located within an area zoned as an "Industrial District." Land located immediately to the south and to the west of the Site is also zoned as an "Industrial District." The land directly east of the Site, on the opposite side of Wolf Street, is zoned both as a "Highway Commercial District" and a "One-Family Residential District." The land located to the north of the Site, on the opposite side of the New York State Thruway, is zoned as "Open-Land District," "Planned Commercial District," and "One-Family Residential District." Based on the Code of the Town of Salina, land within each zoning district has specific intended uses.

The Town is considering other options to the current industrial zoning of the landfill property. These may include use of the property for passive recreational purposes (park, walking trails, etc.). There is also the potential for commercial development at and around the vicinity of the landfill. Any written proposals submitted to NYSDEC for the future use of the Site will be considered for incorporation into the remedial plans, as appropriate.

The area is served by municipal water.

## SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Town of Salina could not produce records indicating the actual date that the Salina Landfill opened. However, in 1962, the Town Board closed the dump known as the "Mattydale Dump" pursuant to a court action. The Mattydale Dump was located in the vicinity of the current town garage off of Factory Avenue, approximately ½ mile to the east of the Site. With the closure of the Mattydale Dump, it is believed that the Town proceeded to work with a Site property owner (East Plaza, Inc.) to start landfill operations at the current location of the Town of Salina Landfill. In the same year, the Town adopted a garbage collection ordinance to regulate the collection of solid waste within the boundaries of the Town and to promote the public health, safety and welfare of the residents.

The Town of Salina established residential refuse districts as early as 1941. As such, the Town Board would solicit bids from independent haulers and enter into a contract each year. Licensing procedures were adopted to monitor the disposal of waste and permits were issued to haulers doing business in the Town. In 1970, periodic checks on the landfill indicated that in addition to waste generated within the Town, additional tonnage was coming from outside areas. The Highway Superintendent reported that the Landfill was reaching capacity and suggested that the boundaries be expanded up to Route 81 or additional property be purchased.

During the period the landfill was in operation, in addition to accepting municipal solid waste, the landfill also accepted hazardous wastes including paint sludge, paint thinner, polychlorinated biphenyl (PCB)-contaminated wastes, and contaminated sediment dredged from Ley Creek.

In 1971, several complaints were made by the New York State Thruway Authority because refuse was being left uncovered and debris was blowing onto the Thruway. The Thruway Authority requested that the Town cover the landfill. Due to the capacity problems, the Town Board started looking into other solid waste disposal options, such as purchasing additional property to start another landfill, building an incinerator, or using a shredding plant which was being constructed by the City of Syracuse.

Between 1971 and 1974, landfill operations continued with little or no control over the refuse haulers that were dumping in the landfill. Town records indicate that the trucks with permit stickers were on the "honor system" and were not checked for source or quantity of refuse and that only town residents that brought their own refuse to the Landfill were checked. Reaching its capacity, the landfill was officially closed sometime in late 1974 or early 1975, pursuant to an order by NYSDEC.

In 1976, landfill cover specifications were issued by NYSDEC for dirt fill and grading of the Site. However, litigation proceedings commenced between the Town of Salina and the property owner East Plaza, Inc. In 1981, the Town purchased the western portion of the Site (approximately 29 acres) from East Plaza, Inc. Once again, landfill cover specifications were issued for the Site by the NYSDEC in July 1981.

In September 1981, the Town awarded a contract to cover the landfill with a two-foot clay-type soil. Once the soil was placed, the area was hydroseeded to establish a vegetative cover. This project was completed in November 1982. There were no further remedial activities undertaken at the Site thereafter to the present time.

Since that time, a number of investigations have been performed at the Town of Salina Landfill. The investigations have largely been focused on gathering only enough data to determine whether the landfill was a threat to human health and to the environment.

In 1986, NYSDEC and the Onondaga County Department of Health collected three soil samples adjacent to the north bank of Ley Creek along the landfill and four surface water samples from the same stretch of Ley Creek and drainage ditches north and east of the landfill. The soil samples contained polyaromatic hydrocarbon compounds (PAHs), metals, volatile organic compounds (VOCs) and pesticides in low levels. PCBs were not detected in the water samples, but were detected in the soil samples.

In 1987, NUS Corporation (on behalf of EPA) collected one surface water and one sediment sample from an upstream location in Ley Creek (west of Route 11), one surface water and one sediment sample alongside the landfill (in the drainage swale in the northeast section of the landfill), and one surface water and one sediment sample from just

downstream of the landfill in Ley Creek. The surface water and sediment samples did not contain higher concentrations of contaminants than the samples collected upstream from the landfill.

In 1987, Atlantic Testing (on behalf of NYSDEC) attempted to install three groundwater monitoring wells on-Site. Only one well was completed, as drilling for the other two wells encountered wastes in the form of black oil and petroleum-saturated soil in two boreholes. The soils in these borings contained PCBs, low levels of semi-volatile organic compounds (SVOCs) and dibenzofuran and elevated levels of cadmium, chromium, nickel and zinc. One upgradient monitoring well was installed. The groundwater from this well contained low levels of VOCs and SVOCs, high iron and manganese, but no PCBs.

In 1989, a bioaccumulation study conducted by O'Brien & Gere Co. (on behalf of General Motors Corporation) on fish caught in Ley Creek showed that the fish contained up to 6.8 mg/kg PCBs.

In 1991, during an inspection of the landfill by Ecology and Environment (on behalf of NYSDEC), a leachate outbreak was observed along the northern bank of Ley Creek downgradient of an area within the southwestern corner of the landfill.

In 1994, Ecology and Environment completed a Preliminary Site Assessment (on behalf of NYSDEC). This investigation included the collection of 10 surface water and sediment samples from locations in Ley Creek alongside the landfill, (including one upstream of the landfill) and in the adjacent drainage ditches situated to the north and west of the landfill within the Site. Additionally, five surface soil samples were collected on or around the landfilled area, and three leachate samples were collected from the north bank of Ley Creek (two along the southwestern corner of the landfill, and one near the power lines that pass over Ley Creek). The results indicated low levels of VOCs and SVOCs in the surface water (but no PCBs were detected). PCBs, pesticides, VOCs, and SVOCs were detected in the sediment samples, soil samples, and leachate samples.

In 1994, EPA designated Onondaga Lake, its tributaries, and the upland areas which have contributed or are contributing hazardous substances to the lake (Subsites) as a Superfund National Priorities List (NPL) site. In 1997, NYSDEC and EPA jointly notified the Town that the Salina Landfill was a Subsite of the Onondaga Lake NPL Site due to releases or the threat of releases of hazardous substance, pollutants or contaminants into the environment.

In 1996, Ecology and Environment prepared a Preliminary Site Assessment Addendum (on behalf of NYSDEC). This supplemental investigation was conducted to provide further information on potential groundwater contamination at the landfill. Five new monitoring wells were installed, developed and sampled in the landfilled area north of Ley Creek. The groundwater from most wells contained low levels of VOCs and SVOCs. A PCB compound was detected in one well at a low concentration. One of the downgradient wells (MW-4) (see Figure 2) contained almost no organic compounds, but did show elevated

levels of a number of metals. Two surface water and sediment samples collected by NYSDEC from drainage ditches on-Site indicated PCBs were present in the sediment, but were absent from the surface water.

In 1996, NYSDEC designated the Town of Salina Landfill as a Class 2 Inactive Hazardous Waste Site. This designation means that NYSDEC considers the Site a significant threat to human health and/or the environment, which requires remedial action. This Site was designated a Subsite to the Onondaga Lake Superfund Site in June 1997 by NYSDEC and EPA, due to the fact that Site contaminants had migrated to Ley Creek, which flows into the lake.

In 1997, representatives from NYSDEC collected three sediment samples from the OLCC. The results of that sampling show that detectable concentrations of VOCs, SVOCs, and PCBs are present in Old Ley Creek Channel.

The portion of Ley Creek adjacent to the landfill was not included as part of the Site due to the presence of upstream sources of contamination that need to be addressed. Upstream contaminated surface water and sediments in Ley Creek are currently being investigated under an RI/FS for the General Motors Former Inland Fisher Guide Facility and Ley Creek Deferred Media Subsite of the Onondaga Lake Site. As is stated in the "Site Description" section above, the sediments, surface waters and banks of Ley Creek downstream of the Route 11 Bridge, as well as the sediments, surface waters and banks of the OLCC are being addressed separately.

On October 29, 1997, the Town of Salina entered into an Order on Consent with the NYSDEC to perform the RI/FS, remedial design, and remedial action for the Site. On November 17, 1997, the Town also entered into a State Assistance Contract under the 1986 Environmental Quality Bond Act of New York State. This contract stated that the Town would be reimbursed 75% of the eligible costs during the RI/FS. This contract may be amended for the remedial design and remedial action costs.

The RI started on June 29, 1998. Two phases of sampling occurred over two summers. An RI report was submitted to NYSDEC by the Town, through its consultants, in May 2000. The report was reviewed by the EPA and NYSDEC, and then revised by the Town's consultants. The RI Report was approved in March 2001. The Town submitted a Draft FS Report in January 2001. The report was reviewed by the EPA and NYSDEC, and then revised by the Town's consultants. The FS Report was approved in May 2002.

In January 2003, NYSDEC and EPA released a Proposed Plan describing the remedial alternatives considered for the Site and identifying the preferred remedy with the rationale for the preference. The primary elements of the preferred remedy included constructing impermeable caps over the landfill areas north and south of Ley Creek, constructing groundwater/leachate collection trenches north and south of Ley Creek, and pumping the collected groundwater/leachate to the Metropolitan Syracuse Wastewater Treatment Plant (METRO) for treatment.

During the public comment period, it was learned that Onondaga County has a policy not to accept wastewater from inactive hazardous waste sites for treatment at METRO. The Town of Salina and the County participated in extended negotiations in an effort to reach an agreement to allow the landfill's groundwater/leachate to be treated at METRO. At the time that the Record of Decision (ROD) was signed in March 2007 (see Figure 8 for an illustration of the remedy that was selected), no agreement had been reached. Therefore, a contingency remedy was selected. If the negotiations between the Town of Salina and Onondaga County related to the utilization of METRO to treat the collected contaminated groundwater/leachate were successful, then the collected groundwater/leachate would be pretreated on-Site and conveyed to METRO in lieu of the groundwater leachate undergoing complete treatment at an on-Site treatment facility and thereafter being discharged to Ley Creek. On September 10, 2008, the Town of Salina and the County entered into an agreement for METRO to accept the pretreated groundwater/leachate.

In July 2007, the Town of Salina's contractor commenced the design of the selected remedy.

In the ROD, Alternative 5 (waste excavation south of Ley Creek and consolidation north of Ley Creek; capping of landfill north of Ley Creek; and contaminated leachate collection with off-Site discharge of treated effluent) was eliminated from consideration due to concerns that significant quantities of hazardous waste were commingled with the municipal refuse in the landfill located south of Ley Creek, which would have significantly increased the cost of the remedy since these wastes would require off-Site disposal. After the issuance of the ROD, samples were collected from the waste in the landfill area south of Ley Creek as part of the design. Upon analysis of these samples, it was concluded that the landfill likely contains a heterogeneous mixture of municipal refuse with only low concentrations of hazardous substances typically associated with municipal refuse.

Based upon a review of sample results from on-Site monitoring wells, it was noted that the VOC concentration in monitoring well MW-10 (see Figure 2 for the location of the well and the "Results of the Remedial Investigation" section, below, for more detail) exceeded the other monitoring wells by several orders-of-magnitude. This finding led to the conclusion that there was likely a source in the vicinity of monitoring well MW-10. In mid-January 2010, NYSDEC performed a trench/test-pit investigation to locate this source area. In this investigation, two trenches and 14 test pits were excavated. Based on the results of the investigation, the source area was located. In March 2010, approximately 1,810 tons of VOC-contaminated soil and waste was excavated and properly disposed off-Site. Information related to the reassessment of the contamination in the landfill area located south of Ley Creek can be found in the September 2009 *Geotechnical Report*, the November 2009 *Monitoring Well Installation and Sampling Report*, and the December 2009 Cost *Estimates to Relocate Waste Vs. Cap In Place*, all of which are available in the administrative record files (see Appendix III).

Based upon the conclusion that the landfill likely contains a heterogeneous mixture of municipal refuse with only low concentrations of hazardous substances and as a result of

the removal of source area VOC-contaminated soil and waste, the remedy selected in the ROD was reevaluated and a modified remedy was proposed.

## HIGHLIGHTS OF COMMUNITY PARTICIPATION

The 2001 RI report, 2002 FS report, 2003 Proposed Plan, 2006 revised Proposed Plan, 2009 *Geotechnical Report*, M*onitoring Well Installation and Sampling Report*, Cost *Estimates to Relocate Waste Vs. Cap In Place*, and 2010 Proposed Plan for Remedy Modification for the Site were made available to the public in both the Administrative Record and information repositories maintained at NYSDEC's Albany and Syracuse offices; Salina Town Hall, 201 School Road, Liverpool, New York; Salina Free Library, 100 Belmont Street, Syracuse, New York; Onondaga County Public Library, Syracuse Branch at the Galleries, 447 South Salina Street, Syracuse New York; and the Atlantic States Legal Foundation, 658 West Onondaga Street, Syracuse, New York.

In May 2010, fact Sheets were sent to over 450 addressees on the Site mailing list, articles appeared in the local newspapers, and selected mailings of the Proposed Plan for Remedy Modification were made to local officials and interested parties. The mailing list includes local citizens, businesses, local, state and federal governmental agencies, media, and environmental organizations. A notice of availability of the above-referenced documents was published in the *Post Standard* on May 21, 2010, the start of the public comment period. A public meeting was held at the Salina Town Hall on June 7, 2010. The meeting included presentations by NYSDEC officials on the results of the RI/FS and discussions of the preferred remedy. The meeting provided an opportunity for the public to ask questions, discuss their concerns, and provide comment on the Proposed Plan. Approximately 40 people attended the meeting. The public comment period ended on June 21, 2010.

The 2010 fact sheet, public notice, Proposed Plans for Remedy Modification, and responses to the comments received at the public meeting and in writing during the public comment periods are included in the Responsiveness Summary (see Appendix V).

## SCOPE AND ROLE OF OPERABLE UNIT

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Section 300.5, defines an operable unit as a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site.

NYSDEC and EPA have currently organized the work for the Onondaga Lake NPL Site into 11 subsites. These subsites are also considered to be operable units of the NPL Site by EPA.

NYSDEC has already selected a remedy for the Ley Creek Dredgings Subsite in a Record of Decision (ROD) concurred on by EPA on February 9, 1998. Construction of the remedy for the Ley Creek Dredgings Subsite (excavation of PCB-contaminated soils, on-site disposal under a cap, and off-site treatment/disposal) was completed in August 2001.

On September 29, 2000, a ROD, with EPA concurrence, was signed by New York State for the LCP Bridge Street Subsite. The selected remedy includes a combination of excavation and on- and off-site treatment/disposal of contaminated soils and sediments, and the construction of a cap, subsurface barrier wall, and groundwater extraction and treatment system. New York State has negotiated a Consent Order with the potentially responsible party (PRP) for the performance of the design and construction of the selected remedy. The Consent Order was signed on March 21, 2002. Accelerated remedial activities, including excavation and off-site disposal of soil from two parcels contaminated with PCBs, the excavation of approximately 4,000 cy of mercury contaminated soil, and the commencement of soil washing of the excavated mercury contaminated soil, were conducted in 2003 and 2004. The Final Design was approved by NYSDEC in September 2004. All remedial activities, except for the placement of the final cap and restoration of the stream and on-site wetlands, were completed in 2006.

On March 28, 2002, a ROD was issued by NYSDEC and EPA for the Semet Residue Ponds Subsite. The selected remedy includes removing the pond residue for recycling the material into RT-12 (a component of driveway sealer) and containing the groundwater to prevent its migration into Tributary 5A and Onondaga Lake. After the remedy was selected, the PRP indicated that the selected remedy may no longer be feasible because of changes in market conditions. Under a Consent Order between NYSDEC and the PRP, a focused FS to evaluate other remedial alternatives was completed in July 2006. NYSDEC and EPA are currently evaluating the options presented in the focused FS report.

A ROD selecting a remedy for the Lake Bottom subsite was issued by NYSDEC and EPA on July 1, 2005. The selected remedy includes dredging an estimated 2.65 million cubic yards of contaminated sediments and isolation capping of an estimated 425 acres in the littoral zone (water depths ranging from 0 to 30 feet), thin layer capping of an estimated 154 acres, an oxygenation pilot study (of the water near the lake bottom) which will be followed by full-scale oxygenation if supported by the pilot study, and monitored natural recovery in the profundal zone (water depths exceeding 30 feet). It is anticipated that the most highly contaminated materials would be treated and/or disposed of off-site. The balance of the dredged sediment would be placed in a "Sediment Consolidation Area" (SCA). Wastewater generated by the dredging/sediment handling processes as a result of dewatering of the sediments at the SCA would be treated prior to being discharged back to the lake. An Explanation of Significant Differences which describes a change to a portion of the remedy required by the ROD in the southwest portion of the lake was issued by

NYSDEC and EPA on December 14, 2006. The change was necessary to ensure the stability of the adjacent causeway and the adjacent area which includes a portion of I-690, and was supported by recent, more extensive sampling of the area which indicates that the pure chemical contamination is significantly less extensive than estimated in the ROD. A Consent Decree related to the performance of the design and construction of the remedy by Honeywell under New York State oversight was entered on January 4, 2007. Extensive pre-design investigations commenced in September 2005 and are ongoing, along with remedial design activities. Dredging in the lake is scheduled to begin in May 2012.

RODs for two portions of the Geddes Brook/Ninemile Creek subsite were signed in April and October 2009. The selected remedies include the dredging/excavation and removal of an estimated 120,000 cubic yards of contaminated channel sediments and floodplain soils/sediments over approximately 30 acres. Depending on the location, clean materials, consisting of a habitat layer and, if needed, backfill will be placed in the dredged/excavated areas. Contaminated sediments and soils removed from the stream and floodplains will be disposed of at either the LCP Bridge Street subsite containment system, which was designed and constructed pursuant to the requirements of a September 2000 ROD, or the SCA, which will be constructed at Wastebed 13 as part of the remediation of the Onondaga Lake Bottom subsite in accordance with the 2005 Lake-Bottom ROD.

A ROD for the Niagara Mohawk – Hiawatha Boulevard – Syracuse Former MGP Subsite was signed on March 31, 2010. The selected remedy calls for contaminated soil in the northeastern portion of the site that could leach contaminants to groundwater to be solidified in place and groundwater along the northern perimeter of the site to be treated using enhanced bioremediation. The design of the remedy is presently underway.

RI/FSs are currently underway at the following Onondaga Lake NPL Subsites: General Motors Former Inland Fisher Guide and Ley Creek Deferred Media; Lower Ley Creek, Wastebed B/Harbor Brook, OLCC; and Willis Avenue. These RI/FSs are expected to be completed within the next few years.

The primary objectives of this action are to prevent direct contact (human and wildlife) with the landfill waste, minimize the migration of Site-related contaminants, and minimize any current and potential future health and environmental impacts.

## SUMMARY OF SITE CHARACTERISTICS

The purpose of the RI, conducted from 1998 to 2000, was to determine the nature and extent of the contamination at and emanating from the Site. The results of the RI/FS conducted to support the 2007 ROD are also relied upon to support this amendment to the ROD (AROD). The results of the RI are summarized below and in Table 1.

**Groundwater**

Groundwater underlying the Site is found in two water-bearing units. The uppermost water-bearing unit is unconfined. The water table ranges from four to 22 feet below grade and is present either within the waste or in the uppermost sand unit. (See Figure 5.) The lower water-bearing unit is under confined conditions and is present in the lower sand unit, above the till. In fact, the conditions are such that one groundwater monitoring well, screened in the lower sand unit, was a free-flowing artesian well.

Groundwater samples were collected from a total of seventeen permanent monitoring wells on-Site, including fourteen shallow wells and three deep wells. (See Figure 2.)

The groundwater that appears to be most heavily impacted is located in the southeast portion of the main landfilled area north of Ley Creek. Monitoring well MW-10 (see Figure 2) is the most heavily contaminated, with elevated concentrations of toluene (92,774 µg/l[microgram per liter]; the groundwater standard is 5 µg/l) and xylenes (17,900 µg/l; the groundwater standard is 5 µg/l), as well as elevated concentrations of chlorinated solvents, such as trichloroethene (11,138 µg/l; the groundwater standard is 5 µg/l). Other wells in the southeastern vicinity of MW-10, including MW-6, MW-7, MW-8 and MW-9, contained a number of volatile organic compounds that exceed water quality standards or guidance values.

Four monitoring wells (MW-8, MW-9, MW-10 and MW-15) contained semi-volatile organic compounds that exceeded standards, such as bis(2-ethylhexyl)phthalate (17 µg/l; the groundwater standard is 5 µg/l) and naphthalene (36 µg/l; the groundwater guidance value is 10 µg/l). The groundwater in four monitoring wells (MW-7, MW-10, MW-12 and MW-15) also contained a few pesticides, BHC-alpha (0.011 µg/l; the groundwater standard is 0.01 µg/l) and endrin (0.014 µg/l; the groundwater standard is "non-detect").

PCBs (Aroclor 1248) were detected in six monitoring wells (MW-1, MW-5, MW-6, MW-8, MW-9 and MW-15) in excess of water quality standards or guidance values (maximum concentration of 1.6 µg/l; the groundwater standard is 0.09 µg/l).

The groundwater in the confined aquifer was almost entirely free of organic compounds. The only exception was upgradient well MW-0D, which contained 2 µg/l of butyl benzyl phthalate (the groundwater guidance value is 50 µg/l).

The metals that exceed groundwater standards, the maximum detections, and the applicable groundwater standards include cadmium (34 µg/l; the groundwater standard is 5 µg/l) and chromium (309 µg/l; the groundwater standard is 50 µg/l). These parameters, as well as elevated concentrations of total dissolved solids and specific conductance, may indicate that the groundwater is slightly brackish.

Review of the leachate indicator data from the monitoring wells indicates that most of the shallow wells have been impacted by the landfill. The ratio of alkalinity to sulfate can be

used to show leachate impacts and the majority of the shallow wells show high alkalinity/sulfate ratios. Alternatively, the deep wells have a low alkalinity/sulfate ratio, indicating that they have not been impacted by leachate. This evaluation is supported by the presence of elevated levels of nitrogen compounds (ammonia and Total Kjeldahl Nitrogen [TKN]) and total organic carbon (TOC) in the shallow wells, but absence or low concentrations of these compounds in the deep wells. The stratigraphic information and information on contaminant distribution within monitoring wells MW-12 and MW-12D indicate that the two aquifers are not interconnected.

Water samples were also collected from seven temporary wells that were installed in the water table aquifer along the northern bank of Ley Creek. The wells were installed to help define groundwater flow direction and to aid in the understanding of the interconnection between groundwater and surface water. Three of the seven wells were installed immediately upgradient of active leachate seeps. The results show high alkalinity/sulfate ratios and elevated concentrations of ammonia, TKN, and TOC. These results would appear to confirm that groundwater immediately adjacent to Ley Creek is impacted by landfill leachate.

**Leachate**

Three leachate samples were collected from the northern bank of Ley Creek (see Figure 3). The organic compounds that exceeded Class GA groundwater standards, the maximum detections, and the applicable groundwater standards included benzene (4 µg/l; the groundwater standard is 1 µg/l), chlorobenzene (22 µg/l; the groundwater standard is 5 µg/l), and Aroclor 1248 (1.0 µg/l; the groundwater standard is 0.09 µg/l). The metals that exceeded groundwater standards, the maximum detections, and the applicable groundwater standards included chromium (126 µg/l; the groundwater standard is 50 µg/l) and lead (199 µg/l; the groundwater standard is 25 µg/l).

**Surface Water**

Surface water samples were collected from six locations (see Figure 3). Organic compounds were detected in 2 of the samples. The parameters that were detected, the maximum concentrations, and the applicable water quality standards or guidance values were benzo(k)fluoranthene (10 µg/l; the water quality guidance value is 0.002 µg/l) and Aroclor 1248 (0.14 µg/l; the water quality standard is $1x10^{-6}$ µg/l). Although there appear to be upstream sources of Aroclor 1248, the Site may be a potential source since it was detected in samples collected in Ley Creek alongside the landfill.

The parameters that were detected, the maximum concentrations, and the applicable water quality standards for the metals that exceeded water quality standards for Class B waters were aluminum (238 µg/l; the water quality standard is 100 µg/l) and iron (702 µg/l; the water quality standard is 300 µg/l). These compounds were found in all of the samples. Both metals showed a trend of increasing concentrations with increasing distance

downstream. The increase in concentration of the metals between the 48-inch storm water discharge pipe and the drainage ditch along the western border of the landfill indicates that groundwater flowing into the landfill and through the Site that seeps into Ley Creek impacts stream water quality. Cyanide was detected in three of the six samples in excess of the standards or guidance values for Class B waters (13.6 µg/l, 13.6 µg/l, and 18.6 µg/l; the standard is 5.2 µg/l). The analytical results for surface water are summarized in Table 1.

**Sediment**

At each surface water sample location, two sediment depths were targeted for collection—one from 0-6 inches below the sediment/water interface and a second from 6-12 inches below the interface. A sediment sample was selected upstream of the Site in Ley Creek (see Figures 3 and 4). With regard to VOCs, most of the sediment samples contained acetone (0.014 milligrams per kilogram [mg/kg] to 0.078 mg/kg) and three samples contained methylene chloride 0.003 mg/kg, 0.004 mg/kg, and 0.007 mg/kg). All of the Ley Creek samples contained numerous SVOCs in excess of New York State sediment criteria. The predominant SVOCs present in the sediments were PAHs. The PAHs detected above sediment criteria with their maximum concentrations were benzo(a) anthracene (9.1mg/kg), benzo(a)pyrene (7.45 mg/kg); and chrysene (10.15 mg/kg). In most cases, the uppermost sample was 1.5 to two times higher in concentration compared to the deeper sample, with one location as the exception.

There were no pesticides detected in the sediments. PCBs (Aroclors 1248 and 1260) were detected in every sample in high concentrations (ranging from 3.6 mg/kg to 81mg/kg), with the exception of the sediment samples collected from the drainage ditch paralleling the New York State Thruway where PCBs were not detected. The Site-specific sediment screening criterion for PCBs is 0.0008 mg/kg. The upstream sample location had PCB concentrations of 51.3 mg/kg and 49.7 mg/kg (shallow and deep, respectively). This upstream Ley Creek sample indicates that PCBs emanate from an upstream source.

A number of metals, including arsenic, cadmium, chromium, lead, nickel, silver, and zinc, were present in the sediments in excess of sediment criterion in virtually all samples except the sediment samples collected from the drainage ditch paralleling the New York State Thruway. The metals that were detected, the maximum detections, and the associated sediment criterion are cadmium (83.7 mg/kg; the sediment criterion is 0.6 mg/kg) and chromium (1,767 mg/kg; the sediment criterion is 26.0 mg/kg). The concentrations for chromium in the downgradient samples were significantly higher than upstream concentrations, indicating that the contamination in the landfill could be contributing to the contamination of the sediments in Ley Creek.

Data from previous investigations at the landfill show PCBs and metals above sediment criterion in the drainage ditch west of the landfill which is located in a wetland. Cadmium concentrations ranged from not detected to 7.2 mg/kg; the criterion is 0.6 mg/kg. Lead concentrations ranged from not detected to 151 mg/kg; the criterion is 31 mg/kg.

## Soil

The uppermost soils encountered over most of the Site consist of silt and clay and represent the soil cover placed over the waste in 1982. This uppermost layer is approximately 2 feet thick. The soil cover overlies landfilled waste. The waste is thickest on the western portion of the Site and thins out to the east. Across the western portion of the landfill, the waste overlies a layer of clay varying in thickness from six to 40 feet. A discontinuous layer of sand appears between the waste and clay layer along the southern and eastern portions of the Site. A silt and sand unit up to 20 feet thick underlies this clay layer over most of the Site. This silt and sand unit overlies a sand unit up to 25-feet thick that appears to dip slightly to the west. A dense glacial till is present beneath the sand unit. The landfill appears to lie in a trough, as the till is found within 10 feet of the surface on the south side of Ley Creek, but is approximately 60 feet below grade in boring B-11 (see Figure 5).

The guidance used for the evaluation of contaminant concentrations in the soil are based on NYSDEC's 6NYCRR Subpart 375-6.8 Remedial Program Soil Cleanup Objectives (Part 375) (SCOs).

## Surface Soil

Twenty-nine surface soil samples were collected on and around the Site. As with the sediments, the predominant SVOCs were PAHs, and these compounds were detected in every sample. The concentrations of SVOCs are depicted in Figure 6. The PAHs that were detected in excess of the SCOs, with their maximum concentrations, were: benzo(a)anthracene (8.3 mg/kg; the Unrestricted Use Soil Cleanup SCO is 1 mg/kg), benzo(a)pyrene (5.2 mg/kg; the SCO is 1 mg/kg), and benzo(b)fluoranthene (13.9 mg/kg; the SCO is 1 mg/kg). The highest concentrations of PAHs were detected in the samples collected over most of the landfill surface north of Ley Creek. A number of pesticides were detected in three samples, but none were in excess of the SCOs. Aroclor 1248 was detected in two surface soil samples (0.22 mg/kg and 8.4 mg/kg; the Unrestricted Use SCO is 0.1 mg/kg), which are both located on the parcel between OLCC and Ley Creek. Aroclor 1248 was detected in one surface soil sample at a concentration of 8.4 mg/kg, which exceeds the SCO of 0.1 mg/kg for surface soils. The sample was collected from the parcel between OLCC and Ley Creek.

Evaluation of the metals data shows that almost all metals concentrations exceeded the SCOs in every sample. In many cases, the metals concentrations in the samples collected on top of the landfill were present in concentrations only slightly above background. The metals detected above standards with their maximum concentrations and background levels were: cadmium (17.3 mg/kg; background is 1 mg/kg), chromium (116 mg/kg; background is 10 mg/kg), lead (1,163 mg/kg; background is 18.75 mg/kg), and mercury (2.6 mg/kg; background is 0.1 mg/kg. The analytical data for soil are summarized in Table 1.

**Subsurface Soil**

Eight subsurface soil samples were collected from test pits during the waste area investigation. The sample from one test pit was collected from a black oily sludge with a strong petroleum odor. The samples from four test pits were collected near this test pit in an attempt to determine the extent of the black oily sludge. One sample was collected from a very compact yellow sandy material, with no odor. Another sample was collected from a dark stained soil, near where the original sanitary sewer line connected to the current sewer line. The samples from other test pits were collected from soils in contact with the original sanitary sewer line that crossed the Site.

A number of VOCs were detected in the subsurface soil samples. In particular, one sample had 0.377 mg/kg of 1,1-dichloroethane (the Unrestrictive Use SCO is 0.27 mg/kg) and 0.766 mg/kg of 1,2-dichloroethene (total) (the SCO is 0.33 mg/kg). One sample contained a relatively high concentration of total xylenes (45.362 mg/kg; the Unrestricted Use SCO is 0.26 mg/kg) and toluene (147.949 mg/kg; the SCO is 0.7 mg/kg). As with the surface soil samples, the subsurface soil samples all contained PAHs as the predominant subclass of SVOCs present in excess of SCOs. The PAHs detected above SCOs with their maximum concentrations and the SCOs were: benzo(a)anthracene (16.0 mg/kg; the Unrestricted Use SCO is 1 mg/kg), benzo(a)pyrene (11.700 m g/kg; the SCO is 1 mg/kg), benzo(b)fluoranthene (22.0 mg/kg, the SCO is 1 mg/kg. The subsurface soil samples did not contain pesticides but all samples contained PCBs. The samples from four test pits contained Aroclor 1248 in excess of the Unrestricted Use SCO, the highest being 420 mg/kg (the SCO is 0.1 mg/kg).

Again, as with the surface soil samples, virtually all of the metals in all of the samples exceeded SCOs. However, the metals concentrations were generally within one to two times background concentrations. The exceptions were the samples from three test pits (collected along the edge of the creek, immediately north of the confluence of Ley Creek and the OLCC), where metals concentrations ranged from two to 250 times background concentrations. In particular, the concentrations of chromium and cyanide were significantly higher than both background concentrations and the concentrations found in other areas of the landfill. The metals detected above standards with their maximum concentrations were: cadmium (34.5 mg/kg, the background is 1 mg/kg), chromium (4,265 mg/kg; background is 10 mg/kg), lead (418 mg/kg; background is 18.75 mg/kg), and mercury (0.87 mg/kg; background is 0.1 mg/kg). It is likely that these elevated concentrations of metals in this area are predominantly the result of historical waste disposal in the area rather than an upstream source.

It is important to note that while the subsurface soil samples collected adjacent to the former sanitary sewer contained elevated levels of certain contaminants, there was no evidence of coarse-grained bedding material around the sewer. It appeared that the sewer was placed in native soils. Based on these direct visual observations, it appears unlikely that the material surrounding the sewer has, or will act as a preferred pathway for

contaminant migration. However, it is unknown whether the interior of the sewer can act as a pathway.

In addition to the test pits, samples were collected from two soil borings at varying depths and analyzed for inorganic compounds. Several of the metal concentrations exceeded the background values, but virtually all metal concentrations were within one to 2 times the background concentrations, except selenium which was approximately three times the background. The samples collected from these borings were also analyzed to determine the feasibility of using bioremediation as a remedial alternative for soil in the vicinity of MW-10 (see Figure 2). (Bioremediation was determined to not be feasible based upon the tests due to the nature of the wastes present.) Two borings were also drilled in the middle of Ley Creek to determine if waste was present beneath the bed of the creek. No waste was found in these borings. The analytical data for soil collected from soil borings are summarized in Table 1

**Biota**

The analytical results for earthworm bioassays indicate that metals are the most common contaminant class in earthworms. The metals that were detected at levels of concern were chromium, copper, lead, mercury and zinc. Only two SVOCs were detected: 4-methylphenol and di-n-butyl phthalate. Since the earthworm samples were composited into one sample in order for the laboratory to perform the required analyses, no trends across the Site could be established.

**Contamination Fate and Transport**

A conceptual site model[6] is depicted in Figure 7.

## PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430 (a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of alternatives, using the remedy selection criteria which are described below. This analysis provides a

[6] A conceptual site model illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors.

basis for making a statutory finding that the remedy employs treatment as a principal element.

No principal threat wastes have been identified at the Site.

## CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The Salina Landfill is located within an area zoned as an "Industrial District." Land located immediately to the south and to the west of the Site is also zoned as an "Industrial District." The land directly east of the Site, on the opposite side of Wolf Street, is zoned both as a "Highway Commercial District" and a 'One-Family Residential District." The land located to the north of the Site, on the opposite side of the New York State Thruway, is zoned as an "Open-Land District," a "Planned Commercial District," and a "One-Family Residential District."

Based on a number of factors, including the reported history of land use in the area of the Site and the existing zoning for the Site property, NYSDEC has determined that the reasonably-anticipated future use for the Site is industrial.

As a result of the consolidation of the landfill waste that will occur under the selected modified remedy, other options to the current industrial zoning of the landfill property can be considered. These may include use of the property for passive recreational purposes (walking trails, *etc.*).

Currently, the on-Site aquifers are not used for drinking water. Residents located in the vicinity of the Site use the public water supply provided by Onondaga County. Groundwater near the Site will not be used as a source of potable water under future-use scenarios.

## SUMMARY OF SITE RISKS

The risk assessment, which is part of the original RI/FS report and was discussed in the 2007 ROD, determined that the contaminants of concern detected in environmental media at the Site (*i.e.*, PAHs, arsenic, Aroclor 1248) at the levels identified in the RI pose elevated carcinogenic (under both current and future land-use scenarios) and noncarcinogenic (under the future land-use scenario) health risks to potentially exposed populations at the Site.

Based on the results of the ecological risk assessment, the contamination at the Site poses a risk to soil invertebrates and terrestrial vertebrates. Specifically, using maximum contaminant concentrations in surface soil, a risk was calculated for soil invertebrates from total PAHs, chromium, copper, lead, mercury, and zinc. Using mean contaminant

concentrations, a risk was calculated for soil invertebrates from chromium, copper, mercury, and zinc.

This risk assessment also indicates that, using maximum contaminant concentrations, soil-invertebrate feeding birds are potentially at risk from aluminum, barium, cadmium, chromium, cobalt, copper, lead, mercury, selenium, silver, vanadium, zinc, and cyanide.

The results of the ecological risk assessment also indicate that, using maximum contaminant concentrations, soil invertebrate-feeding mammals are potentially at risk from aluminum, arsenic, barium, cadmium, copper, lead, mercury, selenium, silver, thallium, vanadium, and cyanide. Using mean contaminant concentrations, a risk was calculated from aluminum, arsenic, barium, cadmium, lead, mercury, selenium, silver, thallium, vanadium, and cyanide.

Based upon the human health and ecological risk assessments, and the fact that groundwater containing hazardous substances in excess of groundwater standards discharge unabated into Ley Creek, a tributary of Onondaga Lake, NYSDEC and EPA have determined that the Site poses an unacceptable threat which warrants remediation.

**Basis for Action**

Based upon the human health and ecological risk assessments, NYSDEC and EPA have determined that the response action selected in this ROD Amendment is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances from the Site into the environment.

## REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are site-specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and unacceptable exposures established in the risk assessment.

The following RAOs, which were established in the 2007 ROD, remain the same:

- Reduce/eliminate contaminant leaching to ground water
- Control surface-water runoff and erosion
- Prevent the off-Site migration of contaminated groundwater and leachate
- Restore groundwater quality to levels which meet state and federal drinking-water standards

- Prevent human contact with contaminated soils, sediment, and ground water
- Minimize exposure of aquatic species and wildlife to contaminants in surface water, sediments, and soils

## SUMMARY OF ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

During the preparation of the May 2002 FS, the complete excavation and removal of the landfilled wastes both north and south of Ley Creek was not considered to be a viable remedial alternative and was, therefore, eliminated from further consideration. Not only is source containment (*i.e.*, landfill cap, measures to control landfill leachate, source-area groundwater control to contain the plume, and institutional controls to supplement engineering controls) consistent with the *Presumptive Remedy for CERCLA Municipal Landfill Sites*[7], but the cost of complete excavation and removal of the landfilled wastes would be an order of magnitude higher than the other remedial alternatives that were considered.

The present-worth costs for all of the alternatives discussed below are calculated using a discount rate of 7 percent and a 30-year time interval. The time to implement reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy or procure contracts for design and construction.

The 2007 ROD identified five alternatives, including no action (Alternative 1). Two of the alternatives (Alternatives 2 and 3) involved on-Site treatment of the contaminated groundwater/leachate and two of the alternatives (Alternatives 4 and 5) involved off-Site treatment of the contaminated groundwater/leachate at METRO. Since the County has agreed to treat the contaminated groundwater/leachate at METRO, the on-Site treatment alternatives (Alternatives 2 and 3) have been dropped from consideration in this amended ROD.

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[7] See EPA Publication 9203.1-021, SACM Bulletins, *Presumptive Remedies for Municipal Landfill Sites*, April 1992, Vol. 1, No. 1, and February 1993, Vol. 2, No.1, SACM Bulletin *Presumptive Remedies*, August 1992, Vol.1, No. 3. and EPA Directive No. 9355.0-49FS, *Presumptive Remedy for CERCLA Municipal Landfill Sites*, September 1993.

The no-further-action alternative (Alternative 1) and the two alternatives involving off-Site treatment of the contaminated groundwater/leachate at METRO (Alternatives 4 and 5) have been retained for this proposed modification. These alternatives were slightly altered from those presented in the 2007 ROD because of new information obtained during the remedial design. The no-action alternative is now called "no further action" since a source removal was undertaken at the Site. Alternative 4, described below, is the contingency remedy selected in the 2007 ROD. Alternative 4 called for placing a cap over the wastes landfilled in the area south of Ley Creek. Alternative 5 calls for relocating these wastes onto the to-be-capped area north of Ley Creek.

The alternatives are:

**Alternative 1: No Further Action**

| | |
|---|---|
| Capital Cost: | $0 |
| Annual Operation, Monitoring, and Maintenance (OM&M) Costs: | $0 |
| Present-Worth Cost: | $0 |
| Construction Time: | 0 months |

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures. Since a source was identified and removed in the vicinity of MW-10 in March 2010, this alternative is being called "no further action" as opposed to "no action."

Because this alternative would result in contaminants remaining on-Site, CERCLA requires that the Site be reviewed at least once every five years. If justified by this assessment, remedial actions may be implemented in the future to remove or treat the waste.

**Alternative 4: Part 360 Cap North and South of Ley Creek and Contaminated Groundwater/Leachate Collection North and South of Ley Creek, Pretreatment of the Collected Contaminated Groundwater/Leachate, Off-Site Contaminated Groundwater/Leachate Treatment and Discharge of Treated Effluent, and Long-Term Operation, Monitoring and Maintenance**

| | |
|---|---|
| Capital Cost: | $22,736,268 |
| Annual OM&M Costs: | $329,703 |
| Present-Worth Cost: | $26,827,561 |
| Construction Time: | 2 years |

The key elements of this alternative are as follows:

- Construction of groundwater/leachate collection trenches north and south of Ley Creek;
- Excavation of contaminated sediments in the western drainage ditch;
- Lining the drainage ditches located along the northern and eastern borders of the Site;
- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill area north of Ley Creek, as appropriate;
- Construction of 6 NYCRR Part 360 caps over the landfill area north and south of Ley Creek;
- Engineered drainage controls and fencing;
- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;
- Conveyance of the collected groundwater/leachate to an on-Site pretreatment facility and then to METRO for final treatment.
- Institutional controls (such as environmental easements) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;
- Operation and maintenance of the on-Site treatment plant and maintenance of the cap and groundwater/leachate collection trench(es); and
- Long-term monitoring.

The northern collection trench would be approximately 2,900 feet long. The southern collection trench would be approximately 1,260 feet long. The trenches would be constructed and creek banks would be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 Use and Protection of Waters. The groundwater/leachate collection trench would be installed along (the channelized portion of) Ley Creek. Based upon available data and the conclusion that the groundwater flow from the landfill south of Ley Creek is likely to be influenced by a northwestern flowing gradient to the southern collection trench along Ley Creek, a collection trench along the northern side of OLCC may not be needed. If monitoring data

becomes available in the future that indicates a different flow gradient, then the need for a groundwater collection trench along the north side of the OLCC will be evaluated.

All excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 mg/kg would be sent off-Site for treatment/disposal at a Toxic Substances Control Act (TSCA)-compliant facility. Those sediments that have PCB concentrations less than 50 mg/kg would be consolidated underneath the cover on the landfill area north of Ley Creek. Nonhazardous soils and waste would be consolidated on-Site over approximately 10 acres in a currently flat area in the northern portion of the Site. The consolidated material would be graded to improve drainage in this area and then covered with the Part 360 cap.

The high level of VOCs in soils and waste in the vicinity of MW-10 (see Figure 2) is within the expected area of the leachate collection trench north of Ley Creek. Design modifications to the leachate pretreatment facility are expected since the March 2010 VOC source removal will significantly improve the groundwater/leachate quality at the Site. The groundwater investigation to study the positive effects of the March 2010 source removal on landfill leachate and Site groundwater began in Spring 2010. Design modifications to the groundwater/leachate pretreatment facility will be determined based on the results of this investigation.

After spreading the waste materials, soils, and sediments on top of the landfilled areas, the surfaces north and south of Ley Creek would be graded and covered. Before installing the multilayer caps in the areas to the north and south of Ley Creek, the subgrades would be graded to promote drainage and exhibit final slopes between 4% and 33%. After its installation, the caps would be seeded.

A 6 NYCRR Part 360 cap is commonly used in New York State to close municipal solid waste landfills. The cap systems would include the following components:

1. A gas venting layer, in accordance with 6 NYCRR Part 360 regulations, will be placed directly overlying the waste material. A filter fabric is typically directly below and above the venting layer to minimize the migration of fines into the venting layer. This layer is required to transmit methane for high organic waste material.

2. A synthetic 60 mil geomembrane overlying the gas venting layer.

3. A 12-inch compacted soil layer to protect the geomembrane from root penetration, desiccation, and freezing.

4. A final 6-inches of topsoil placed on top of the protective layer to promote vegetative growth for erosion control.

Results of an analysis to determine the infiltration rate through the multilayer caps show a significant reduction in infiltration through the caps. Estimates of collection trench flow are

made with consideration of the reduced infiltration, which results in a reduced saturated thickness and a reduced hydraulic gradient.

Prior to the installation of collection trenches, any landfill wastes encroaching on or near the banks of Ley Creek and OLCC would be pulled back approximately 30 feet from the northern and southern banks of Ley Creek and approximately 30 feet from the northern banks of OLCC. This waste would be removed and disposed properly at a permitted off-Site facility if it is characterized as hazardous waste. If it is not characterized as hazardous waste, then the waste would be consolidated onto the landfill. Site preparation prior to trench construction would include clearing, grubbing, and removal of trees along the relevant banks of Ley Creek. Erosion controls, including silt fencing and/or hay bales, would be installed to prevent soil and silt runoff. The existing slopes along the banks would be regraded to provide a suitable work pad for construction of the trenches.

The groundwater/leachate collection trenches would be keyed into the low-permeability till, or clay layer that act as an aquitard between the shallow and deep aquifers at the Site. Pending further evaluation, it is anticipated that the trenches would be installed using the bio-polymer slurry construction technique, which eliminates the need for shoring, dewatering, and personnel working in the trench. A barrier liner may be installed on the downgradient side of the trenches to prevent the inflow of uncontaminated water from Ley Creek. A perforated high density polyethylene (HDPE) pipe would be installed at the bottom of the trenches and a porous media (such as large diameter gravel) would be backfilled. The trenches would be designed such that the collected groundwater/leachate would flow by gravity through conveyance piping to a collection point or points from which it would be conveyed to an on-Site pretreatment facility (if necessary) and then to METRO via a force main to a sewer connection underlying Route 11.

After the installation of the trenches, the work areas in the buffer areas would be graded for proper drainage, covered with topsoil, and revegetated. The creek banks would be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 *Use and Protection of Waters*.

Calculations performed for this alternative estimated that approximately 45,600 gallons per day (gpd) would be collected in the northern collection trench and 6,900 gpd would be collected in the southern collection trench. These values would likely decline over time as the local groundwater table was lowered in response to the installation of an impermeable cap and collection and discharge of groundwater/leachate.

The 48-inch abandoned sewer line that runs across the Site would be exposed, broken, and sealed with concrete (or some other suitable material) at the eastern and western borders of the Site, to prevent it from serving as a conduit to convey contaminated groundwater off-Site. In addition, a slip liner would be installed in the 48-inch CMP culvert located in the eastern part of the Site to prevent contaminated groundwater from leaking into the pipe and discharging to Ley Creek.

Sediments in the western drainage ditch would be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek.

Mitigation of any disturbed wetlands is also included under this alternative.

As part of a long-term groundwater monitoring program, the direction of groundwater flow across the southeastern portion of the Site toward the northwest would be confirmed, and biodegradation parameters (*e.g.*, oxygen, nitrate, sulfate, methane, ethane, ethene, alkalinity, redox potential, pH, temperature, conductivity, chloride, and total organic carbon) would be used to assess the progress of the degradation of the contaminants in the groundwater downgradient of the groundwater/leachate collection trenches (*i.e.*, the buffer areas between the trenches and the northern and southern banks of Ley Creek and between the limit of waste north of the OLCC and the banks of OLCC).

Because this alternative would result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site be reviewed every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation[8] in the approximately 30-foot buffer areas (*i.e.,* and downgradient of the groundwater/leachate collection trenches) and the buffer area north of the OLCC, and to otherwise confirm that the remedy remains protective. If justified by the review, additional remedial actions may be implemented.

**Alternative 5: Waste Excavation South of Ley Creek and Consolidation North of Ley Creek, Part 360 Cap North of Ley Creek, Contaminated Groundwater/Leachate Collection North and, Potentially, South of Ley Creek, Pretreatment of the Collected Groundwater/Leachate, Off-Site Contaminated Groundwater/Leachate Treatment and Discharge of Treated Effluent, and Long-Term Operation, Monitoring and Maintenance**

| | |
|---|---|
| Capital Cost: | $21,690,000 |
| Annual OM&M Costs: | $265,936 |
| Present-Worth Cost: | $24,990,000 |
| Construction Time: | 3.5 years |

This alternative is similar to Alternative 4, except that instead of capping the landfilled wastes located south of Ley Creek, wastes would be excavated and relocated to the main landfilled area north of Ley Creek. This would be followed by a post-excavation

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[8] Natural attenuation is a variety of physical, chemical and biological processes which, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and groundwater. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction.

assessment (to characterize groundwater and possibly other media, as appropriate, in the area where the removal had occurred). Also, under this alternative, the drainage ditches located along the northern and eastern borders of the Site would not be lined as they would under Alternative 4. In addition, this alternative would involve:

- Excavation of waste in the northeastern corner of the landfill area north of Ley Creek to the center of that landfill area to allow for a diminished footprint;

- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;

- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements before this wastewater is sent to METRO for final treatment;

- Installing a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain its utilities without damaging a geomembrane cap; and

- If any portion of the Site is redeveloped, NYSDEC and New York State Department of Health (NYSDOH) will require that an evaluation be completed to determine the potential for soil vapor intrusion to occur in any future constructed buildings, including provision for implementing actions recommended to address exposures.

During the September 2009 Geotechnical Survey work, the landfill waste was found to be only 2 to 4 feet thick in the northeast corner of the Site. To reduce the footprint of the Landfill, the waste from this area will be relocated onto the north section of the Landfill. The eastern drainage ditch will be removed during the relocation of waste and this area will be restored to promote proper drainage.

Following the construction of a temporary bridge across Ley Creek and a haul road for the transport of excavated material to the northern part of the Site, the entire area south of Ley Creek (approximately four acres) would be cleared and grubbed to facilitate waste removal. Erosion controls would be established around the perimeter of the disturbed area. Once the area is prepared, an estimated 140,000 cubic yards of soil and waste would be excavated, transported to the northern portion of the Site, and staged. The excavation would remove apparent evidence of contamination, including visibly-stained soils and soils with aromatic odors. Post-excavation sampling would be conducted in the southern landfill area.

All excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 mg/kg would be sent off-Site for treatment/disposal at a TSCA-compliant facility[9]. Those sediments, soils, and wastes that have PCB concentrations less than 50

[9] For cost estimating purposes, it was assumed that 1% of the materials in the waste area

mg/kg would be consolidated underneath the cover on the landfill area north of Ley Creek. Nonhazardous soils and waste would be consolidated on-Site over approximately 10 acres in a currently flat area in the northern portion of the Site. The consolidated material would be graded to improve drainage in this area and then covered with the Part 360 cap.

The groundwater/leachate collection trench south of Ley Creek would not be immediately constructed. Following the excavation of the waste from the landfill area south of Ley Creek, groundwater monitoring and a study would be conducted to determine if (a) Site-related contaminants remaining in the area between Ley Creek and OLCC, if any, are a continuing potential source of contaminants to these tributaries (particularly PCBs and metals) at levels that require remediation, and (b) natural attenuation could reduce groundwater contaminants within and downgradient of the excavated source area to Maximum Contaminant Levels (MCLs)[10] within an acceptable time frame. If the study indicates that Site-related contaminants are migrating or may potentially migrate at levels that would require remediation or that natural attenuation has little potential to adequately reduce on-Site groundwater contamination to MCLs, then a groundwater/leachate collection trench would be constructed south of Ley Creek.

Based on March 2010 source removal, an evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements would be conducted before this wastewater is sent to METRO for final treatment to determine the degree of treatment, if any.

As recorded in the 2007 ROD Responsiveness Summary, no Part 360 cap would be placed over National Grid's natural gas line. National Grid has agreed to the installation of a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain its utilities without damaging a geomembrane cap. This will complete a continuous Part 360 cap system throughout the north section of the Site and increases the effectiveness of the remedy to protect human health and the environment.

Because this alternative would result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site be reviewed every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation in the area of the Site south of Ley Creek and in the approximately 30-foot buffer areas (and downgradient of the groundwater/leachate collection trench(es)), and to otherwise confirm that the remedy remains protective. If justified by the review, additional remedial actions may be implemented.

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located to the south of Ley Creek would be hazardous.

[10] Drinking-water standards.

## *EVALUATION OF ALTERNATIVES*

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely short-term effectiveness; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; implementability; cost; compliance with applicable or relevant and appropriate requirements; overall protection of human health and the environment; and support agency and community acceptance. The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with applicable or relevant and appropriate requirements addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refer to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and operation and maintenance costs, and net present-worth costs.

- Support Agency acceptance indicates whether, based on its review of the RI/FS and Proposed Plan for Remedy Modification, NYSDOH (the support agency for NYSDEC) concurs with, opposes, or has no comment on the preferred modified remedy at the present time.

- Community acceptance refers to the public's general response to the alternatives described in the RI/FS reports and Proposed Plan for Remedy Modification.

A comparative analysis of these alternatives based upon the evaluation criteria noted above, follows.

**Overall Protection of Human Health and the Environment**

Since Alternative 1 would not address the risks posed through each exposure pathway, it would not be protective of human health and the environment.

Alternatives 4 and 5 would be significantly more protective than Alternative 1, in that the risk of incidental contact with waste by humans and ecological receptors would be reduced by excavating waste material, contaminated soils and sediments, and excavating and/or covering the landfilled waste material and contaminated soil. Collecting and treating the leachate and contaminated groundwater under Alternative 4 would restore water quality in the aquifer downgradient of the collection trenches. Collecting and treating contaminated groundwater and leachate in a collection trench north and, possibly, south of Ley Creek, under Alternative 5, in combination with removing landfilled wastes south of Ley Creek, would reduce groundwater contamination originating from this area and help restore water quality in the aquifer south of Ley Creek and downgradient of the northern collection trench.

Alternatives 4 and 5 would protect human health and the environment to a similar extent. Under Alternative 4, the capping of the landfilled waste both north and south of Ley Creek would significantly reduce the infiltration of precipitation through the landfilled wastes, thereby significantly decreasing the generation of leachate and contaminated groundwater. Under Alternative 5, the capping of the landfilled waste north of Ley Creek and the excavation of the landfilled waste south of Ley Creek would significantly reduce the infiltration of precipitation through the landfilled waste and would remove source material, thereby reducing the volume of contaminants of concern that may migrate to the groundwater.

**Compliance with ARARs**

A 6 NYCRR Part 360 landfill cap is an action-specific ARAR for landfill closure. Therefore, Alternatives 4 and 5 would satisfy this action-specific ARAR. Alternative 1 would not meet this ARAR, since it does not include any provisions for a 6 NYCRR Part 360 landfill cap.

Since Alternative 4 would involve the excavation of PCB-contaminated sediments and Alternative 5 would involve the excavation of PCB-contaminated waste material, soils, and sediments, their disposition would be governed by the requirements of TSCA. Those excavated waste materials, soils, and sediments which equal or exceed 50 mg/kg PCB would be sent off-Site for treatment/disposal at a TSCA-compliant facility. If off-Site disposal of contaminated waste material, soils, or sediments is necessary under Alternatives 4 and 5, state and federal regulations related to the transportation and off-Site

treatment/disposal of wastes would apply. Since these alternatives would involve the excavation of contaminated soils and sediments, fugitive dust and VOC emission regulations would apply.

Alternatives 4 and 5 would need to comply with 6 NYCRR Part 608 by protecting Ley Creek and OLCC during construction and restoring the creek banks after construction is completed, as appropriate.

Alternative 1 does not provide for any direct remediation of groundwater and would, therefore, not comply with chemical-specific ARARs (*i.e.*, MCLs). A combination of the groundwater/leachate collection trench(es) and monitored natural attenuation in the buffer areas downgradient of the trench(es) and north of OLCC, and in the area where landfilled wastes would be removed south of Ley Creek in Alternative 5, would result in the downgradient groundwater eventually meeting MCLs. However there is no expectation that MCLs would be met in the areas beneath the new landfill cap(s) under Alternatives 4 and 5.

The groundwater/leachate collection trenches would prevent the migration of the contaminated groundwater away from the Landfill. Prevention of migration of contaminated groundwater and leachate away from the Landfill is an action-specific Remedial Action Objective for the Site.

The lower precipitation infiltration rate associated with placing an impermeable cap over the landfilled areas would significantly reduce the generation of leachate and additional groundwater contamination. The excavation of the waste materials south of Ley Creek under Alternative 5 would significantly reduce the migration of contaminants to the groundwater in this area. Since the viability of monitored natural attenuation of the contaminated groundwater south of Ley Creek under Alternative 5 and in the buffer areas in Alternative 4 cannot be confirmed until after the landfilled waste material is removed, it is unknown whether removing the waste material in combination with natural attenuation of the groundwater in this area would adequately reduce migration of Site-related contaminants of concern or restore the on-Site groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame.

**Long-Term Effectiveness and Permanence**

Alternative 1 would not provide reliable protection of human health and the environment over time. Alternatives 4 and 5 would be more effective over the long-term than Alternative 1, since they include the collection and treatment of the contaminated leachate and groundwater. Excavating the waste from the landfill area south of Ley Creek, excavating contaminated sediments from the western drainage ditch, consolidating the waste material, soils, and sediments on the landfill area north of Ley Creek and constructing an impermeable cap over the landfill area north of Ley Creek under Alternative 5, and excavating contaminated sediments from the western drainage ditch, consolidating the sediments on the landfill area north of Ley Creek, and constructing caps over the landfill areas north and south of Ley Creek under Alternative 4, would substantially reduce the

residual risk posed by the landfilled waste on the Site by essentially isolating it from contact with human and environmental receptors. The impermeable cap(s) constructed under Alternatives 4 and 5 would also reduce the mobility of contaminants caused by infiltrating rainwater. The impermeable cap(s) proposed in Alternatives 4 and 5 represent permanent measures that could be maintained at regular intervals to ensure their structural integrity. Long-term effectiveness of the remedial measures in the buffer areas would also be expected, as the contaminated soils would be removed. In addition, the removal of contaminated soils in the buffer areas under both alternatives and the removal of the waste south of Ley Creek under Alternative 5 would permanently eliminate the mobility of the contaminants.

The 6 NYCRR Part 360 cap(s) that would be constructed under Alternatives 4 and 5 would require routine inspection and maintenance to ensure their long-term effectiveness and permanence. Routine maintenance, as a reliable management control, would include mowing, fertilizing, reseeding, and repairing any potential erosion or burrowing rodent damage. The fencing under these alternatives would need to be inspected for holes or breeches. In addition, flushing of the collection trench drainage systems would need to be performed on a periodic basis, and engineered drainage controls would need to be inspected and repaired as needed. Since only one cap would be constructed under Alternative 5, it would require less maintenance than Alternative 4. In addition, if it is determined that a groundwater/leachate collection system is not needed south of Ley Creek (*e.g.*, if natural attenuation of the contaminated groundwater in this area restores the groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame), Alternative 5 would require significantly less overall maintenance than Alternative 4 since there would only be a single groundwater/leachate collection trench.

Reliability is another measure of the long-term effectiveness of a remedial action. A reliable alternative performs its function with reduced long-term oversight and maintenance. Long-term operation and maintenance would be required for both of the action alternatives. Both of the action alternatives would be reliable, if designed and constructed according to sound engineering practices for landfill closure. If pretreatment is necessary, the on-Site pretreatment plant under Alternatives 4 and 5 would be very reliable, as long as the operation and maintenance of the plant is properly attended to by the on-Site operator. The cap(s) would also be reliable.

**Reduction in Toxicity, Mobility, or Volume Through Treatment**

Alternative 1 would not actively reduce the toxicity, mobility, or volume of contaminants through treatment. This alternative would solely rely on natural attenuation to reduce the levels of contaminants.

The impermeable landfill cap(s) in Alternatives 4 and 5 and the excavation of the landfill south of Ley Creek under Alternative 5 would result in significantly reduced infiltration of precipitation into the waste, and therefore a significant reduction in the mobility of the contaminants, and a significantly reduced volume of contaminated groundwater/leachate requiring treatment.

Treating the collected leachate and contaminated groundwater at both the on-Site pre-treatment plant and the METRO facility under Alternatives 4 and 5 would reduce the toxicity, mobility, and volume of contaminants in collected leachate/groundwater through treatment, and it would also reduce the possibility of additional groundwater contamination.

Alternatives 4 and 5 would limit further migration of and potential exposure to hazardous substances, and under these alternatives the infiltration of rainwater into the waste disposal areas and the associated leaching of contaminants from these areas would be nearly eliminated, but the reduction in mobility would not be accomplished through treatment.

**Short-Term Effectiveness**

Alternative 1 does not include any physical construction measures in any areas of contamination and, therefore, does not present a risk to the community as a result of their implementation. The excavation of 4 - 5 acres of waste under Alternative 5 may result in the release of objectionable odors. The excavation and relocation of this waste would also pose a much more significant risk of exposure of on-Site workers to potentially contaminated soils and waste material than the other action alternative. Long-term monitoring activities related to Alternatives 4 and 5 would present some risk to on-Site workers through dermal contact and inhalation. Alternatives 4 and 5 would pose an additional risk of exposure of on-Site workers to waste material and contaminated sediments and soils through excavating, moving, placing, and regrading the waste and contaminated soils and sediments. Alternatives 4 and 5 would also pose a risk of exposure of on-Site workers to potentially contaminated soils and groundwater through the installation of groundwater/leachate collection trenches. The noted exposures to on-Site workers under Alternatives 4 and 5 can be minimized by utilizing proper protective equipment. The vehicle traffic associated with landfill cap construction and the off-Site transport of contaminated soils/sediments could impact the local roadway system and nearby residents through increased noise level. Disturbance of the land during excavation and cap and groundwater/leachate collection trench construction could affect the surface water hydrology of the Site. There would also be the potential for increased stormwater runoff and erosion during excavation and construction activities that must be properly managed to prevent excessive water and sediment loading.

Excavation and impermeable cap construction activities, as well as groundwater/leachate collection trench installation activities as part of Alternatives 4 and 5, would require substantial clearing of trees and vegetation across the Site, which would temporarily disrupt animal habitats during the construction. Alternative 5 would likely be most disruptive to habitats, since this alternative would take longer to implement and would be more invasive than Alternative 4. Excavation of the waste under Alternative 5, as well as the construction of the collection trenches, could result in fugitive dust generation and direct contact with waste and contaminated soil or water. Engineering controls could be applied to reduce the production of dust, and health and safety measures can reduce direct contact with contamination.

Since no activities would be performed under Alternative 1, there would be no implementation time. It is estimated that Alternative 4 would be implemented in 2 years and that Alternative 5 would be implemented in 3.5 years.

**Implementability**

Alternative 1 involves no construction and would, therefore, be easy to implement. Excavating contaminated sediments from the western drainage ditch, consolidating the sediments on the landfill area north of Ley Creek, constructing multilayer caps over the landfill areas north and south of Ley Creek, and installing groundwater/leachate collection trenches north and south of Ley Creek under Alternative 4, and excavating the waste from the landfill area south of Ley Creek, excavating contaminated sediments from the western drainage ditch, consolidating the waste material, soils, and sediments on the landfill area north of Ley Creek, constructing an impermeable cap over the landfill areas north of Ley Creek, and installing a groundwater/leachate collection trench north and, if needed, south of Ley Creek under Alternative 5, although more difficult to implement than Alternative 1, can be accomplished using technologies known to be reliable and can be readily implemented. Since it would involve the movement of a substantial amount of waste material, Alternative 5 would be more difficult to implement than Alternative 4. Alternatives 4 and 5 would also involve monitoring of natural attenuation parameters. Equipment, services and materials for this work are readily available. These actions would also be administratively feasible.

The on-Site and off-Site treatment facilities would be a reliable source of treatment of the collected groundwater/leachate.

Since Alternatives 4 and 5 may result in the disturbance of wetland areas, mitigation of the affected wetlands is also included under these alternatives. The purpose of mitigation of the affected wetlands is to restore wetlands disturbed by remediation activities. If wetland mitigation would include the establishment of a new on-Site high quality wetland, this may be more feasible to implement under Alternative 5 since the area south of Ley Creek may be available for wetland development.

**Cost**

The present-worth costs are calculated using a discount rate of seven percent and a thirty-year time interval.

The estimated capital, annual operation, maintenance, and monitoring, and present-worth costs for each of the alternatives are presented below.

| Alt. | Capital Cost | Annual Cost | Present-Worth Cost |
|---|---|---|---|
| 1 | $0 | $0 | $0 |
| 4 | $22,736,268 | $329,703 | $26,827,561 |
| 5 | $21,690,000 | $265,936 | $24,990,000 |

As is indicated from the cost estimates, there are no costs associated with the no-action alternative, Alternative 1. The estimated present-worth cost for Alternatives 4 is $1,837,550 greater than Alternative 5.

Depending on the success of the March 2010 VOC source removal, it is believed that pretreatment processes of the collected contaminated groundwater/leachate may be reduced. If, however, the post-source removal groundwater/leachate study concludes that pretreatment is needed as described in the March 2007 Record of Decision, the capital cost and the annual operation and maintenance cost would increase.

**Support Agency Acceptance**

NYSDOH (the support agency for NYSDEC) concurs with the selected modified remedy.

**Community Acceptance**

Comments received during the public comment period indicate that the public generally supports the selected modified remedy. The public's comments are summarized and addressed in the Responsiveness Summary, which is attached as Appendix V to this document.

## SELECTED MODIFIED REMEDY

### *Summary of the Rationale for the Selected Modified Remedy*

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, NYSDEC and EPA have determined that Alternative 5 best satisfies the requirements of CERCLA Section 121, 42 U.S.C. Section 9621, and provides the best balance of tradeoffs among the remedial alternatives with respect to the NCP's nine evaluation criteria, 40 CFR Section 300.430(e)(9). Therefore, NYSDEC and EPA recommend that the 2007 ROD be amended accordingly.

Under the requirements of the NCP, the "Overall Protection of Human Health and the Environment" and "Compliance with ARARs" evaluation criteria are threshold requirements that each alternative must meet in order to be eligible for selection. Both Alternatives 4

and 5 would reduce the risk of incidental contact with waste by humans and ecological receptors.

While Alternatives 4 and 5 would both effectively prevent the risk of incidental contact with waste material, contaminated soils, and contaminated sediment by humans and ecological receptors, Alternative 5, the selected modified remedy, has the following advantages over Alternative 4:

- In the 2007 ROD, Alternative 5 was eliminated from consideration because of concerns that significant quantities of hazardous waste were commingled with the municipal refuse in the landfill located south of Ley Creek, which would have significantly increased the cost of the remedy since these wastes would require off-Site disposal. As part of the design, samples were collected from the waste in the landfill south of Ley Creek. Upon analysis of these samples, it has been concluded that the landfill likely contains a heterogeneous mixture of municipal refuse with only low concentrations of hazardous substances typically associated with municipal refuse. As a result, the present-worth cost of Alternative 4 is now estimated to be $1,837,550 greater than Alternative 5.

- Since only one cap would be constructed under Alternative 5, it would require less maintenance than Alternative 4. In addition, if it is determined that a groundwater/leachate collection system is not needed south of Ley Creek (*e.g.*, if natural attenuation of the contaminated groundwater in this area restores the groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame), Alternative 5 would require significantly less overall maintenance than Alternative 4 since there would only be a single groundwater/leachate collection trench.

As is described in the above evaluation of alternatives, NYSDEC and EPA believe that the selected modified remedy for the Site will provide the best balance of tradeoffs among alternatives with respect to the evaluation criteria, would be protective of human health and the environment, and would comply with all ARARs.

The selected modified remedy would mitigate the migration of contamination to Onondaga Lake via Ley Creek; it would provide a reduction in the toxicity, mobility, and/or volume of contaminated groundwater and leachate through treatment; it would satisfy the ARARs and RAOs; and it would provide long-term effectiveness. The selected modified remedy would be implemented in a reasonable time frame with minimal significant short-term impacts to human health or the environment. It also would be cost-effective, and would utilize permanent solutions to the maximum extent practicable. The selected modified remedy would also meet the statutory preference for the use of treatment (of the contaminated groundwater and leachate) as a principal element. Finally, the selected modified remedy would provide overall protection to human health and the environment.

***Description of the Selected Modified Remedy***

The major components of the selected modified remedy include[11]:

- Excavation of the landfilled wastes located south of Ley Creek , including the 30 feet of waste encroaching the southern bank of Ley Creek and the northern bank of the Old Ley Creek Channel waste;

- Excavation of waste in the northeastern corner of the landfill area to the north of Ley Creek to the center of that landfill area to allow a diminished footprint;

- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;

- Excavation of waste 30 feet into the northern banks of Ley Creek;

- Excavation of contaminated sediments in the western drainage ditch;

- Off-Site treatment/disposal at a TSCA-compliant facility of all excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 milligrams per kilogram (mg/kg);

- Consolidation of the excavated sediments, soils, and wastes that have PCB concentrations less than 50 mg/kg on the landfill area north of Ley Creek;

- Construction of a 6 NYCRR Part 360 cap over the landfill area north of Ley Creek;

- Installation of a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain its utilities without damaging a geomembrane cap;

- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements;

- Based on the evaluation of trench and pre-treatment requirements, if necessary, construction of a groundwater/leachate collection trench north of Ley Creek and construction of a pre-treatment facility;

- After pre-treatment (if necessary), treatment of the collected leachate and groundwater at METRO;

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11 See Figure 9 for an illustration of the selected remedy.

- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;

- Engineered drainage controls and fencing, as appropriate;

- Institutional controls (such as environmental easements) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;

- Operation and maintenance of the on-Site treatment plant and groundwater/leachate collection trench(es), if these remedy components are necessary, and maintenance of the Part 360 cap;

- If any portion of the Site is redeveloped, an evaluation to determine the potential for soil vapor intrusion to occur in any future constructed buildings, including provision for implementing actions recommended to address exposures; and

- Long-term monitoring.

The environmental benefits of the selected modified remedy may be enhanced by consideration, during the remedial design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green policy[12]. This will include consideration of green remediation technologies and practices.

The Town of Salina will need to certify the continued effectiveness of the institutional and engineering controls on a periodic basis in an annual report. The certification will need to indicate that the required long-term monitoring is being conducted, identify the required institutional and engineering controls, indicate whether they remain effective for the protection of public health and the environment, and indicate whether they should remain in place.

Before installing the multilayer cap, the subgrade will be graded to promote drainage and exhibit final slopes between 4% and 33%. The entire cap will then be seeded.

Currently, the limits of the landfill waste encroach on the banks of Ley Creek in several locations. Landfilled waste will be pulled back 30 feet from the northern bank of Ley Creek prior to the installation of the groundwater/leachate collection trenches[13]. The landfilled waste will be removed from the southern bank of Ley Creek and 30 feet from the northern banks of OLCC as the part of the waste relocation from the south section of the landfill to the northern central section of the Site. This landfilled waste will be removed and disposed

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12 See http://epa.gov/region2/superfund/green_remediation.

13 If necessary, the northern collection trench will be approximately 2,800 feet long.

properly at a permitted off-Site facility if it is characterized as hazardous waste. If it is not characterized as hazardous waste, then the waste will be consolidated onto the landfill. Based on a 2010–2011 groundwater study, the groundwater/leachate collection trenches may need to be installed along the northern bank of Ley Creek at the new limits of the waste. As a result of the waste relocation south of Ley Creek, a collection trench along the northern side of OLCC may not be needed. If monitoring data indicates a different flow gradient, then the need for a groundwater collection trench along the north side of the OLCC will be evaluated. Site preparation prior to trench construction will include clearing, grubbing, and removal of trees along the northern and southern banks of Ley Creek. Erosion controls, including silt fencing and/or hay bales will be installed to prevent soil and silt runoff from entering the creek. The existing slopes along the banks will be regraded to provide a suitable work pad for construction of the trench. Contaminated material cut from the banks will be placed under the cap (contingent upon the results of the PCB testing noted above).

The groundwater/leachate collection trench south of Ley Creek will not be immediately constructed. Following the excavation of the waste from the landfill area south of Ley Creek, groundwater monitoring and a study will be conducted to determine if (a) Site-related contaminants remaining in the area between Ley Creek and OLCC, if any, are a continuing potential source of contaminants to these tributaries (particularly PCBs and metals) at levels that require remediation, and (b) natural attenuation could reduce groundwater contaminants within and downgradient of the excavated source area to MCLs within an acceptable time frame. If the study indicates that Site-related contaminants are migrating or may potentially migrate at levels that will require remediation or that natural attenuation has little potential to adequately reduce on-Site groundwater contamination to MCLs, then a groundwater/leachate collection trench will be constructed south of Ley Creek.

The groundwater/leachate collection trench(es) will be keyed into the clay layer that acts as an aquitard between the shallow and deep aquifers at the Site. Where the clay layer is not present or is of insufficient thickness, the leachate collection trench(es) will be keyed into the dense glacial till. Additional investigation of the permeability of the glacial till will be conducted during the remedial design phase. If the glacial till is determined to not be a sufficiently low permeability material, then additional measures (*e.g.*, installation of sheet piling downgradient of the collection trench(es)) may be implemented to ensure that groundwater flow will not bypass the collection trenches.

Pending further evaluation during design, it is anticipated that the trenches will be installed using the bio-polymer slurry construction technique, which eliminates the need for shoring, dewatering, and personnel working in the trench. A barrier liner will be installed on the downgradient side of the trenches to prevent the inflow of uncontaminated water from Ley Creek. A perforated high density polyethylene pipe will be installed at the bottom of the trenches and a porous media (such as large diameter gravel) will be backfilled. The trenches will be designed such that collected water will flow by gravity through conveyance piping to existing manholes located on the northwestern and eastern parts of the Site. From these manholes, the water will be treated at an on-Site treatment plant.

After the installation of the trench(es), the downgradient work areas will be graded for proper drainage and covered with 0.5 foot of topsoil. All areas disturbed by the construction will be revegetated. The trenches will be constructed and buffer areas and the banks of Ley Creek and OLCC will be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 Use and Protection of Waters.

The 48-inch abandoned sewer line that runs across the Site will be exposed, broken, and sealed with concrete (or some other suitable material) at the eastern and western borders of the Site, to prevent it from serving as a conduit to convey contaminated groundwater off-Site. In addition, a slip liner will be installed in the 48-inch corrugated metal pipe culvert located in the eastern part of the Site to prevent contaminated groundwater from leaking into the pipe and discharging to Ley Creek.

Sediments in the western drainage ditch will be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek. Analysis of the northern drainage ditch in 2009 indicated that no further action was necessary. All other drainage ditches will be completely removed as part of the waste relocation and consolidation efforts.

During the preliminary remedial design, delineation and evaluation of any wetlands on or adjacent to the Site or impacted by the Site consistent with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*; 40 CFR Part 6, Appendix A: "Statement of Procedures on Floodplain Management and Wetlands Protection," Executive Order 11990: "Protection of Wetlands," and EPA's 1985 "Statement of "Policy on Floodplains/Wetlands Assessments for CERCLA Actions" will be performed. Also, since remedial activities will take place within the 100- or 500-year floodplain, a floodplain assessment consistent with Executive Order 11988: "Floodplain Management," and 40 CFR Part 6, Appendix A will be performed to minimize or avoid the adverse effects of a 500-year event, as well as to protect against the spread of contaminants and the long-term disabling of remedial treatment systems due to flooding events. In addition, the substantive requirements of 6 NYCRR Part 502, Floodplain Management Criteria for State Projects will also need to be met.

The selected modified remedy will be designed to neither inhibit nor impair National Grid's operations on the Site. Coordination with National Grid to identify the location of all of its utility lines, structures and facilities will be done in order to identify design requirements for uninterrupted access by National Grid and to ensure safe construction of the selected modified remedy. The Town of Salina and National Grid entered into an agreement in August 2010 to enhance and/or relocate National Grid's utility lines on-Site and to insure that the modified remedy would be protection of human health and the environment.

Because the selected modified remedy will result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site undergo a statutorily-mandated review every five years. As part of any such review, groundwater monitoring results and Site modeling will be utilized to assess the effects of natural attenuation to attain MCLs in the

two 30-foot buffer areas associated with Ley Creek and in the buffer area north of OLCC, and to otherwise confirm that the modified remedy remains protective. If justified by the review, additional remedial actions may be implemented.

## STATUTORY DETERMINATIONS

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site.

For the reasons discussed below, NYSDEC and EPA have determined that the selected modified remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected modified remedy will protect human health and the environment through excavating the landfilled wastes located south of Ley Creek and consolidating them on the landfill area north of Ley Creek and capping the consolidated waste mass and leachate seeps, thereby eliminating the threat of exposure via direct contact with or ingestion of the contaminated media. The selected modified remedy will reduce exposure levels by reducing the amount of water contaminated by the landfill waste by not allowing precipitation to infiltrate into the landfill. The selected modified remedy will also prevent or substantially eliminate the migration of contamination to the Onondaga Lake system from the Site through capping and, as necessary, the installation of the leachate collection trench(es). Short-term human health or ecological risks posed by the landfill and leachate seeps can be minimized with environmental easements, maintenance of the temporary covers, and fencing, while the waste is being excavated and capped. The selected modified remedy will also provide overall protection by reducing the toxicity, mobility, and volume of contamination through the capping of the landfill and treatment of the collected leachate.

Compliance with ARARs and Other Environmental Criteria

A list of the ARARs and "Other Criteria, Advisories, or Guidance TBCs" which will be complied with during implementation of the selected modified remedy, is presented below.

- Clean Air Act (CAA) National Emissions Standards for Hazardous Air Pollutants, 40 CFR Parts 61 and 63

- Resource Conservation and Recovery Act (RCRA), Standards for Hazardous Waste Generators; Manifesting; Pre-Transportation; Reporting Requirements, 40 CFR Part 262 Subparts B, C, D
- RCRA Subtitle C - Hazardous Waste Management, Identification and Listing of Hazardous Wastes, 40 CFR Part 261
- Standards for Hazardous Waste Generators, Hazardous Waste Determinations, 40 CFR Part 262.11
- Standards for Hazardous Waste Generators, 90-Day Accumulation Rule, 40 CFR Part 262.34
- Standards for Owners/Operators of Hazardous Waste Treatment, Storage and Disposal (TSD) Facilities, 40 CFR Parts 264 and 265, Subparts B, F, G, J, S, and X
- RCRA, Standards of Capping: Surface Impoundments, Waste Piles, Landfills, Subtitle C, 40 CFR Parts 264 and 265, Subparts K, L and N
- RCRA Subtitle C, Land Disposal Restrictions, 40 CFR Part 268
- RCRA Subtitle D, Criteria for Classification of Waste Disposal Facilities, 40 CFR Part 257
- U.S. Department of Transportation Rules for Hazardous Materials Transport, 49 CFR Part 107 et. seq.
- Occupational Health and Safety Act, Worker Health and Safety, 29 CFR 1910.120 and 29 CFR 1926
- NYSDEC Identification and Listing of Hazardous Wastes, 6 NYCRR Part 371
- New York State Hazardous Waste Management Facility Regulations, 6 NYCRR Parts 370, 372 and 373
- NYSDEC Corrective Action for Solid Waste Management Units, 6 NYCRR Part 373-2.19
- New York State Solid Waste Management Facility Regulations, 6 NYCRR Parts 360 and 364
- NYSDEC Land Disposal Regulations, 6 NYCRR Part 376

- New York State Classifications of Surface Waters and Groundwaters, 6 NYCRR Part 701
- New York State Regulations on the State Pollution Discharge Elimination System (SPDES), 6 NYCRR Parts 750-758
- New York State Air Pollution Control Regulations, 6 NYCRR Parts 120, 200-203, 207, 211, 212 and 219
- New York State Air Quality Standards, 6 NYCRR Part 257
- Local County or Municipality Pretreatment Requirements, Local regulations
- Safe Drinking Water Act (SDWA) MCLs and MCLGs (40 CFR Part 141)
- New York State Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards, 6 NYCRR Part 703
- Clean Water Act (CWA), Wastewater Discharge Permits, Effluent Guidelines, Best Available Technology (BAT) and BMPPT, 40 CFR Parts 122, 125 and 401
- Floodplain Management 40 CFR 6, Subpart A, 40 CFR 6.302
- 40 CFR Part 6, Appendix A, Statement of Procedures on Floodplain Management and Wetlands Protection
- Fish and Wildlife Coordination Act, 16 U.S.C. 661, Modification to Waterways that Affects Fish of Wildlife, 40 CFR 6.302 (122.49)
- National Historic Preservation Act, 16 U.S.C. 470
- New York State Freshwater Wetlands Law, Environmental Conservation Law, Article 24, 71 in Title 23
- New York State Freshwater Wetlands Implementation Program, 6 NYCRR 662 and 665
- New York State Protection of Waters Program, 6 NYCRR Part 608
- CWA Section 401, State Water Quality Certification (WQC) Program, 33 U.S.C. 1341
- 40 CFR Parts 230 and 231 (associated with the Clean Water Act, Section 404)

- Freshwater Wetlands Regulations, Guidelines on Compensatory Mitigation, October 1993 (A New York State SCG)
- Requirements for Management of Hazardous Contaminated Media (Hazardous Waste Identification Rule (HWIR) - Media), 61 FR 18879, 40 CFR Part 260, et. al.
- CAA, National Ambient Air Quality Standards, 40 CFR Part 50
- Executive Order 11990 (Protection of Wetlands)
- Executive Order 11988 (Floodplain Management)
- Land Use in the CERCLA Remedy Selection Process, OSWER Directive No. 9355.7-04
- EPA Statement of Policy on Floodplains and Wetlands Assessments for CERCLA Actions
- New York Guidelines for Soil Erosion and Sediment Control
- New York State Air Cleanup Criteria, January 1990
- SDWA Proposed MCLs
- NYSDEC, Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, October 1998
- New York State Groundwater Effluent Limitations, TOGS 1.1.2
- NYSDEC Division of Water, Guidance on Groundwater Contamination Strategy, TOGS 2.1.1
- New York State Ambient Air Quality Guidelines, Air Guide-1
- NYSDEC Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites, October 1994
- EPA Ambient Water Quality Criteria (Federal Register, Volume 57, No. 246, December 22, 1992)
- NYSDEC Remedial Program Soil Cleanup Objectives, 6 NYCRR Part 375-6
- New York State Environmental Conservation Law Section 27-1318, Institutional and Engineering Controls

- New York State Codes, Rules and Regulations (NYCRR) Part 502, Floodplain Management Criteria for State Projects

Cost-Effectiveness

For the foregoing reasons, it has been determined that the selected modified remedy provides for overall effectiveness in proportion to its cost.

The estimated capital cost for the selected modified remedy is $21,690,000. The estimated annual O&M cost for 30 years is $265,936 per year (7% discount rate for 30 years). The estimated total present-worth cost of the selected modified remedy is $24,990,000.

Although Alternative 1 (No Action) is less costly than the selected modified remedy, it will not achieve the overall protection of human health and the environment, and contamination from the Site will continue to migrate into the Onondaga Lake system. The estimated present-worth cost for the selected modified remedy is $1,837,550 less than Alternative 4.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected modified remedy provides the best balance of tradeoffs among the alternatives with respect to the balancing criteria set forth in NCP §300.430(f)(1)(i)(B), such that it represents the maximum extent to which permanence and treatment can be practicably utilized at this Site.

The selected modified remedy will not provide a permanent solution for the Town of Salina Landfill in that the entire landfill will not be treated. Even if the waste mass were completely removed from the landfill Site, the waste would be deposited elsewhere. This removal and off-Site disposal would not reduce the volume of waste. Therefore, even though the landfill waste is being consolidated, not reduced by the selected modified remedy, it will be contained to prevent exposure to humans and the environment.

The leachate collection trench(es), if built, will collect the contaminated groundwater and leachate from the landfill, eliminating the mobility of the waste. The leachate will be treated, thereby reducing the toxicity of the waste.

There are no principal threat wastes located at the Site. However, any hazardous waste that is found at the Site (for example, during the excavation of the landfilled wastes located south of Ley Creek and the installation of the leachate collection trenches) will be removed and handled in an appropriate manner (disposal at an approved hazardous waste treatment, storage, or disposal Site).

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment as a principal element is satisfied under the selected modified remedy in that the leachate and contaminated groundwater will be collected and treated, and will no longer reach the tributary of Onondaga Lake, Ley Creek. Any hazardous wastes encountered during the excavation of the landfilled wastes located south of Ley Creek and the construction of the leachate collection trench(es) will be treated off-Site at an approved treatment, storage and disposal facility.

Five-Year Review Requirements

Since the selected alternative will result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site undergo a statutory review every five years. If justified by this assessment, remedial actions may be implemented in the future to remove or treat the waste.

## DOCUMENTATION OF SIGNIFICANT CHANGES

No significant changes to the modified remedy, as originally identified in the Proposed Plan for Remedy Modification, were necessary or appropriate.

# APPENDIX I

## Figures

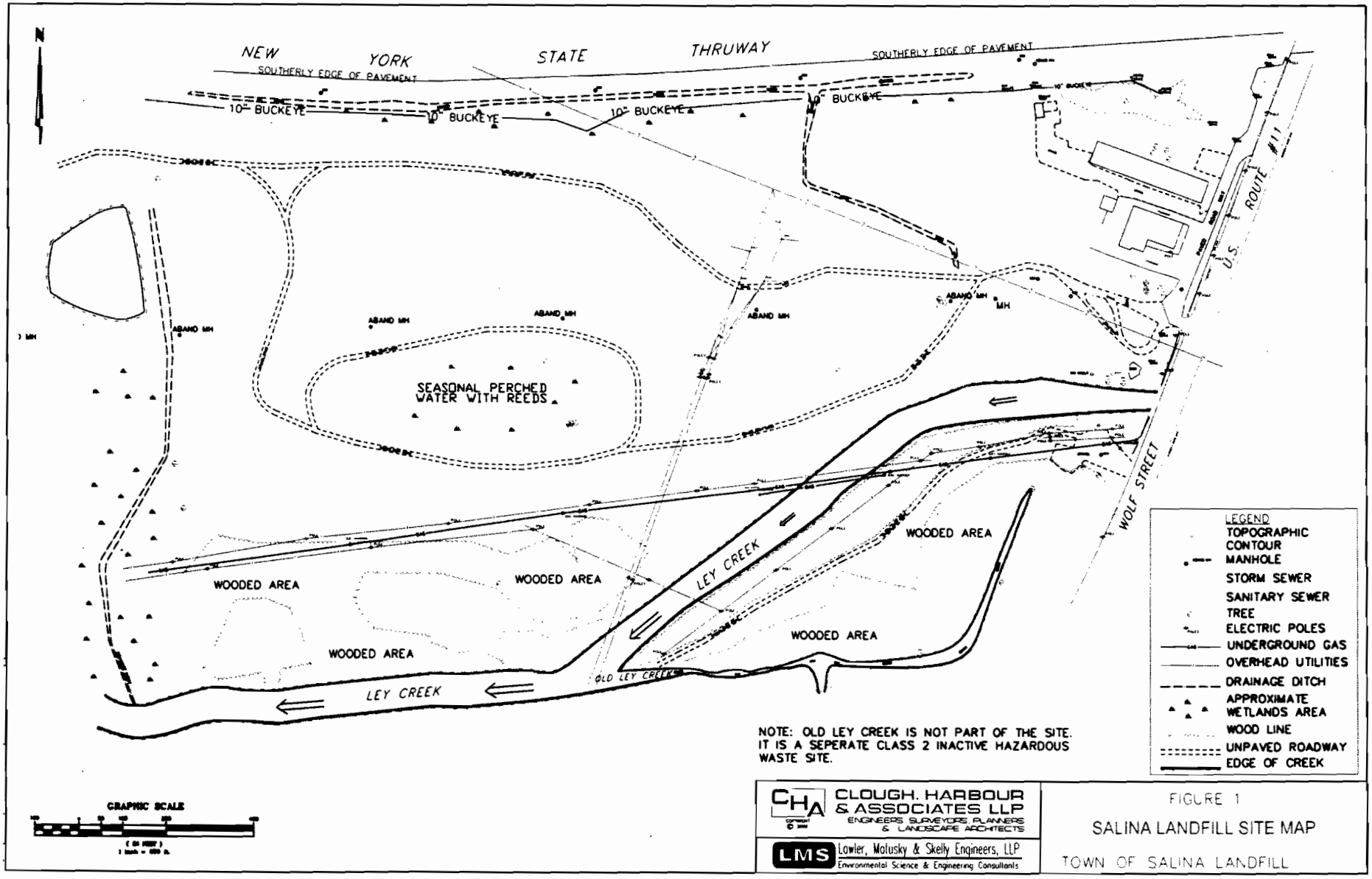
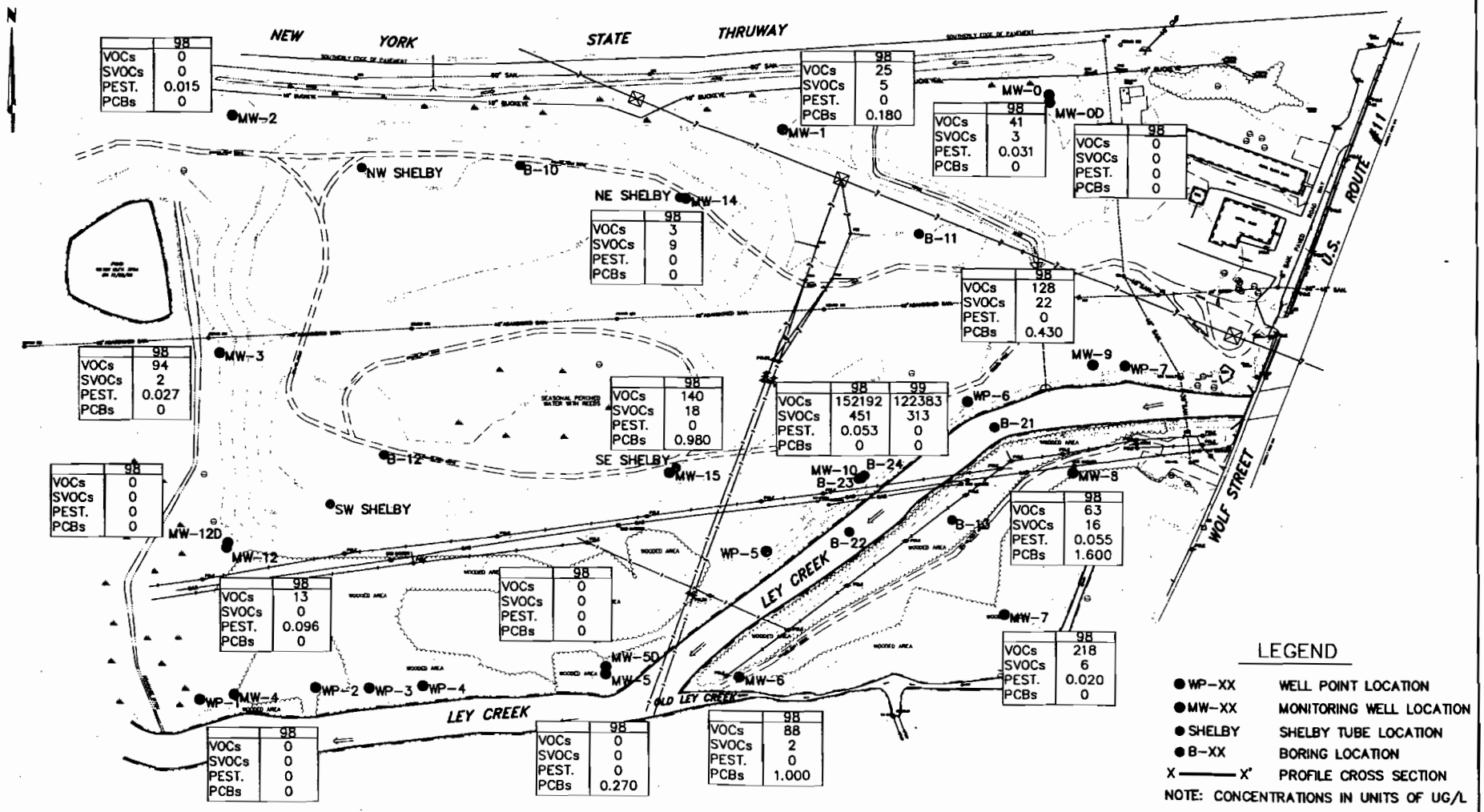



FIGURE 1

SALINA LANDFILL SITE MAP

TOWN OF SALINA LANDFILL




| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0.015 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 25 |
| SVOCs | 5 |
| PEST. | 0 |
| PCBs | 0.180 |

| | 98 |
|---|---|
| VOCs | 41 |
| SVOCs | 3 |
| PEST. | 0.031 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 3 |
| SVOCs | 9 |
| PEST. | 0 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 128 |
| SVOCs | 22 |
| PEST. | 0 |
| PCBs | 0.430 |

| | 98 |
|---|---|
| VOCs | 94 |
| SVOCs | 2 |
| PEST. | 0.027 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 140 |
| SVOCs | 18 |
| PEST. | 0 |
| PCBs | 0.980 |

| | 98 | 99 |
|---|---|---|
| VOCs | 152192 | 122383 |
| SVOCs | 451 | 313 |
| PEST. | 0.053 | 0 |
| PCBs | 0 | 0 |

| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 63 |
| SVOCs | 16 |
| PEST. | 0.055 |
| PCBs | 1.600 |

| | 98 |
|---|---|
| VOCs | 13 |
| SVOCs | 0 |
| PEST. | 0.096 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 218 |
| SVOCs | 6 |
| PEST. | 0.020 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0 |
| PCBs | 0 |

| | 98 |
|---|---|
| VOCs | 0 |
| SVOCs | 0 |
| PEST. | 0 |
| PCBs | 0.270 |

| | 98 |
|---|---|
| VOCs | 88 |
| SVOCs | 2 |
| PEST. | 0 |
| PCBs | 1.000 |

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FIGURE 2
SUMMARY OF GROUNDWATER DATA
TOWN OF SALINA LANDFILL

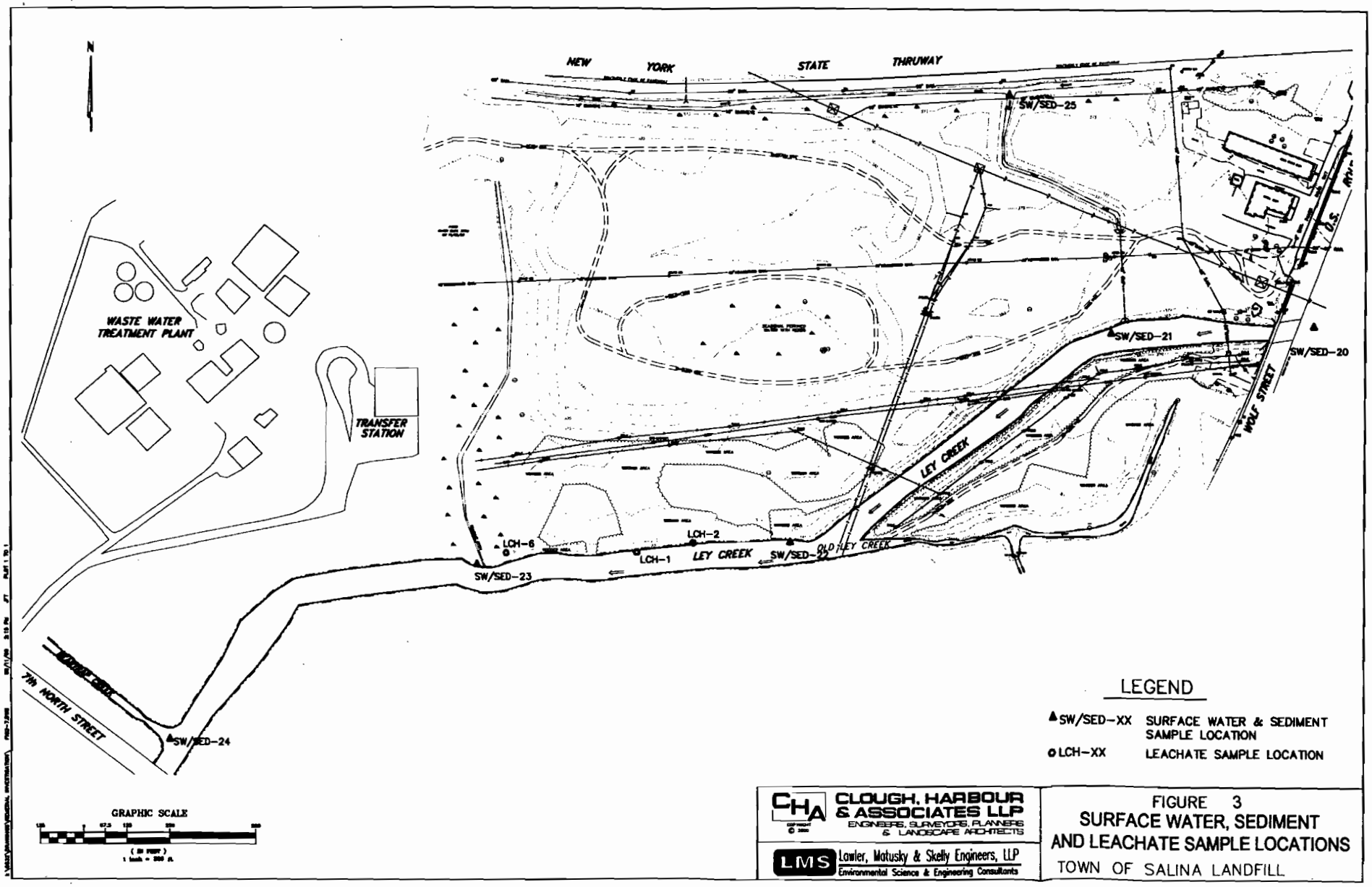


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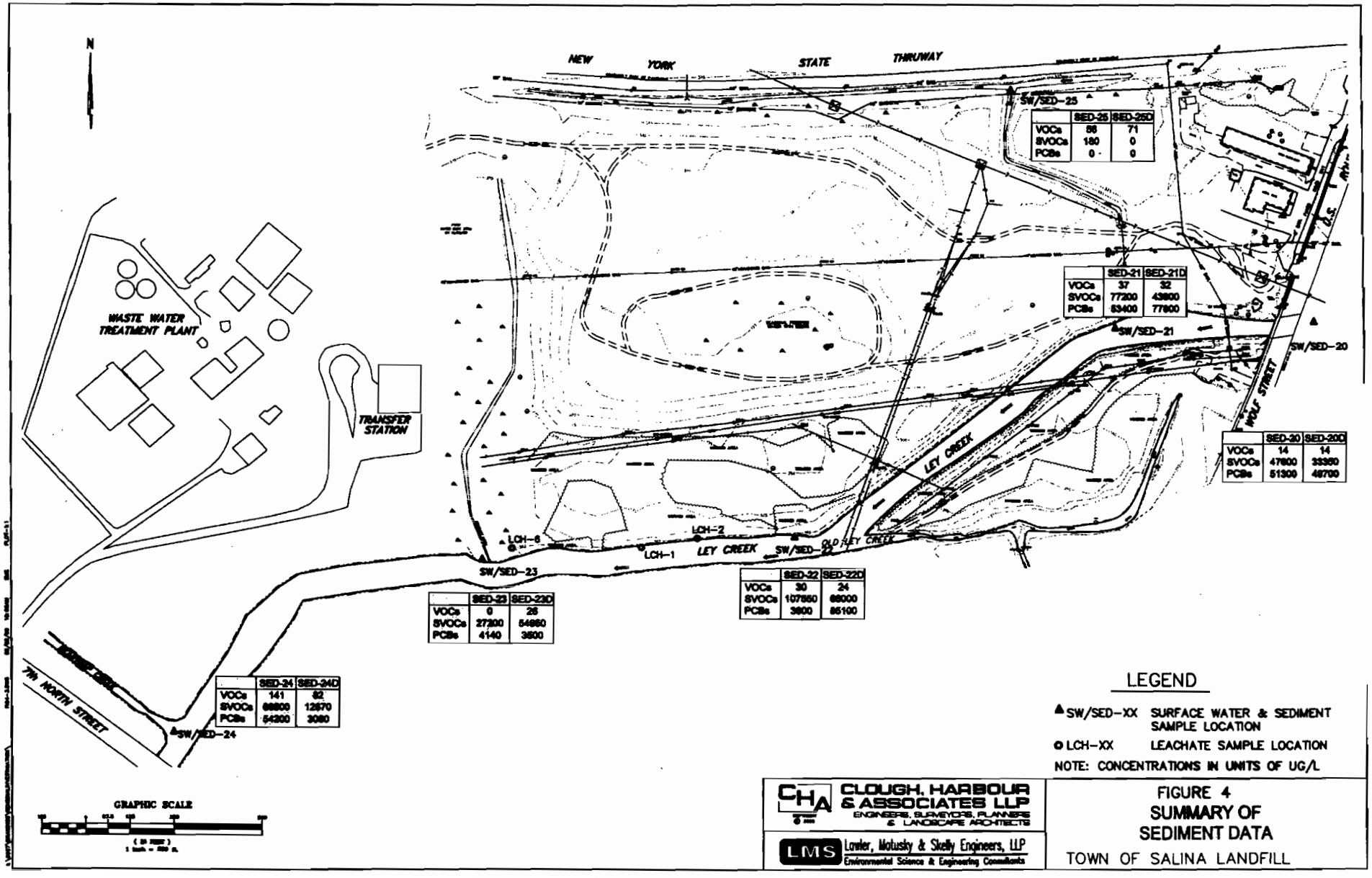
FIGURE 3
SURFACE WATER, SEDIMENT AND LEACHATE SAMPLE LOCATIONS
TOWN OF SALINA LANDFILL




## LEGEND

▲ SW/SED-XX SURFACE WATER & SEDIMENT SAMPLE LOCATION

⊙ LCH-XX LEACHATE SAMPLE LOCATION

NOTE: CONCENTRATIONS IN UNITS OF UG/L

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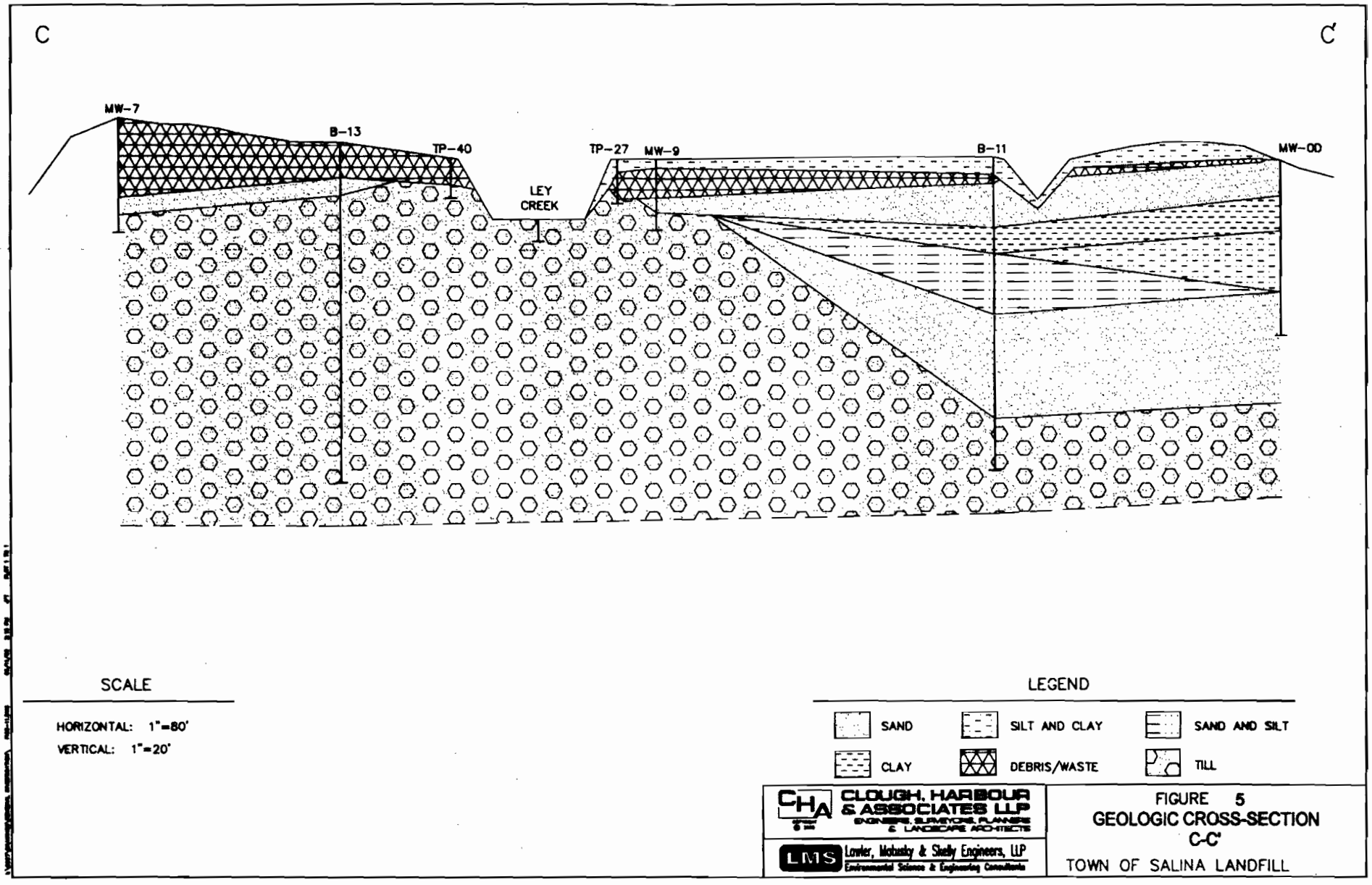
# FIGURE 4
# SUMMARY OF SEDIMENT DATA
TOWN OF SALINA LANDFILL




SCALE

HORIZONTAL: 1"=80'
VERTICAL: 1"=20'

LEGEND

SAND | SILT AND CLAY | SAND AND SILT
CLAY | DEBRIS/WASTE | TILL

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FIGURE 5
GEOLOGIC CROSS-SECTION
C-C'
TOWN OF SALINA LANDFILL

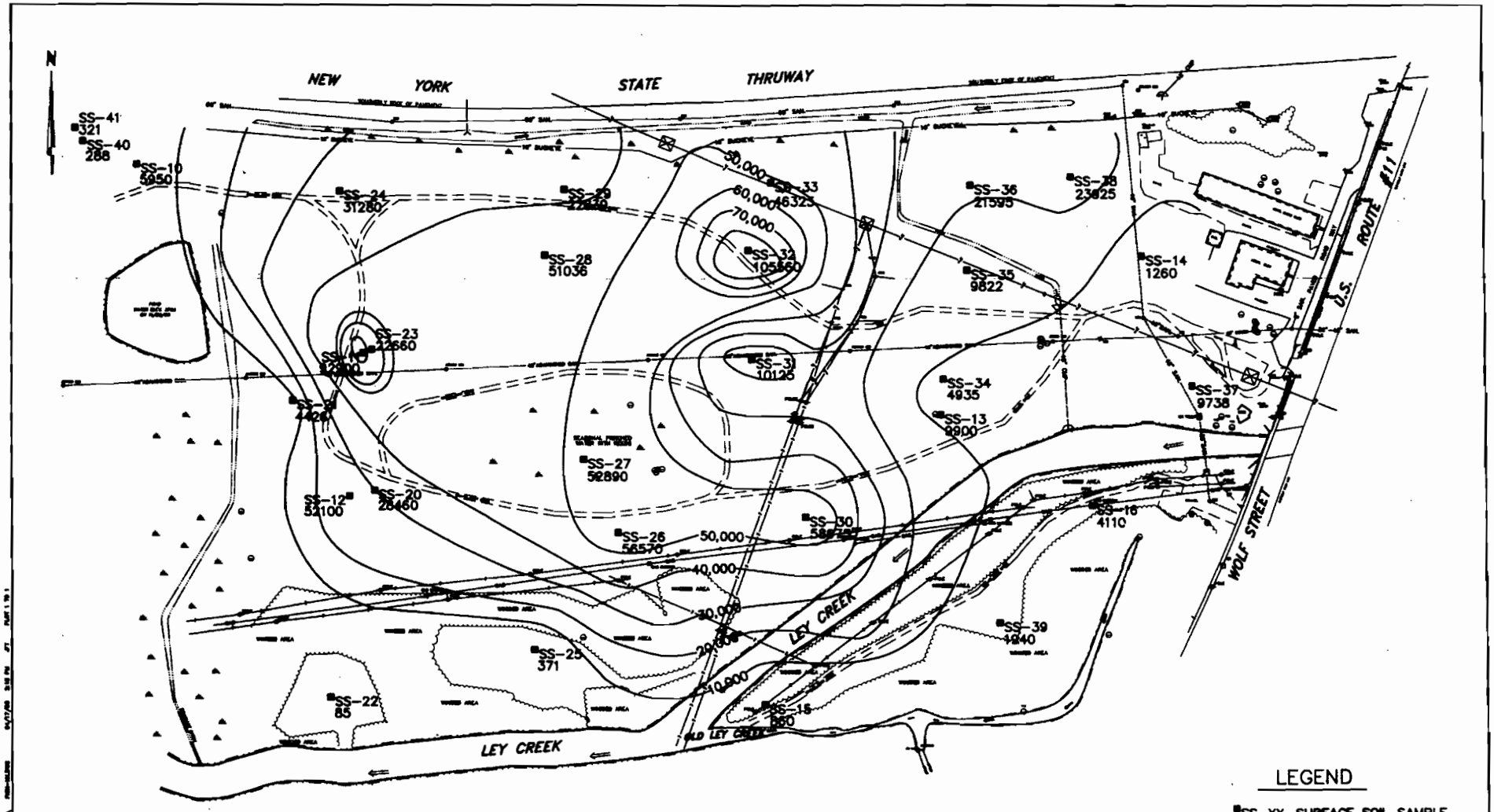


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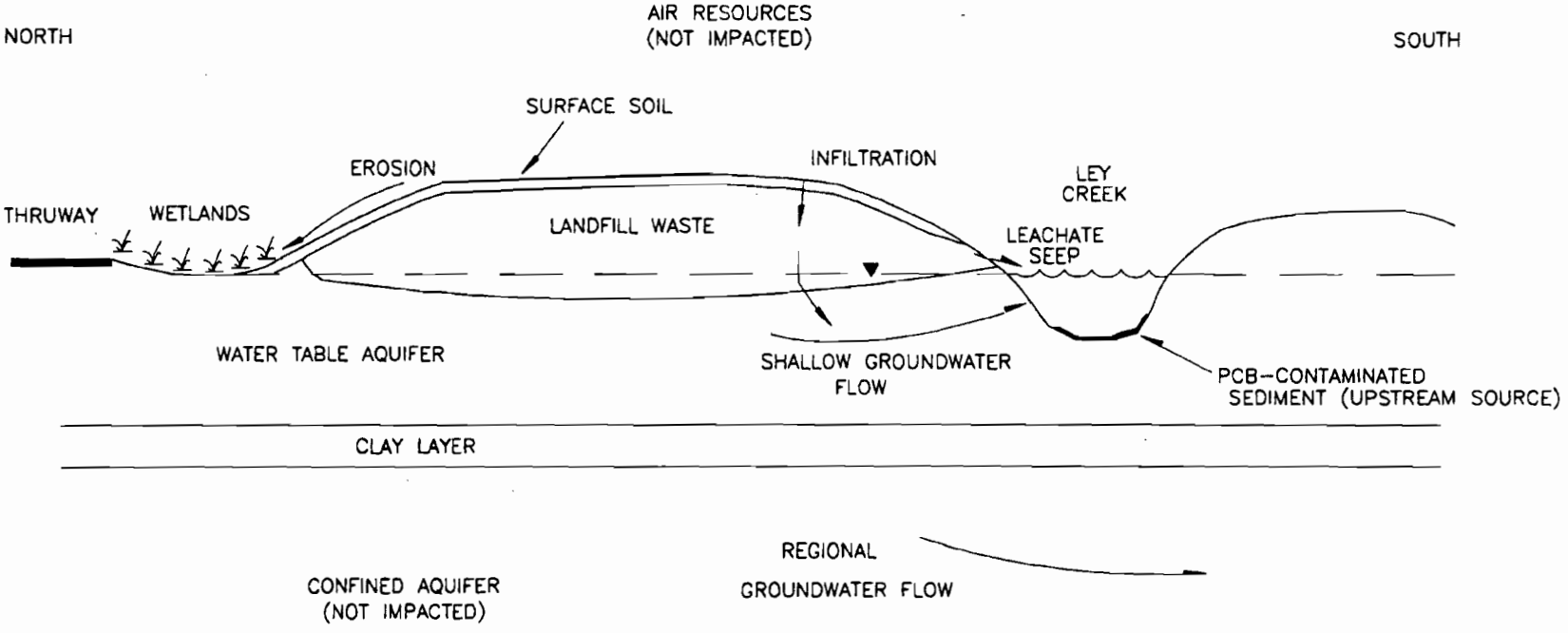
FIGURE 6

SURFACE SOIL SAMPLE SVOC CONCENTRATIONS

TOWN OF SALINA LANDFILL




LEGEND

WATER TABLE

CONTAMINANT MIGRATION PATHWAYS

NOT TO SCALE

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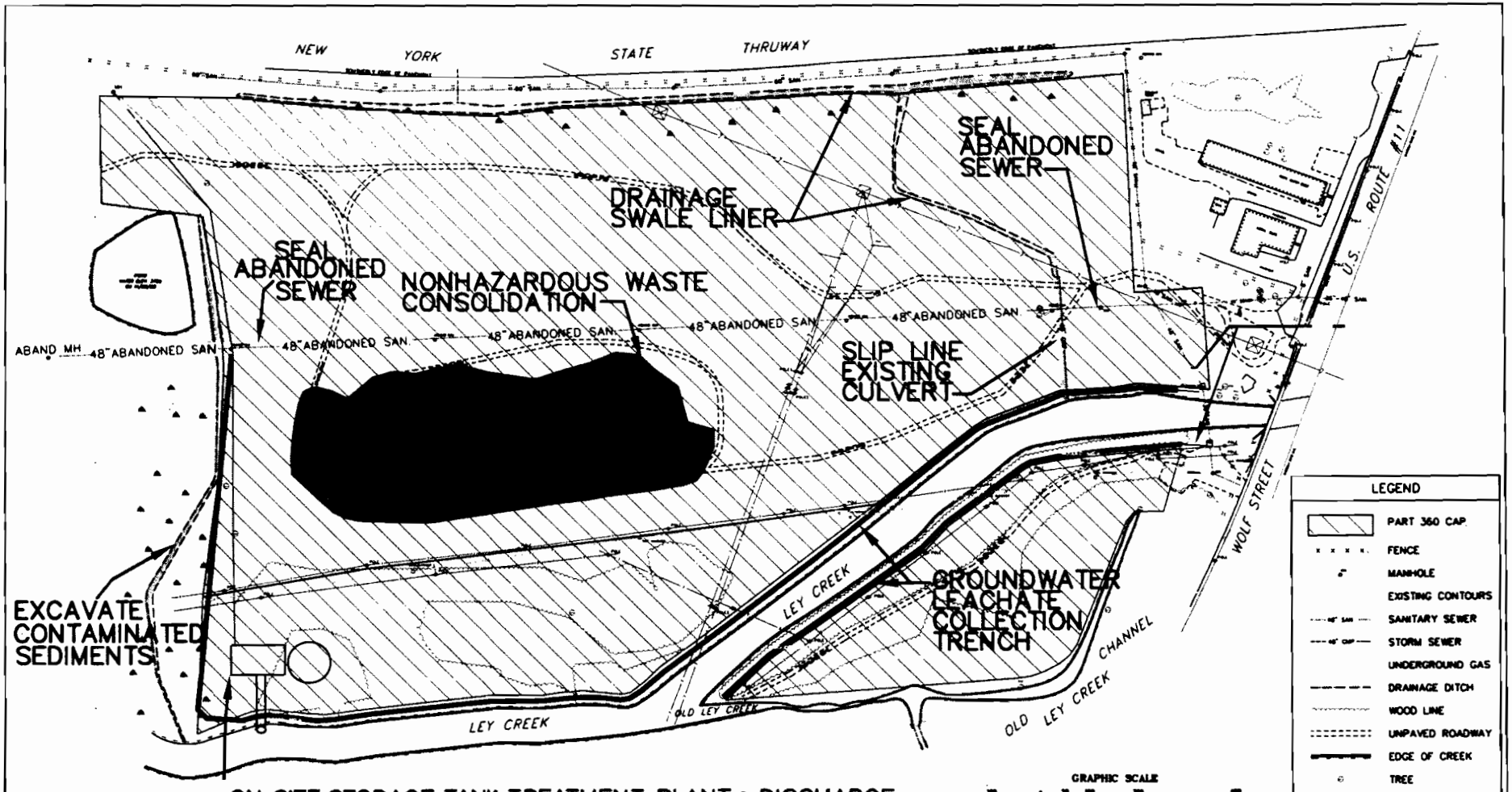
FIGURE 7
**CONCEPTUAL CONTAMINANT MIGRATION PATHWAYS**
TOWN OF SALINA LANDFILL




## ON-SITE STORAGE TANK, TREATMENT PLANT & DISCHARGE

NOTES:

1. OLD LEY CREEK IS NOT PART OF THE SITE. IT IS A SEPARATE CLASS 2 INACTIVE HAZARDOUS WASTE SITE.
2. LOCATIONS OF REMEDIAL COMPONENTS ARE APPROXIMATE AND SUBJECT TO CHANGE DURING REMEDIAL DESIGN.
3. ALTERNATIVE 2 – PART 360 CAP NORTH AND SOUTH OF LEY CREEK, GROUNDWATER COLLECTION NORTH AND SOUTH OF LEY CREEK.
4. NON-HAZARDOUS WASTE CONSOLIDATION FROM EXCAVATION OF LEACHATE COLLECTION TRENCHES

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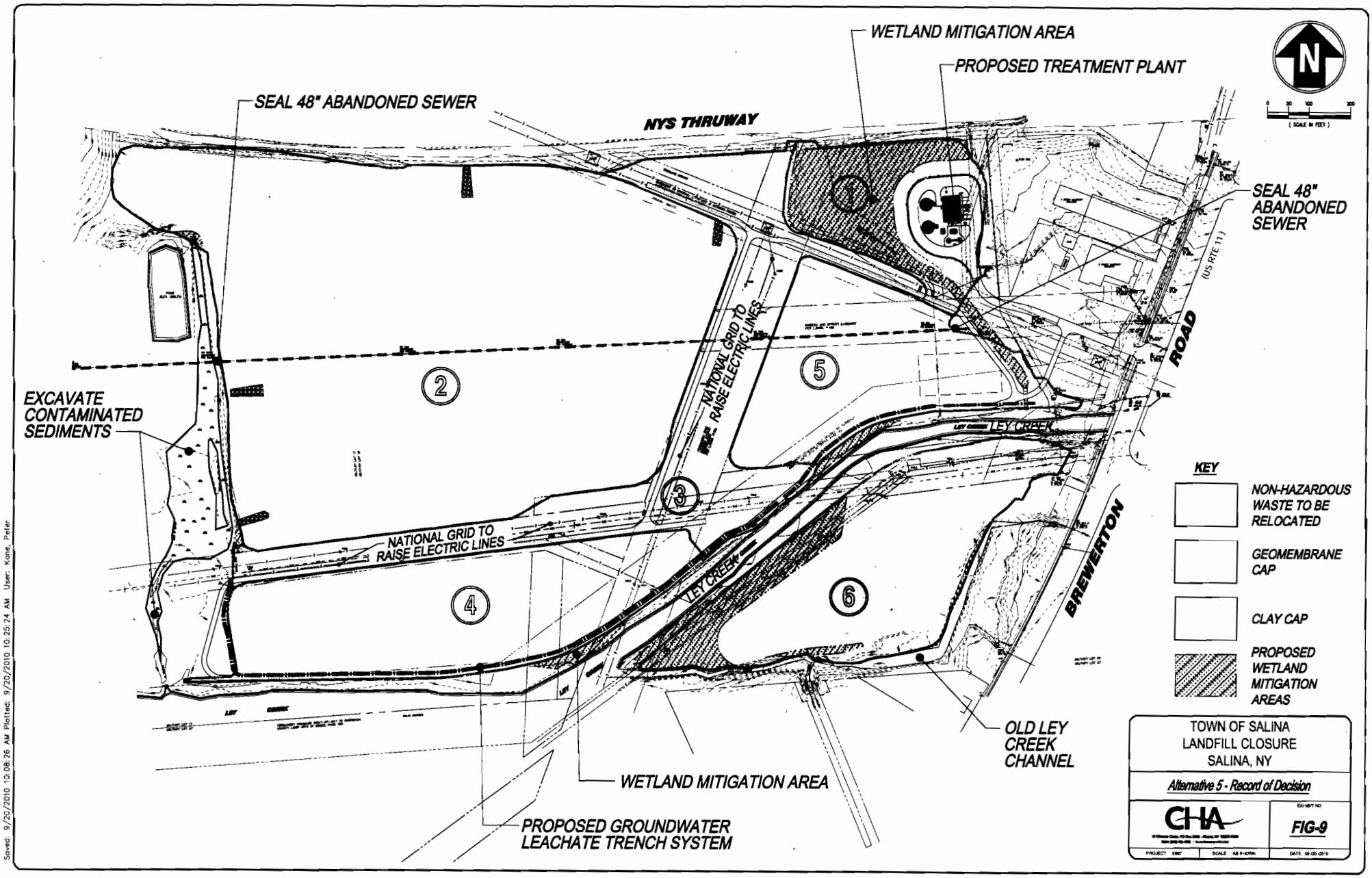
FIGURE 8

ALTERNATIVE 2

TOWN OF SALINA LANDFILL




File: K:\6967\RD\TECH\REPORTS\AMENDED PP - ROD\6967_FIG-9_RECORD OF DECISION_ALT-5.DWG
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# APPENDIX II

Tables

**Table 1**
**Nature and Extent of Contamination**

| MEDIUM | CATEGORY | CONTAMINANT OF CONCERN | CONCENTRATION RANGE (mg/kg) | FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE | CLEANUP OBJECTIVE (mg/kg) * |
|---|---|---|---|---|---|
| Surface Soils | Semivolatile Organic Compounds | Benzo(a)anthracene | ND to 88.0 | 21 of 27 | 0.224 |
| | | Benzo(a)pyrene | ND to 87.0 | 23 of 27 | 0.061 |
| | | Benzo(b)fluoranthene | ND to 13.9 | 14 of 27 | 1.1 |
| | | Benzo(k)fluoranthene | ND to 3.7 | 8 of 27 | 1.1 |
| | | Indeno(1,2,3-cd)pyrene | ND to 5.0 | 4 of 27 | 3.2 |
| | | Dibenzo(a,h)anthracene | ND to 0.95 | 19 of 27 | 0.014 |
| | | Chrysene | ND to 9.1 | 20 of 27 | 0.4 |
| Surface Soils | Inorganics | Arsenic | ND to 7.0 | 8 of 27 | 1.1 |
| | | Barium | ND to 530 | 17 of 27 | 61.85 |
| | | Beryllium | ND to 0.48 | 7 of 27 | 0.16 |
| | | Cadmium | ND to 17.3 | 11 of 27 | 1.0 |
| | | Chromium | ND to 127 | 27 of 27 | 10 |
| | | Cobalt | ND to 17 | 6 of 27 | 8.55 |
| | | Copper | ND to 103 | 12 of 27 | 18.45 |
| | | Iron | 4,800 to 18,800 | 27 of 27 | 20000 |
| | | Lead | ND to 1,163 | 13 of 27 | 28.6 |
| | | Manganese | 273 to 557 | 1 of 27 | 492.0 |
| | | Mercury | ND to 1.5 | 18 of 27 | 0.100 |
| | | Nickel | 11 to 70 | 26 of 27 | 37.3 |
| | | Selenium | ND to 23 | 20 of 27 | 2.0 |
| | | Silver | ND to 8 | 12 of 27 | 1.1 |
| | | Thallium | ND to 3.6 | 10 of 27 | 1.1 |
| | | Vanadium | ND to 22 | 2 of 27 | 21.15 |
| | | Zinc | 39 to 1,733 | 27 of 27 | 20.0 |

* - NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

| MEDIUM | CATEGORY | CONTAMINANT OF CONCERN | CONCENTRATION RANGE (mg/kg) | FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE | CLEANUP OBJECTIVE (mg/kg) * |
|---|---|---|---|---|---|
| Subsurface Soils | Volatile Organic Compounds | 1,1-Dichloroetane | ND to 377 | 1 of 8 | 200 |
| | | 1,2-Dichloroethene (total) | ND to 766 | 1 of 8 | 300 |
| | | 2-Butanone | ND to 420 | 2 of 8 | 300 |
| | | Acetone | ND to 1,600 | 3 of 8 | 200 |
| | | Ethylbenzene | ND to 9,700 | 1 of 8 | 5,500 |
| | | Toluene | ND to 147,949 | 1 of 8 | 1,500 |
| | | Xylene (Total) | ND to 45,362 | 1 of 8 | 1,200 |
| Suburface Soils | Semivolatile Organic Compounds | Benzo(a)anthracene | ND to 16.0 | 6 of 8 | 0.224 |
| | | Benzo(a)pyrene | ND to 11.7 | 7 of 8 | 0.061 |
| | | Benzo(b)fluoranthene | ND to 22.2 | 6 of 8 | 1.1 |
| | | Benzo(k)fluoranthene | ND to 8.6 | 1 of 8 | 1.1 |
| | | Indeno(1,2,3-cd)pyrene | ND to 5.2 | 1 of 8 | 3.2 |
| | | Dibenzo(a,h)anthracene | ND to 1.5 | 1 of 8 | 0.014 |
| | | Chrysene | ND to 15.4 | 7 of 8 | 0.4 |
| | | Phenol | ND to 0.5 | 1 of 8 | 0.030 |
| Subsurface Soils | Polychlorinated Biphenyls ** | Aroclor-1248 | 0.087 to 420 | 8 of 8 | 10.0* |
| Sediment | Inorganics | Arsenic | 5.3 to 6.7 | 1 of 2 | 6.0 |
| | | Cadmium | 5.3 to 6.7 | 2 of 2 | 0.6 |
| | | Copper | 13 to 28 | 1 of 2 | 16.0 |
| | | Mercury | ND to 0.15 | 1 of 2 | 0.15 |

* - NYSDEC TAGM #4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

** - Values listed reflect the combined guidance for "Total PCBs" - Approximate Background

| MEDIUM | CATEGORY | CONTAMINANT OF CONCERN | CONCENTRATION RANGE (ug/l) | FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE | CLEANUP OBJECTIVE ( ug/l) * |
|---|---|---|---|---|---|
| Groundwater | Volatile Organic Compounds | 1,1,1-Trichloroethane | ND to 2,822 | 3 of 19 | 5.0 |
| | | 1,2-Dichloroethene | ND to 26,742 | 5 of 19 | 5.0 |
| | | Acetone | ND to 3,100 | 1 of 19 | 5.0 |
| | | Benzene | ND to 29 | 4 of 19 | 1.0 |
| | | Chlorobenzene | ND to 23 | 2 of 19 | 5.0 |
| | | Chloroethane | ND to 136 | 4 of 19 | 5.0 |
| | | Toluene | ND to 92,774 | 4 of 19 | 5.0 |
| | | Vinyl Chloride | ND to 1,059 | 3 of 19 | 2.0 |
| | | Xylenes (Total) | ND to 17,900 | 4 of 19 | 5.0 |
| Groundwater | Semi-Volatile Organic Compounds | 1,4-Dichlorobenzene | ND to 10 | 4 of 19 | 3.0 |
| | | Naphthalene | ND to 36 | 2 of 19 | 10.0 |
| Groundwater | PCBs | Aroclor 1248 | ND to 1.6 | 6 of 19 | 0.09 |
| Groundwater | Inorganics | Arsenic | ND to 73.6 | 2 of 19 | 25 |
| | | Barium | ND to 1,687 | 1 of 19 | 1,000 |
| | | Cadmium | ND to 34.0 | 12 of 19 | 5 |
| | | Iron | 701 to 56,000 | 19 of 19 | 300 |
| | | Lead | ND to 52.2 | 2 of 19 | 25 |
| | | Manganese | 33.4 to 7,633 | 14 of 19 | 300 |
| Leachate | Volatile Organic Compounds | Benzene | ND to 4 | 1 of 3 | 1** |
| | | Chlorobenzene | ND to 22 | 2 of 3 | 5** |
| Leachate | Pesticides/ PCBs | Aroclor 1248 | 0.7 to 1.0 | 3 of 3 | 0.09** |
| Leachate | Inorganics | Aluminum | 1,051 to 12,131 | 2 of 3 | 2,000** |
| | | Barium | 460 to 1,501 | 1 of 3 | 1,000** |
| | | Chromium | 42 to 125 | 2 of 3 | 50** |
| | | Iron | 31,183 to 156,000 | 3 of 3 | 300** |
| | | Lead | 29 to 198 | 3 of 3 | 25** |
| | | Manganese | 412 to 1,000 | 3 of 3 | 300** |

* - TOGS 1.1.1 Standards or Guidance Values for Class B Surface Waters

** - No Promulgated Standards for Leachate, TOGS 1.1.1 Standards or Guidance Values Used

# TABLE 2
# TOWN OF SALINA LANDFILL
# OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site

| CAS Number | Chemical | (1) Minimum Concentration | Minimum Qualifier | (1) Maximum Concentration | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | (4) Background Value | (5) Screening Toxicity Value | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | (6) Rationale for Contaminant Deletion or Selection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75-25-2 | Bromoform | 10 | J | 12 | J | ug/kg | SS-15, -16 | 7/7 | NA | 12 | N/A | 720000 C | 81000 | EPA SSLs | NO | BSL |
| 75-09-2 | Methylene Chloride | 1 | J | 1 | J | ug/kg | SS-10, -14 | 2/7 | 11 - 12 | 1 | N/A | 760000 C | 85000 | EPA SSLs | NO | BSL |
| 106-46-7 | 1,4-Dichlorobenzene | 46 | J | 47 | J | ug/kg | SS-33 | 2/27 | 330 -3700 | 47 | N/A | 240000 C | 27000 | EPA SSLs | NO | BSL |
| 91-57-6 | 2-Methylnaphthalene | 46 | J | 540 | | ug/kg | SS-27 | 11/27 | 330 -3700 | 540 | N/A | 41000000 N | 36400 | NYS TAGM | NO | BSL |
| 106-47-8 | 4-Chloroaniline | 75 | J | 210 | J | ug/kg | SS-20 | 5/27 | 330 -3700 | 210 | N/A | 8200000 N | 3500000 | Reg IX PRG | NO | BSL |
| 83-32-9 | Acenaphthene | 61 | J | 1000 | | ug/kg | SS-32 | 16/27 | 330 -3700 | 1000 | N/A | 120000000 N | 4700000 | EPA SSLs | NO | BSL |
| 208-96-8 | Acenaphthylene | 43 | J | 1800 | J | ug/kg | SS-11 | 17/27 | 330 - 1900 | 1800 | N/A | N/A | 41000 | NYS TAGM | NO | NTX, BSL |
| 120-12-7 | Anthracene | 50 | J | 2500 | J | ug/kg | SS-11 | 22/27 | 330 - 1900 | 2500 | N/A | 610000000 N | 23000000 | EPA SSLs | NO | BSL |
| 56-55-3 | Benzo(a)anthracene | 40 | J | 8800 | D | ug/kg | SS-32 | 25/27 | 330 - 350 | 8800 | N/A | 78000 C | 900 | EPA SSLs | YES | FD, ASL |
| 50-32-8 | Benzo(a)pyrene | 40 | J | 8700 | D | ug/kg | SS-32 | 25/27 | 330 - 9500 | 8700 | N/A | 780 C | 90 | EPA SSLs | YES | FD, ASL |
| 205-99-2 | Benzo(b)fluoranthene | 60 | J | 13900 | | ug/kg | SS-11 | 24/27 | 330 - 1900 | 13900 | N/A | 7800 C | 900 | EPA SSLs | YES | FD, ASL |
| 191-24-2 | Benzo(g,h,i)perylene | 40 | J | 5200 | D | ug/kg | SS-32 | 24/27 | 330 - 390 | 5200 | N/A | N/A | 50000 | NYS TAGM | NO | NTX, BSL |
| 207-08-9 | Benzo(k)fluoranthene | 70 | J | 3700 | J | ug/kg | SS-11 | 25/27 | 330 - 370 | 3700 | N/A | 78000 C | 9000 | EPA SSLs | NO | BSL |
| 117-81-7 | Bis(2-Ethythexyl)phthalate | 40 | J | 1360 | | ug/kg | SS-16 | 5/27 | 330 - 1900 | 1360 | N/A | 410000 C | 46000 | EPA SSLs | NO | BSL |
| 86-74-8 | Carbazole | 47 | J | 700 | | ug/kg | SS-11, -32 | 17/27 | 330 - 1900 | 700 | N/A | 290000 C | 32000 | EPA SSLs | NO | BSL |
| 218-01-9 | Chrysene | 50 | J | 9100 | D | ug/kg | SS-32 | 26/27 | 330 - 350 | 9100 | N/A | 780000 C | 88000 | EPA SSLs | NO | BSL |
| 53-70-3 | Dibenz(a,h)anthracene | 99 | J | 960 | | ug/kg | SS-28 | 17/27 | 330 - 1900 | 960 | N/A | 780 C | 90 | EPA SSLs | YES | ASL |
| 132-64-9 | Dibenzofuran | 47 | J | 3700 | J | ug/kg | SS-11 | 51.85 | 330 - 3700 | 3700 | N/A | 8200000 N | 5100000 | Reg IX PRG | NO | BSL |
| 206-44-0 | Fluoranthene | 41 | J | 18000 | | ug/kg | SS-11 | 27/27 | NA | 18000 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 86-73-7 | Fluorene | 36 | J | 1100 | J | ug/kg | SS-11 | 18/27 | 330 - 1900 | 1100 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 118-74-1 | Hexachlorobenzene | 110 | J | 130 | J | ug/kg | SS-20 | 2/27 | 330 - 3700 | 130 | N/A | 3600 C | 400 | EPA SSLs | NO | BSL, IFD |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 70 | J | 5000 | D | ug/kg | SS-32 | 23/27 | 330 - 1900 | 5000 | N/A | 7800 C | 900 | EPA SSLs | YES | FD, ASL |
| 91-20-3 | Naphthalene | 50 | J | 670 | | ug/kg | SS-32 | 13/27 | 330 - 3700 | 670 | N/A | 41000000 N | 3100000 | EPA SSLs | NO | BSL |
| 85-01-8 | Phenanthrene | 50 | J | 14000 | D | ug/kg | SS-32 | 26/27 | 330 - 350 | 14000 | N/A | N/A | 50000 | NYS TAGM | NO | NTX, BSL |
| 129-00-0 | Pyrene | 44 | J | 16000 | D | ug/kg | SS-32 | 27/27 | NA | 16000 | N/A | 61000000 N | 2300000 | EPA SSLs | NO | BSL |
| 72-54-8 | 4,4' - DDD | 6.9 | | 27 | | ug/kg | SS-11 | 3/27 | 3.4 - 37 | 27 | N/A | 24000 C | 3000 | EPA SSLs | NO | BSL |
| 72-55-9 | 4,4'- DDE | 1.7 | JP | 15 | | ug/kg | SS-13 | 3/27 | 3.4 - 350 | 15 | N/A | 17000 C | 2000 | EPA SSLs | NO | BSL |
| 50-29-3 | 4,4'-DDT | 0.61 | JP | 20 | P | ug/kg | SS-12 | 4/27 | 3.4 - 350 | 20 | N/A | 17000 C | 2000 | EPA SSLs | NO | BSL |
| 309-00-2 | Aldrin | 1.4 | J | 1.8 | JP | ug/kg | SS-11 | 2/27 | 1.8 - 180 | 1.8 | N/A | 340 C | 40 | EPA SSLs | NO | BSL, IFD |
| 12789-03-6 | alpha-Chlordane | 4.4 | JP | 6.9 | JP | ug/kg | SS-11 | 2/27 | 1.8 - 180 | 6.9 | N/A | 16000 C | 500 | EPA SSLs | NO | BSL, IFD |

(1) Minimum/maximum detected concentration.

(2) Total of 7 surface soil samples analyzed for VOCs; 27 samples analyzed for SVOCs and Pest/PCBs; 29 samples analyzed for met

(3) Maximum concentration used for screening.

(4) Off-Site samples SS-40 and SS-41 used as background samples - Refer to text for supporting information.
Maximum analyte concentration found in two samples used as screening tool.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient or common earth mineral(NUT)
Below Screening Level (BSL)

Definitions.
N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropnate Requirement/To Be Considered
EPA SSLs= EPA Generic Soil Screening Levels.
Reg IX PRG = EPA Region IX Preliminary Remediation Goals.
NYS TAGM = New York State Technical Administrative Guidance Manual (soil guidance values).
East U.S. = Eastern U S. background range.
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 2
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
(Page 2 of 2)

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site

| CAS Number | Chemical | (1) Minimum Concentration | Minimum Qualifier | (1) Maximum Concentration | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | (4) Background Value | (5) Screening Toxicity Value | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | (6) Rationale for Contaminant Deletion or Selection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 319-85-7 | BHC (beta isomer) | 2.1 | P | 2.7 | JP | ug/kg | SS-11 | 3/27 | 1.8 - 180 | 2.7 | N/A | 3200 C | 400 | EPA SSLs | NO | BSL |
| 319-86-8 | BHC (delta isomer) | 0.31 | JP | 0.9 | J | ug/kg | SS-11 | 2/27 | 1.8 - 180 | 0.9 | N/A | N/A | 300 | NYS TAGM | NO | NTX, BSL, IFD |
| 58-89-9 | BHC (gamma isomer) (Linda | 0.66 | JP | 0.71 | JP | ug/kg | SS-11 | 2/27 | 1.8 - 180 | 0.71 | N/A | 4400 C | 500 | EPA SSLs | NO | BSL, IFD |
| 60-57-1 | Dieldrin | 0.45 | JP | 6.8 | JP | ug/kg | SS-11 | 4/27 | 3.5 -350 | 6.8 | N/A | 360 C | 40 | EPA SSLs | NO | BSL |
| 7421-36-3 | Endrin Aldehyde | 0.62 | JP | 14 | JP | ug/kg | SS-11 | 3/27 | 3.4 - 350 | 14 | N/A | N/A | NA | NA | NO | NTX |
| 53494-70-5 | Endrin Ketone | 3.5 | JP | 35 | P | ug/kg | SS-11 | 3/27 | 3.4 - 350 | 35 | N/A | N/A | NA | NA | NO | NTX |
| 5103-74-2 | gamma-Chlordane | 0.72 | J | 7.9 | P | ug/kg | SS-11 | 3/27 | 1.8 - 180 | 7.9 | N/A | N/A | 540 | NYS TAGM | NO | NTX, BSL |
| 72-43-5 | Methoxychlor | 2.7 | JP | 17 | JP | ug/kg | SS-11 | 3/27 | 17.9 - 1800 | 17 | N/A | 10000000 N | 390000 | EPA SSLs | NO | BSL |
| 1267-229-6 | Aroclor-1248 | 220 | | 8400 | J | ug/kg | SS-16 | 2/27 | 34 - 3500 | 8400 | N/A | 2900 C | 1000 | EPA SSLs | YES | ASL |
| 742-99-05 | Aluminum | 5160 | | 13000 | | mg/kg | SS-39 | 29/29 | NA | 13000 | 11100 | 2000000 N | 100000 | Reg IX PRG | NO | BSL, BKG,NUT |
| 7440-38-2 | Arsenic | 2.6 | | 7 | | mg/kg | SS-11 | 9/29 | 2.1 - 2.2 | 7 | BDL | 3.8 C | 0.4 | EPA SSLs | YES | ASL |
| 7440-39-3 | Barium | 32.1 | | 530 | | mg/kg | SS-26 | 29/29 | NA | 530 | 64 | 140000 N | 5500 | EPA SSLs | NO | NUT, BSL |
| 7440-41-7 | Beryllium | 0.36 | B | 0.48 | B | mg/kg | SS-11 | 7/29 | 0.62 - 0.66 | 0.48 | BDL | 4100 N | 1.75 | East U.S. | NO | BSL,NUT |
| 7440-43-9 | Cadmium | 1.1 | | 17.3 | | mg/kg | SS-11 | 29/29 | NA | 17.3 | 1.4 | 2000 N | 78 | EPA SSLs | NO | BSL |
| 7440-70-2 | Calcium | 6860 | G | 119000 | | mg/kg | SS-11 | 29/29 | NA | 119000 | 12800 | N/A | 12800 (SB) | NYS TAGM | NO | NUT |
| 7440-47-3 | Chromium | 10.7 | | 127.1 | J | mg/kg | SS-16 | 29/29 | NA | 127.1 | 20 | N/A | 390 | EPA SSLs | NO | BSL |
| 7440-48-4 | Cobalt | 4.8 | B | 16.5 | | mg/kg | SS-15 | 29/29 | NA | 16.5 | 9 | 120000 N | 100000 | Reg IX PRG | NO | BKG, BSL |
| 7440-50-8 | Copper | 18.3 | | 859.6 | | mg/kg | SS-16 | 29/29 | NA | 859.6 | 23 | 82000 N | 76000 | Reg IX PRG | NO | BSL |
| 7439-89-6 | Iron | 4800 | | 19800 | | mg/kg | SS-28 | 29/29 | NA | 19800 | 16400 | 610000 N | 100000 | Reg IX PRG | NO | BKG, NUT, BSL |
| 7439-92-1 | Lead | 8.7 | | 1163.2 | | mg/kg | SS-15 | 29/29 | NA | 1163.2 | 20 | N/A | 400 | EPA SSLs | YES | ASL,TX |
| 7439-95-4 | Magnesium | 1746 | | 27000 | | mg/kg | SS-22 | 29/29 | NA | 27000 | 7410 | N/A | 7410 (SB) | NYS TAGM | NO | NUT, NTX |
| 7439-96-5 | Manganese | 273 | | 4447 | J | mg/kg | SS-15 | 29/29 | NA | 4447 | 509 | 290000 N | 32000 | Reg IX PRG | NO | BKG, BSL |
| 7439-97-6 | Mercury | 0.22 | | 2.6 | | mg/kg | SS-11 | 18/29 | 0.1 - 0.11 | 2.6 | BDL | N/A | 23 | EPA SSLs | NO | BSL |
| 7440-02-0 | Nickel | 10.9 | | 82.3 | | mg/kg | SS-16 | 29/29 | NA | 82.3 | 16 | 41000 N | 1600 | EPA SSLs | NO | BSL |
| 7440-09-7 | Potassium | 557 | B | 2872 | J | mg/kg | SS-15 | 29/29 | NA | 2872 | 982 | N/A | 982 (SB) | NYS TAGM | NO | NUT |
| 7782-49-2 | Selenium | 4.6 | N | 22.8 | N | mg/kg | SS-22 | 22/29 | 1.0 - 1.2 | 22.8 | 9 | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-22-4 | Silver | 0.35 | | 8 | | mg/kg | SS-21, -21, -28 | 14/29 | 0.33 - 2.2 | 8 | BDL | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-23-5 | Sodium | 663 | B | 875 | B | mg/kg | SS-15 | 7/29 | 208 - 221 | 875 | BDL | N/A | SB | NYS TAGM | NO | NUT |
| 7440-28-0 | Thallium | 2.4 | N | 3.6 | N | mg/kg | SS-29, -32 | 10/29 | 1.2 - 2.2 | 3.6 | BDL | 140 N | 130 | Reg IX PRG | NO | BSL |
| 7440-62-2 | Vanadium | 11.9 | | 22.4 | | mg/kg | SS-28 | 27/29 | 6.3 - 6.5 | 22.4 | 22 | 14000 N | 550 | EPA SSLs | NO | BKG, BSL |
| 7440-66-6 | Zinc | 39.4 | E | 1732.6 | | mg/kg | SS-16 | 29/29 | NA | 1732.6 | 62 | 610000 N | 23000 | EPA SSLs | NO | BSL |

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Above Screening Levels (ASL)
Deletion Reason. Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient or common earth mineral(NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
SQL = Sample Quantitation Limit
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ARAR/TBC = Applicable or Relevant and Appropnate Requirement/To Be Considered
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J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 3
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration Used for Screening (3) | Background Value (4) | Screening Toxicity Value (5) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (6) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane | 58.62 | J | 58.62 | J | ug/kg | TP-34 | 1/8 | 11 - 30 | 58.62 | N/A | 570000000 N | 1400000 | Reg IX PRG | NO | BSL, IFD |
| 75-34-3 | 1,1-Dichloroethane | 377.34 | EJ | 377.34 | EJ | ug/kg | TP-34 | 1/8 | 11 - 30 | 377.34 | N/A | 200000000 N | 7800000 | EPA SSLs | NO | BSL, IFD |
| 75-35-4 | 1,1-Dichloroethene | 4.92 | J | 4.92 | J | ug/kg | TP-34 | 1/8 | 11 - 30 | 4.92 | N/A | 9500 C | 1000 | EPA SSLs | NO | BSL, IFD |
| 540-59-0 | 1,2-Dichloroethene (total | 766.31 | EJ | 766.31 | EJ | ug/kg | TP-34 | 1/5 | 11 - 30 | 766.31 | N/A | 18000000 N | 780000 | EPA SSLs | NO | BSL, IFD |
| 78-93-3 | 2-Butanone | 4.82 | J | 420.00 | E | ug/kg | TP-45 | 7/8 | 14 | 420.00 | N/A | 1200000000 N | 28000000 | Reg IX PRG | NO | BSL |
| 67-64-1 | Acetone | 25.88 | | 1600.00 | EG | ug/kg | TP-45 | 8/8 | NA | 1600.00 | N/A | 200000000 N | 7800000 | EPA SSLs | NO | BSL |
| 71-43-2 | Benzene | 2.20 | J | 26.90 | J | ug/kg | TP-34 | 6/8 | 12 - 20 | 26.90 | N/A | 100000 C | 22000 | EPA SSLs | NO | BSL |
| 75-15-0 | Carbon Disulfide | 10.00 | J | 130.00 | G | ug/kg | TP-45 | 4/8 | 11 - 30 | 130.00 | N/A | 200000000 N | 7800000 | EPA SSLs | NO | BSL |
| 108-90-7 | Chlorobenzene | 9.62 | J | 23.00 | G | ug/kg | TP-45 | 4/8 | 11 - 20 | 23.00 | N/A | 41000000 N | 1600000 | EPA SSLs | NO | BSL |
| 75-00-3 | Chloroethane | 283.28 | EJ | 283.28 | EJ | ug/kg | TP-34 | 1/8 | 11 - 30 | 283.28 | N/A | 2000000 C | 6500 | Reg IX PRG | NO | BSL, IFD |
| 67-66-3 | Chloroform | 6.00 | J | 11.00 | J | ug/kg | TP-47 | 3/8 | 11 - 30 | 11.00 | N/A | 940000 C | 100000 | EPA SSLs | NO | BSL |
| 100-41-4 | Ethylbenzene | 8.00 | J | 9700.00 | G | ug/kg | TP-47 | 4/8 | 12 - 30 | 9700.00 | N/A | 200000000 N | 7800000 | EPA SSLs | NO | BSL |
| 75-09-2 | Methylene Chloride | 1.59 | J | 15.24 | J | ug/kg | TP-34 | 4/8 | 11 - 71 | 15.24 | N/A | 760000 C | 85000 | EPA SSLs | NO | BSL |
| 100-42-5 | Styrene | 25.00 | G | 25.00 | G | ug/kg | TP-47 | 1/8 | 11 - 30 | 25.00 | N/A | 410000000 N | 16000000 | EPA SSLs | NO | BSL, IFD |
| 127-18-4 | Tetrachloroethene | 6.45 | J | 6.45 | J | ug/kg | TP-34 | 1/8 | 11 - 30 | 6.45 | N/A | 110000 C | 12000 | EPA SSLs | NO | BSL, IFD |
| 108-88-3 | Toluene | 1.44 | J | 147949.02 | BDJ | ug/kg | TP-34 | 5/8 | 12 - 30 | 147949.02 | N/A | 410000000 N | 16000000 | EPA SSLs | NO | BSL |
| 79-01-6 | Trichloroethene | 2.71 | J | 2.71 | J | ug/kg | TP-34 | 1/8 | 11 - 30 | 2.71 | N/A | 520000 C | 58000 | EPA SSLs | NO | BSL, IFD |
| 75-01-4 | Vinyl Chloride | 126.80 | J | 126.80 | J | ug/kg | TP-34 | 1/8 | 11 - 30 | 126.80 | N/A | 3800 C | 300 | EPA SSLs | NO | BSL, IFD |
| 133-02-7 | Xylene (total) | 0.74 | G | 45361.58 | D | ug/kg | TP-34 | 4/8 | 11 - 30 | 45361.58 | N/A | 4100000000 N | 160000000 | EPA SSLs | NO | BSL |
| 95-50-1 | 1,2-Dichlorobenzene | 4400 | J | 4400 | J | ug/kg | TP-34 | 1/8 | 530-8600 | 4400 | N/A | 180000000 N | 7000000 | EPA SSLs | NO | BSL, IFD |
| 105-67-9 | 2,4-Dimethylphenol | 92 | J | 350 | J | ug/kg | TP-14 | 2/8 | 540-8600 | 350 | N/A | 41000000 N | 1600000 | EPA SSLs | NO | BSL |
| 91-57-6 | 2-Methylnaphthalene | 120 | J | 950 | J | ug/kg | TP-14 | 2/8 | 540-8600 | 950 | N/A | 41000000 N | 36400 | NYS TAGM | NO | NTX, BSL |
| 95-48-7 | 2-Methylphenol | 250 | J | 250 | J | ug/kg | TP-14 | 1/8 | 530-8600 | 250 | N/A | N/A | 44000000 | Reg IX PRG | NO | NTX,BSL,IFD |
| 106-44-5 | 4-Methylphenol | 160 | J | 1500 | J | ug/kg | TP-34 | 2/8 | 540-8600 | 1500 | N/A | N/A | 4400000 | Reg IX PRG | NO | NTX,BSL,IFD |

Minimum/maximum detected concentration.

(2) Total of 8 subsurface soil samples analyzed for VOCs, SVOCs, and Pest/PCBs; 12 samples analyzed for metals.

(3) Maximum concentration used for screening.

(4) Off-Site surface soil samples SS-40 and SS-41 used as background samples - Refer to text for supporting information.
Maximum analyte concentration found in two samples used as screening tool.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient or common earth mineral(NUT)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
EPA SSLs= EPA Generic Soil Screening Levels.
Reg IX PRG = EPA Region IX Preliminary Remediation Goals.
NYS TAGM = New York State Technical Administrative Guidance Manual (soil guidance values).
East U.S.= Eastern U.S. background range
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 3
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value (4) | Screening Toxicity Value (5) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (6) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 83-32-9 | Acenaphthene | 350 | J | 3300 | J | ug/kg | TP-8 | 3/8 | 530-4800 | 3300 | N/A | 120000000 N | 4700000 | EPA SSLs | NO | BSL |
| 208-96-8 | Acenaphthylene | 170 | J | 2200 | J | ug/kg | TP-8 | 2/8 | 530-4800 | 2200 | N/A | N/A | 41000 | NYS TAGM | NO | NTX,BSL |
| 120-12-7 | Anthracene | 710 | | 8400 | | ug/kg | TP-8 | 4/8 | 530-4800 | 8400 | N/A | 610000000 N | 23000000 | EPA SSLs | NO | BSL |
| 56-55-3 | Benzo(a)anthracene | 1050 | J | 16000 | | ug/kg | TP-8 | 6/8 | 530-1900 | 16000 | N/A | 78000 C | 900 | EPA SSLs | YES | ASL |
| 50-32-8 | Benzo(a)pyrene | 400 | J | 11700 | | ug/kg | TP-8 | 7/8 | 530 | 11700 | N/A | 780 C | 90 | EPA SSLs | YES | ASL |
| 205-99-2 | Benzo(b)fluoranthene | 750 | J | 22200 | | ug/kg | TP-8 | 7/8 | 530 | 22200 | N/A | 7800 C | 900 | EPA SSLs | YES | ASL |
| 191-24-2 | Benzo(g,h,i)perylene | 500 | J | 4400 | J | ug/kg | TP-8 | 6/8 | 530-1900 | 4400 | N/A | N/A | 50000 | NYS TAGM | NO | NTX, BSL |
| 207-08-9 | Benzo(k)fluoranthene | 400 | J | 1000 | J | ug/kg | TP-34 | 5/8 | 530 - 8600 | 1000 | N/A | 78000 C | 9000 | EPA SSLs | NO | BSL |
| 117-81-7 | Bis(2-Ethylhexyl)phthalate | 550 | J | 19000 | | ug/kg | TP-8 | 7/8 | 2050 | 19000 | N/A | 410000 C | 46000 | EPA SSLs | NO | BSL |
| 218-01-9 | Chrysene | 800 | J | 15400 | | ug/kg | TP-8 | 7/8 | 530 | 15400 | N/A | 780000 C | 88000 | EPA SSLs | NO | BSL |
| 53-70-3 | Dibenz(a,h)anthracene | 1500 | J | 1500 | J | ug/kg | TP-8 | 1/8 | 530-4800 | 1500 | N/A | 780 C | 90 | EPA SSLs | YES | ASL |
| 132-64-9 | Dibenzofuran | 220 | J | 3100 | J | ug/kg | TP-8 | 2/8 | 530-4800 | 3100 | N/A | 8200000 N | 5100000 | Reg IX PRG | NO | BSL |
| 84-74-2 | Di-n-Butylphthalate | 1000 | J | 1000 | J | ug/kg | TP-34 | 1/8 | 530-8600 | 1000 | N/A | N/A | 7800000 | EPA SSLs | NO | BSL,IFD |
| 206-44-0 | Fluoranthene | 280 | J | 43400 | | ug/kg | TP-8 | 7/8 | 1900 | 43400 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 86-73-7 | Fluorene | 300 | J | 8300 | J | ug/kg | TP-8 | 6/8 | 530 - 2050 | 8300 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 600 | J | 5200 | J | ug/kg | TP-8 | 6/8 | 530-1900 | 5200 | N/A | 7800 C | 900 | EPA SSLs | YES | ASL |
| 78-59-1 | Isophorone | 350 | J | 1850 | J | ug/kg | TP-14 | 2/8 | 540-8600 | 1850 | N/A | 6000000 C | 670000 | EPA SSLs | NO | BSL |
| 91-20-3 | Naphthalene | 120 | J | 1300 | J | ug/kg | TP-34 | 4/8 | 540-8600 | 1300 | N/A | 41000000 N | 3100000 | EPA SSLs | NO | BSL |
| 85-01-8 | Phenanthrene | 420 | J | 37200 | | ug/kg | TP-8 | 8/8 | NA | 37200 | N/A | N/A | 50000 | NYS TAGM | NO | NTX,BSL |
| 108-95-2 | Phenol | 500 | J | 500 | J | ug/kg | TP-14 | 1/8 | 530-8600 | 500 | N/A | 1200000000 N | 47000000 | EPA SSLs | NO | BSL,IFD |
| 129-00-0 | Pyrene | 340 | J | 39300 | | ug/kg | TP-8 | 8/8 | NA | 39300 | N/A | 61000000 N | 2300000 | EPA SSLs | NO | BSL |
| 1267-229-6 | Aroclor-1248 | 87 | P | 420000 | PDJ | ug/kg | TP-8 | 7/8 | 520 | 420000 | N/A | 2900 C | 1000 | EPA SSLs | YES | ASL |

Minimum/maximum detected concentration.

(2) Total of 8 subsurface soil samples analyzed for VOCs, SVOCs, and Pest/PCBs; 12 samples analyzed for metals.

(3) Maximum concentration used for screening.

(4) Off-Site surface soil samples SS-40 and SS-41 used as background samples - Refer to text for supporting information.
Maximum analyte concentration found in two samples used as screening tool.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient or common earth mineral(NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
EPA SSLs= EPA Generic Soil Screening Levels.
Reg IX PRG = EPA Region IX Preliminary Remediation Goals.
NYS TAGM = New York State Technical Administrative Guidance Manual (soil guidance values).
East U.S.= Eastern U.S. background range
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 3
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN


Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site

| CAS Number | Chemical | (1) Minimum Concentration | Minimum Qualifier | (1) Maximum Concentration | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | (4) Background Value | (5) Screening Toxicity Value | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | (6) Rationale for Contaminant Deletion or Selection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 742-99-05 | Aluminum | 1600.00 | | 20587.18 | | mg/kg | TP-8 | 12/12 | NA | 20587.18 | 11100 | 2000000 N | 100000 | Reg IX PRG | NO | BSL,BKG,NUT |
| 7440-36-0 | Antimony | 1.85 | BNJ | 22.00 | N | mg/kg | TP-46 | 6/12 | 1.4 - 4.8 | 22.00 | BDL | 820000 N | 31000 | EPA SSLs | NO | BSL |
| 7440-38-2 | Arsenic | 2.20 | N | 20.80 | N | mg/kg | TP-47 | 8/12 | 2.2 - 3.3 | 20.80 | BDL | 3.8 C | 0.4 | EPA SSLs | YES | ASL |
| 7440-39-3 | Barium | 23.60 | B | 250.79 | EJ | mg/kg | TP-8 | 12/12 | NA | 250.79 | 64 | 140000 N | 5500 | EPA SSLs | NO | BSL |
| 7440-41-7 | Beryllium | 0.37 | BNJ | 1.35 | BNJ | mg/kg | TP-8 | 5/12 | 0.65 - 1.1 | 1.35 | BDL | 4100 N | 1.75 | East U.S. | NO | BSL,NUT |
| 7440-43-9 | Cadmium | 6.00 | | 34.48 | N*J | mg/kg | TP-14 | 8/12 | 1.1 - 1.1 | 34.48 | 1.4 | 2000 N | 78 | EPA SSLs | NO | BSL |
| 7440-70-2 | Calcium | 22654.54 | | 571000.00 | G | mg/kg | B-23 (18-20) | 12/12 | NA | 571000.00 | 12800 | N/A | 12800 (SB) | NYS TAGM | NO | NUT |
| 7440-47-3 | Chromium | 3.20 | | 4265.03 | | mg/kg | TP-8 | 12/12 | NA | 4265.03 | 20 | N/A | 390 | EPA SSLs | YES | ASL,FD |
| 7440-48-4 | Cobalt | 4.40 | B | 16.15 | BNJ | mg/kg | TP-8 | 8/12 | 4.4 - 6.3 | 16.15 | 9 | 120000 N | 100000 | Reg IX PRG | NO | BSL,BKG |
| 7440-50-8 | Copper | 10.60 | | 3272.97 | | mg/kg | TP-8 | 12/12 | NA | 3272.97 | 23 | 82000 N | 76000 | Reg IX PRG | NO | BSL |
| 7439-89-6 | Iron | 4900.00 | | 54496.93 | *J | mg/kg | TP-14 | 12/12 | NA | 54496.93 | 16400 | 610000 N | 100000 | Reg IX PRG | NO | BSL,NUT |
| 7439-92-1 | Lead | 2.20 | | 417.91 | NJ | mg/kg | TP-8 | 12/12 | NA | 417.91 | 20 | N/A | 400 | EPA SSLs | YES | ASL,FD,TX |
| 7439-95-4 | Magnesium | 1644.95 | | 23336.41 | | mg/kg | TP-8 | 12/12 | NA | 23336.41 | 7410 | N/A | 7410 (SB) | NYS TAGM | NO | NUT |
| 7439-96-5 | Manganese | 161.78 | N*J | 1921.91 | N*J | mg/kg | TP-14 | 12/12 | NA | 1921.91 | 509 | 290000 N | 32000 | Reg IX PRG | NO | BSL |
| 7439-97-6 | Mercury | 0.15 | | 0.87 | | mg/kg | TP-46 | 4/12 | 0.11 - 6.7 | 0.87 | BDL | N/A | 23 | EPA SSLs | NO | BSL |
| 7440-02-0 | Nickel | 7.40 | B | 1400.00 | | mg/kg | TP-46 | 10/12 | 6.7 - 6.7 | 1400.00 | 16 | 41000 N | 1600 | EPA SSLs | NO | BSL |
| 7440-09-7 | Potassium | 386.00 | B | 2721.59 | | mg/kg | TP-8 | 12/12 | NA | 2721.59 | 982 | N/A | 982 (SB) | NYS TAGM | NO | NUT |
| 7782-49-2 | Selenium | 8.10 | N | 18.50 | N | mg/kg | B-23 (18-20) | 7/12 | 1.1 - 2.6 | 18.50 | 9 | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-22-4 | Silver | 5.07 | BNJ | 10.10 | | mg/kg | TP-45 | 3/12 | 0.4 - 3.2 | 10.10 | BDL | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-23-5 | Sodium | 950.32 | BJ | 1972.36 | B | mg/kg | TP-8 | 5/12 | 216 - 359 | 1972.36 | BDL | N/A | SB | NYS TAGM | NO | NUT |
| 7440-28-0 | Thallium | 1.65 | BNJ | 4.00 | | mg/kg | | 7/12 | 1 - 3 | 4.00 | BDL | 140 N | 130 | Reg IX PRG | NO | BSL |
| 7440-62-2 | Vanadium | 8.20 | B | 46.31 | EJ | mg/kg | TP-8 | 8/12 | 6.7 - 10.8 | 46.31 | 22 | 14000 N | 550 | EPA SSLs | NO | BSL |
| 7440-66-6 | Zinc | 13.00 | E | 1324.62 | | mg/kg | TP-8 | 12/12 | NA | 1324.62 | 62 | 610000 N | 23000 | EPA SSLs | NO | BSL |

(1) Minimum/maximum detected concentration.

(2) Total of 8 subsurface soil samples analyzed for VOCs, SVOCs, and Pest/PCBs; 12 samples analyzed for metals.

(3) Maximum concentration used for screening.

(4) Off-Site surface soil samples SS-40 and SS-41 used as background samples - Refer to text for supporting information.
Maximum analyte concentration found in two samples used as screening tool.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient or common earth mineral(NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
EPA SSLs= EPA Generic Soil Screening Levels.
Reg IX PRG = EPA Region IX Preliminary Remediation Goals.
NYS TAGM = New York State Technical Administrative Guidance Manual (soil guidance values).
East U.S.= Eastern U.S. background range
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 4
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value | Screening Toxicity Value (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane | 4.45 | J | 2800.00 | DJ | ug/l | MW-10 | 3/17 | 10 - 20 | 2800.00 | N/A | 3200 N | 200 | MCL | YES | ASL |
| 75-34-3 | 1,1-Dichloroethane | 2.54 | J | 570.00 | EJ | ug/l | MW-10 | 2/17 | 10 - 20 | 570.00 | N/A | 800 N | 810 | Reg IX PRG | NO | BSL, IFD |
| 75-35-4 | 1,1-Dichloroethene | 360.00 | EG | 360.00 | EG | ug/l | MW-10 | 1/17 | 10 - 20 | 360.00 | N/A | 0.044 C | 7 | MCL | YES | ASL |
| 540-59-0 | 1,2-Dichloroethene (total) | 11.63 | | 38011.00 | DG | ug/l | MW-10 | 4/17 | 10 - 20 | 38011.00 | N/A | 55 N | NA | NA | YES | ASL |
| 67-64-1 | Acetone | 40.00 | | 40.00 | | ug/l | MW-0 | 1/17 | 10 - 20 | 40.00 | N/A | 610 N | 50 | NYS TOGS | NO | BSL,IFD |
| 71-43-2 | Benzene | 2.69 | J | 29.00 | G | ug/l | MW-10 | 3/17 | 10 -20 | 29.00 | N/A | 0.32 C | 5 | MCL | YES | ASL |
| 108-90-7 | Chlorobenzene | 1.00 | J | 23.00 | | ug/l | MW-8 | 5/17 | 10 - 20 | 23.00 | N/A | 110 N | 110 | Reg IX PRG | NO | BSL |
| 75-00-3 | Chloroethane | 9.44 | J | 94.22 | | ug/l | MW-3 | 3/17 | 10 - 20 | 94.22 | N/A | 3.6 C | 4.6 | Reg IX PRG | YES | ASL |
| 74-87-3 | Chloromethane | 6.71 | J | 47.00 | G | ug/l | MW-10 | 2/17 | 10 - 20 | 47.00 | N/A | 2.1 C | 1.5 | Reg IX PRG | YES | ASL |
| 100-41-4 | Ethylbenzene | 3100.00 | DJ | 3100.00 | DJ | ug/l | MW-10 | 1/17 | 10 - 20 | 3100.00 | N/A | 1300 N | 700 | MCL | NO | IFD |
| 127-18-4 | Tetrachloroethene | 6.00 | G | 6.00 | G | ug/l | MW-10 | 1/17 | 10 - 20 | 6.00 | N/A | 1.1 C | 5 | MCL | NO | IFD |
| 108-88-3 | Toluene | 3.00 | BJ | 61000.00 | DG | ug/l | MW-10 | 10/17 | 10 -20 | 61000.00 | N/A | 750 N | 1000 | MCL | YES | ASL |
| 542-75-6 | trans-1,3-Dichloropropene | 124.81 | | 124.81 | | ug/l | MW-15 | 1/17 | 10 - 20 | 124.81 | N/A | NA | NA | NA | NO | IFD,NTX |
| 79-01-6 | Trichloroethene | 1.68 | J | 570.00 | EG | ug/l | MW-10 | 3/17 | 10 - 20 | 570.00 | N/A | 1.6 C | 5 | MCL | YES | ASL |
| 75-01-4 | Vinyl Chloride | 106.66 | | 740.00 | EG | ug/l | MW-10 | 2/17 | 10 - 20 | 740.00 | N/A | 0.04 C | 2 | MCL | YES | ASL |
| 133-02-7 | Xylene (total) | 1.43 | J | 17900.00 | DJ | ug/l | MW-10 | 5/17 | 10 - 20 | 17900.00 | N/A | 12000 N | 10000 | MCL | YES | ASL |
| 95-50-1 | 1,2-Dichlorobenzene | 3.52 | J | 5.00 | J | ug/l | MW-10 | 2/17 | 9 - 10 | 5.00 | N/A | 550 N | 600 | MCL | NO | BSL,IFD |
| 106-46-7 | 1,4-Dichlorobenzene | 2.35 | J | 9.00 | J | ug/l | MW-10 | 4/17 | 9 - 10 | 9.00 | N/A | 0.47 C | 75 | MCL | YES | ASL |
| 105-67-9 | 2,4-Dimethylphenol | 20.00 | G | 20.00 | G | ug/l | MW-10 | 1/17 | 9 - 10 | 20.00 | N/A | 730 N | 730 | Reg IX PRG | NO | BSL, IFD |
| 91-58-7 | 2-Chloronaphthalene | 1.97 | J | 1.97 | J | ug/l | MW-3 | 1/17 | 9 - 10 | 1.97 | N/A | N/A | 10 | NYS TOGS | NO | BSL,IFD,NTX |

(1) Minimum/maximum detected concentration.

(2) Total of 17 groundwater samples used in COC screening. Only total metals concentrations used for groundwater evaluation.

(3) Maximum concentration used for screening.

(4) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Tap Water used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- MCL = Federal Maximum Contaminant Level
- SMCL = Secondary Maximum Contaminant Level
- Reg IX PRG = EPA Region IX Preliminary Remediation Goals
- NYS TOGS = New York State Technical and Operational Guidance Series for groundwater criteria.
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- BDL = below detection limits

# TABLE 4
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value | Screening Toxicity Value (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91-57-6 | 2-Methylnaphthalene | 1.68 | J | 9.00 | J | ug/l | MW-10 | 3/17 | 9 - 10 | 9.00 | N/A | 120 N | N/A | N/A | NO | BSL |
| 95-48-7 | 2-Methylphenol | 78.00 | G | 78.00 | G | ug/l | MW-10 | 1/17 | 9 - 10 | 78.00 | N/A | 1800 N | 1800 | Reg IX PRG | NO | BSL,IFD |
| 106-44-5 | 4-Methylphenol | 2.24 | J | 130.00 | D | ug/l | MW-10 | 2/17 | 9 - 10 | 130.00 | N/A | 180 N | 180 | Reg IX PRG | NO | BSL,IFD |
| 117-81-7 | Bis(2-Ethylhexyl)phthalate | 1.44 | J | 17.00 | | ug/l | MW-9 | 4/17 | 9 - 10 | 17.00 | N/A | 4.8 C | 4.8 | Reg IX PRG | NO | IFD |
| 85-68-7 | Butylbenzylphthalate | 1.00 | J | 5.17 | J | ug/l | MW-9 | 5/17 | 9 - 10 | 5.17 | N/A | 7300 N | 7300 | Reg IX PRG | NO | BSL |
| 84-66-2 | Diethylphthalate | 1.02 | J | 16.00 | G | ug/l | MW-10 | 3/17 | 9 - 10 | 16.00 | N/A | 29000 N | 29000 | Reg IX PRG | NO | BSL |
| 84-74-2 | Di-n-Butylphthalate | 2.00 | J | 10.00 | G | ug/l | MW-10 | 2/17 | 9 - 10 | 10.00 | N/A | N/A | NA | NA | NO | NTX,IFD |
| 86-73-7 | Fluorene | 1.04 | J | 1.04 | J | ug/l | MW-15 | 1/17 | 9 - 10 | 1.04 | N/A | 240 N | 240 | Reg IX PRG | NO | BSL, IFD |
| 91-20-3 | Naphthalene | 1.14 | J | 36.00 | G | ug/l | MW-10 | 4/17 | 9 - 10 | 36.00 | N/A | 6.5 N | 6.2 | Reg IX PRG | YES | ASL |
| 85-01-8 | Phenanthrene | 1.25 | J | 1.25 | J | ug/l | MW-15 | 1/17 | 9 - 10 | 1.25 | N/A | N/A | 50 | NYS TOGS | NO | NTX,IFD,BSL |
| 50-29-3 | 4,4'-DDT | 0.015 | JP | 0.015 | JP | ug/l | MW-3 | 1/17 | 0.095 - 0.47 | 0.015 | N/A | 0.2 C | 0.2 | Reg IX PRG | NO | BSL, IFD |
| 30-90-2 | Aldrin | 0.0098 | JP | 0.0098 | JP | ug/l | MW-12 | 1/17 | 0.047 - 0.05 | 0.0098 | N/A | 0.0039 C | 0.004 | Reg IX PRG | YES | ASL |
| 31-98-36 | BHC-alpha | 0.0033 | JP | 0.0033 | JP | ug/l | MW-12 | 1/17 | 0.047 - 0.05 | 0.0033 | N/A | 0.011 C | 0.011 | Reg IX PRG | NO | BSL,IFD |
| 72-20-8 | Endrin | 0.0025 | J | 0.0025 | J | ug/l | MW-7 | 1/17 | 0.094 - 0.10 | 0.0025 | N/A | 11 N | 2 | MCL | NO | BSL,IFD |
| 76-44-8 | Heptachlor | 0.0016 | JP | 0.0016 | JP | ug/l | MW-7 | 1/17 | 0.047 - 0.05 | 0.0016 | N/A | 0.015 C | 0.4 | MCL | NO | BSL,IFD |
| 72-43-5 | Methoxychlor | 0.012 | JP | 0.055 | JP | ug/l | MW-8 | 5/17 | 0.47 - 0.50 | 0.055 | N/A | 180 N | 40 | MCL | NO | BSL |
| 12672-29-6 | Aroclor-1248 | 0.18 | JP | 1.6 | | ug/l | MW-8 | 6/17 | 0.05 - 0.95 | 1.6 | N/A | 0.033 C | 0.5 | MCL | YES | ASL |
| 7429-90-5 | Aluminum | 66.98 | B | 32444.00 | | ug/l | MW-6 | 17/17 | NA | 32444.00 | N/A | 37000 N | 50 | SMCL | NO | BSL, NUT |
| 7440-36-0 | Antimony | 9.00 | B | 9.00 | B | ug/l | MW-8 | 1/17 | 5.6 - 15 | 9.00 | N/A | 15 N | 6 | MCL | NO | IFD |
| 7440-38-2 | Arsenic | 5.02 | B | 73.57 | | ug/l | MW-6 | 9/17 | 3.6 - 10 | 73.57 | N/A | 0.045 C | 50 | MCL | YES | ASL |

(1) Minimum/maximum detected concentration.

(2) Total of 17 groundwater samples used in COC screening. Only total metals concentrations used for groundwater evaluation.

(3) Maximum concentration used for screening.

(4) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Tap Water used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- MCL = Federal Maximum Contaminant Level
- SMCL = Secondary Maximum Contaminant Level
- Reg IX PRG = EPA Region IX Preliminary Remediation Goals
- NYS TOGS = New York State Technical and Operational Guidance Series for groundwater criteria.
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- BDL = below detection limits

# TABLE 4
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value | Screening Toxicity Value (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7440-39-3 | Barium | 29.43 | EJ | 849.28 | | ug/l | MW-3 | 17/17 | NA | 849.28 | N/A | 2600 N | 2000 | MCL | NO | BSL |
| 7440-41-7 | Beryllium | 1.72 | B | 1.72 | B | ug/l | MW-6 | 1/17 | 1 - 3 | 1.72 | N/A | .73 N | 4 | MCL | NO | BSL,IFD |
| 7440-43-9 | Cadmium | 1.41 | B | 34.00 | | ug/l | MW-1 | 14/17 | 0.5 - 5 | 34.00 | N/A | 18 N | 5 | MCL | YES | ASL |
| 7440-70-2 | Calcium | 122060.00 | NJ | 341100.00 | NJ | ug/l | MW-5 | 17/17 | NA | 341100.00 | N/A | N/A | NA | NA | NO | NUT,NTX |
| 7440-47-3 | Chromium | 2.77 | B | 309.00 | | ug/l | MW-10 | 13/17 | 1.8 - 1.8 | 309.00 | N/A | N/A | 100 | MCL | YES | ASL |
| 7440-48-4 | Cobalt | 1.47 | B | 50.70 | | ug/l | MW-10 | 15/17 | 1.3 - 1.3 | 50.70 | N/A | 2200 N | 2200 | Reg IX PRG | NO | BSL |
| 7440-50-8 | Copper | 2.05 | B | 70.70 | | ug/l | MW-10 | 14/17 | 1.6 - 1.6 | 70.70 | N/A | 1500 N | 1300 | MCL | NO | BSL |
| 7439-89-6 | Iron | 700.52 | | 56000.00 | | ug/l | MW-6 | 17/17 | NA | 56000.00 | N/A | 11000 N | 300 | SMCL | NO | NUT |
| 7439-92-1 | Lead | 2.00 | J | 52.16 | | ug/l | MW-15 | 14/17 | 2 - 2 | 52.16 | N/A | N/A | 15 | MCL | YES | FD,ASL,TX |
| 7439-95-4 | Magnesium | 28738.00 | | 117800.00 | | ug/l | MW-5 | 17/17 | NA | 117800.00 | N/A | N/A | 35000 | NYS TOGS | NO | NUT,NTX |
| 7439-96-5 | Manganese | 33.36 | | 3710.00 | | ug/l | MW-10 | 17/17 | NA | 3710.00 | N/A | 730 N | 50 | SMCL | YES | ASL,FD |
| 7440-02-0 | Nickel | 6.75 | B | 269.00 | | ug/l | MW-10 | 14/17 | 1.9 - 1.9 | 269.00 | N/A | 730 N | 1000 | MCL | NO | BSL |
| 7440-09-7 | Potassium | 2880.50 | B | 141530.00 | | ug/l | MW-3 | 5/5 | NA | 141530.00 | N/A | N/A | NA | NA | NO | NUT |
| 7440-22-4 | Silver | 4.11 | B | 4.11 | B | ug/l | MW-8 | 1/17 | 1.6 - 10 | 4.11 | N/A | 180 N | 180 | Reg IX PRG | NO | BSL,IFD |
| 7440-23-5 | Sodium | 22600.00 | | 1256700.00 | EJ | ug/l | MW-5D | 17/17 | NA | 1256700.00 | N/A | N/A | 20000 | NYS TOGS | NO | NUT |
| 7440-28-0 | Thallium | 5.80 | J | 5.80 | J | ug/l | MW-3, -12, -12D | 3/17 | 5.8 - 10 | 5.80 | N/A | 2.6 N | 2 | MCL | NO | IFD |
| 7440-62-2 | Vanadium | 1.96 | B | 51.28 | | ug/l | MW-6 | 13/17 | 1.3 - 1.3 | 51.28 | N/A | 260 N | 260 | Reg IX PRG | NO | BSL |
| 7440-66-6 | Zinc | 6.07 | * | 255.00 | | ug/l | MW-10 | 5/5 | NA | 255.00 | N/A | 11000 N | 11000 | Reg IX PRG | NO | BSL |
| 57-12-5 | Cyanide | 14.80 | | 16.40 | | ug/l | MW-15 | 2/17 | 10 - 10 | 16.40 | N/A | N/A | 200 | MCL | NO | BSL |

(1) Minimum/maximum detected concentration.

(2) Total of 17 groundwater samples used in COC screening. Only total metals concentrations used for groundwater evaluation.

(3) Maximum concentration used for screening.

(4) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Tap Water used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(5) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- MCL = Federal Maximum Contaminant Level
- SMCL = Secondary Maximum Contaminant Level
- Reg IX PRG = EPA Region IX Preliminary Remediation Goals
- NYS TOGS = New York State Technical and Operational Guidance Series for groundwater criteria.
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- BDL = below detection limits

# TABLE 5
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value (4) | Screening Toxicity Value (5) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (6) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 24.05 | | 137.57 | | ug/kg | SED-24 | 9/10 | 16 - 16 | 137.57 | N/A | 200000000 N | 7800000 | EPA SSLs | NO | BSL |
| 75-09-2 | Methylene Chloride | 3.33 | J | 6.77 | J | ug/kg | SED-25 | 3/10 | 14 - 47 | 6.77 | N/A | 760000 C | 85000 | EPA SSLs | NO | BSL |
| 133-02-7 | Xylene (total) | 4.74 | J | 4.74 | J | ug/kg | SED-22 | 1/10 | 14 - 49 | 4.74 | N/A | 4100000000 N | 160000000 | EPA SSLs | NO | BSL,IFD |
| 51-28-5 | 2,4-Dinitrophenol | 2000 | J | 2000 | J | ug/kg | SED-22D | 1/10 | 1300 - 135500 | 2000 | N/A | 4100000 N | 160000 | EPA SSLs | NO | BSL,IFD |
| 121-14-2 | 2,4-Dinitrotoluene | 2000 | J | 2000 | J | ug/kg | SED-22D | 1/10 | 520 - 54000 | 2000 | N/A | 4100000 N | 900 | EPA SSLs | NO | IFD |
| 83-32-9 | Acenaphthene | 300 | J | 2900 | | ug/kg | SED-22 | 3/10 | 520 - 54000 | 2900 | N/A | 120000000 N | 4700000 | EPA SSLs | NO | BSL |
| 208-96-8 | Acenaphthylene | 400 | J | 1050 | J | ug/kg | SED-22 | 5/10 | 520 - 54000 | 1050 | N/A | N/A | 41000 | NYS TAGM | NO | NTX,BSL |
| 120-12-7 | Anthracene | 310 | J | 2550 | | ug/kg | SED-22 | 8/10 | 510 - 1840 | 2550 | N/A | 610000000 N | 23000000 | EPA SSLs | NO | BSL |
| 56-55-3 | Benzo(a)anthracene | 1230 | J | 9100 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 9100 | N/A | 78000 C | 900 | EPA SSLs | YES | ASL |
| 50-32-8 | Benzo(a)pyrene | 1090 | J | 7450 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 7450 | N/A | 780 C | 90 | EPA SSLs | YES | ASL |
| 205-99-2 | Benzo(b)fluoranthene | 1560 | | 11700 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 11700 | N/A | 7800 C | 900 | EPA SSLs | YES | ASL |
| 191-24-2 | Benzo(g,h,i)perylene | 270 | J | 2000 | J | ug/kg | SED-22 | 7/10 | 520 - 2650 | 2000 | N/A | N/A | 50000 | NYS TAGM | NO | NTX,BSL |
| 207-08-9 | Benzo(k)fluoranthene | 470 | J | 2700 | J | ug/kg | SED-22D | 7/10 | 520 - 2650 | 2700 | N/A | 78000 C | 9000 | EPA SSLs | NO | BSL |
| 117-81-7 | Bis(2-Ethylhexyl)phtha | 110 | J | 8000 | J | ug/kg | SED-24 | 9/10 | 1870 - 1870 | 8000 | N/A | 410000 C | 46000 | EPA SSLs | NO | BSL |
| 86-74-8 | Carbazole | 400 | J | 900 | J | ug/kg | SED-22 | 3/10 | 520 - 54000 | 900 | N/A | 290000 C | 32000 | EPA SSLs | NO | BSL |
| 218-01-9 | Chrysene | 1250 | J | 10150 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 10150 | N/A | 780000 C | 88000 | EPA SSLs | NO | BSL |
| 53-70-3 | Dibenz(a,h)anthracene | 500 | J | 900 | J | ug/kg | SED-22 | 4/10 | 520 - 54000 | 900 | N/A | 780 C | 90 | EPA SSLs | YES | ASL |
| 132-64-9 | Dibenzofuran | 600 | J | 600 | J | ug/kg | SED-22 | 1/10 | 520 - 54000 | 600 | N/A | 8200000 N | 5100000 | Reg IX PRG | NO | BSL,IFD |
| 84-74-2 | Di-n-Butylphthalate | 70 | J | 1800 | J | ug/kg | SED-22D | 2/10 | 1560 - 54000 | 1800 | N/A | N/A | 7800000 | EPA SSLs | NO | BSL |
| 206-44-0 | Fluoranthene | 2940 | | 19150 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 19150 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 86-73-7 | Fluorene | 600 | J | 4,100 | | ug/kg | SED-22 | 6/10 | 510 - 3300 | 4,100 | N/A | 82000000 N | 3100000 | EPA SSLs | NO | BSL |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 400 | J | 3200 | | ug/kg | SED-22 | 7/10 | 520 - 2650 | 3200 | N/A | 7800 C | 900 | EPA SSLs | YES | ASL |
| 85-01-8 | Phenanthrene | 1010 | J | 9500 | | ug/kg | SED-22 | 8/10 | 520 - 1870 | 9500 | N/A | N/A | 50000 | NYS TAGM | NO | NTX,BSL |
| 129-00-0 | Pyrene | 1920 | | 23700 | EJ | ug/kg | SED-21 | 8/10 | 520 - 1870 | 23700 | N/A | 61000000 N | 2300000 | EPA SSLs | NO | BSL |
| 12672-29-6 | Aroclor-1248 | 2100 | PJ | 81000 | PJ | ug/kg | SED-22D | 8/10 | 50 - 180 | 81000 | N/A | 2900 C | 1000 | EPA SSLs | YES | ASL |
| 11096-82-5 | Aroclor-1260 | 280 | JPX | 4800 | J | ug/kg | SED-21D | 8/10 | 50 - 180 | 4800 | N/A | 2900 C | 1000 | EPA SSLs | YES | ASL |

(1) Minimum/maximum detected concentration.

(2) Total of 10 sediment samples (from Ley Creek and on-site drainageways) used in COC screen. Refer to text for further discussion.

(3) Maximum concentration used for screening.

(4) Off-Site sample SED-20 used as background sample - Refer to text for supporting information.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient or common earth mineral (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- EPA SSLs= EPA Generic Soil Screening Levels.
- Reg IX PRG = EPA Region IX Preliminary Remediation Goals.
- NYS TAGM = New York State Technical Administrative Guidance Manual (soil guidance values).
- East U.S.= Eastern U.S. background range.
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- BDL = below detection limits

# TABLE 5
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: On-Site

| CAS Number | Chemical | (1) Minimum Concentration | Minimum Qualifier | (1) Maximum Concentration | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | (4) Background Value | (5) Screening Toxicity Value | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | (6) Rationale for Contaminant Deletion or Selection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 742-99-05 | Aluminum | 2087.17 | | 28287.67 | | mg/kg | SED-24D | 10/10 | N/A | 28287.67 | 11074 | 2000000 N | 100000 | Reg IX PRG | NO | BSL,NUT |
| 7440-38-2 | Arsenic | 5.27 | B | 25.74 | | mg/kg | SED-24D | 10/10 | N/A | 25.74 | 7 | 3.8 C | 0.4 | EPA SSLs | YES | ASL,FD |
| 7440-39-3 | Barium | 58.40 | B | 387.52 | | mg/kg | SED-24D | 10/10 | N/A | 387.52 | 73.8 | 140000 N | 5500 | EPA SSLs | NO | BSL |
| 7440-41-7 | Beryllium | 0.35 | B | 1.62 | B | mg/kg | SED-24D | 6/10 | 0.3 - 1.1 | 1.62 | 0.6 | 4100 N | 1.75 | East U.S. | NO | BSL,NUT |
| 7440-43-9 | Cadmium | 5.28 | | 83.68 | | mg/kg | SED-24D | 10/10 | N/A | 83.68 | 13.2 | 2000 N | 78 | EPA SSLs | YES | ASL |
| 7440-70-2 | Calcium | 35407.43 | *J | 144801.55 | *J | mg/kg | SED-24D | 10/10 | N/A | 144801.55 | 39731 | N/A | 39731 (SB) | NYS TAGM | NO | NUT |
| 7440-47-3 | Chromium | 5.29 | BN*J | 1766.68 | N*J | mg/kg | SED-24 | 10/10 | N/A | 1766.68 | 84 | N/A | 390 | EPA SSLs | YES | ASL |
| 7440-48-4 | Cobalt | 1.73 | B | 31.12 | B | mg/kg | SED-24D | 10/10 | N/A | 31.12 | 10.4 | 120000 N | 100000 | Reg IX PRG | NO | BSL |
| 7440-50-8 | Copper | 12.71 | | 498.16 | N*J | mg/kg | SED-24D | 10/10 | N/A | 498.16 | 80 | 82000 N | 76000 | Reg IX PRG | NO | BSL |
| 7439-89-6 | Iron | 7399.83 | | 57252.37 | | mg/kg | SED-24D | 10/10 | N/A | 57252.37 | 20688 | 610000 N | 100000 | Reg IX PRG | NO | BSL |
| 7439-92-1 | Lead | 8.15 | *J | 8.15 | *J | mg/kg | SED-25 | 1/1 | N/A | 8.15 | BDL | N/A | 400 | EPA SSLs | NO | BSL |
| 7439-95-4 | Magnesium | 3233.20 | B*J | 37003.86 | *J | mg/kg | SED-24D | 10/10 | N/A | 37003.86 | 11019 | N/A | 11019 (SB) | NYS TAGM | NO | NUT |
| 7439-96-5 | Manganese | 181.46 | NJ | 1132.51 | NJ | mg/kg | SED-24D | 10/10 | N/A | 1132.51 | 728 | 290000 N | 32000 | Reg IX PRG | NO | BSL,BKG |
| 7439-97-6 | Mercury | 0.15 | EJ | 0.74 | | mg/kg | SED-24D | 8/10 | 0.2 - 0.52 | 0.74 | BDL | N/A | 23 | EPA SSLs | NO | BSL |
| 7440-02-0 | Nickel | 11.41 | BN*J | 363.00 | N*J | mg/kg | SED-24D | 9/10 | 11.4 | 363.00 | 47 | 41000 N | 1600 | EPA SSLs | NO | BSL |
| 7440-09-7 | Potassium | 217.59 | BEJ | 4895.68 | EJ | mg/kg | SED-24D | 10/10 | N/A | 4895.68 | 1561 | N/A | 1561 (SB) | NYS TAGM | NO | NUT |
| 7782-49-2 | Selenium | 1.97 | BNJ | 1.97 | BNJ | mg/kg | SED-23 | 1/10 | 1.5 - 5.3 | 1.97 | BDL | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-22-4 | Silver | 1.72 | B | 8.69 | BNJ | mg/kg | SED-24D | 8/10 | 0.5 - 1.7 | 8.69 | BDL | 10000 N | 390 | EPA SSLs | NO | BSL |
| 7440-23-5 | Sodium | 1165.51 | B | 4665.88 | | mg/kg | SED-24D | 9/10 | 1319 | 4665.88 | 2156 | N/A | 2156 (SB) | NYS TAGM | NO | NUT |
| 7440-28-0 | Thallium | 2.28 | ENJ | 2.28 | ENJ | mg/kg | SED-23 | 1/10 | 1.7 - 6.1 | 2.28 | BDL | 140 N | 130 | Reg IX PRG | NO | BSL |
| 7440-62-2 | Vanadium | 11.82 | B | 76.71 | | mg/kg | SED-24D | 10/10 | N/A | 76.71 | 22.3 | 14000 N | 550 | EPA SSLs | NO | BSL |
| 7440-66-6 | Zinc | 44.06 | ENJ | 1185.11 | ENJ | mg/kg | SED-24D | 10/10 | N/A | 1185.11 | 106 | 610000 N | 23000 | EPA SSLs | NO | BSL |
| 57-12-5 | Cyanide | 2.24 | NJ | 11.67 | NJ | mg/kg | SED-24 | 7/10 | 1 - 3 | 11.67 | 4 | N/A | NA | NA | NO | NTX |

(1) Minimum/maximum detected concentration.

(2) Total of 10 sediment samples (from Ley Creek and on-site drainageways) used in COC screen. Refer to text for further discussion.

(3) Maximum concentration used for screening.

(4) Off-Site sample SED-20 used as background sample - Refer to text for supporting information.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Industrial soil used. (Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes
Selection Reason:
- Infrequent Detection but Associated Historically (HIST)
- Frequent Detection (FD)
- Toxicity Information Available (TX)
- Above Screening Levels (ASL)

Deletion Reason:
- Infrequent Detection (IFD)
- Background Levels (BKG)
- No Toxicity Information (NTX)
- Essential Nutrient or common earth mineral (NUT)
- Below Screening Level (BSL)

Definitions:
- N/A = Not Applicable
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- East U.S.= Eastern U.S. background range.
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- BDL = below detection limits

# TABLE 6
# TOWN OF SALINA LANDFILL
# OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value (4) | Screening Toxicity Value (5) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (6) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 207-08-9 | Benzo(k)fluoranthene | 10 | J | 10 | J | ug/l | SW-23, -24 | 2/5 | 9 - 10 | 10 | N/A | 0.92 C | 0.92 | Reg IX PRG | YES | ASL |
| 12672-29-6 | Aroclor-1248 | 0.095 | JP | 0.14 | JP | ug/l | SW-23 | 2/5 | 0.94 - 0.95 | 0.14 | N/A | 0.033 C | 0.5 | MCL | YES | ASL |
| 742-99-05 | Aluminum | 136.56 | | 237.65 | | ug/l | SW-24 | 5/5 | NA | 237.65 | 217 | 37000 N | 50 | SMCL | NO | NUT,BKG,BSL |
| 7440-39-3 | Barium | 50.18 | B | 77.83 | B | ug/l | SW-24 | 5/5 | NA | 77.83 | 63.9 | 2600 N | 2000 | MCL | NO | BKG,BSL |
| 7440-70-2 | Calcium | 40240.00 | | 94166.00 | | ug/l | SW-23 | 5/5 | NA | 94166.00 | 70050 | N/A | NA | NA | NO | NUT,BKG,NTX |
| 7440-47-3 | Chromium | 2.29 | B | 2.29 | B | ug/l | SW-24 | 1/5 | 1.8 - 1.8 | 2.29 | BDL | N/A | 100 | MCL | NO | BSL,IFD |
| 7440-48-4 | Copper | 6.44 | B | 12.71 | B | ug/l | SW-25 | 5/5 | NA | 12.71 | 5.5 | 1500 N | 1300 | MCL | NO | BSL |
| 7439-89-6 | Iron | 444.39 | | 701.59 | | ug/l | SW-24 | 5/5 | NA | 701.59 | 576.4 | 11000 N | 300 | SMCL | NO | NUT,BKG |
| 7439-92-1 | Lead | 2.07 | J | 5.56 | J | ug/l | SW-24 | 5/5 | NA | 5.56 | 3.3 | N/A | 15 | MCL | NO | BKG,BSL |
| 7439-95-4 | Magnesium | 8358.50 | | 16045.00 | | ug/l | SW-24 | 5/5 | NA | 16045.00 | 11143 | N/A | 35000 | NYS TOGS | NO | NTX,BKG,BSL,NUT |
| 7439-96-5 | Manganese | 80.21 | | 217.25 | | ug/l | SW-25 | 5/5 | NA | 217.25 | 80.8 | 730 N | 50 | SMCL | YES | ASL |
| 7440-02-0 | Nickel | 2.36 | B | 2.96 | B | ug/l | SW-24 | 4/5 | 1.9 - 1.9 | 2.96 | 1.9 | 730 N | 1000 | MCL | NO | BSL,BKG |
| 7440-09-7 | Potassium | 3664.90 | B | 4096.00 | B | ug/l | SW-24 | 5/5 | NA | 4096.00 | 3862 | N/A | NA | NA | NO | NUT,BKG,NTX |
| 7440-23-5 | Sodium | 50466.00 | | 85413.00 | | ug/l | SW-24 | 5/5 | NA | 85413.00 | 57471 | N/A | 20000 | NYS TOGS | NO | NUT,BKG;NTX |
| 7440-62-2 | Vanadium | 1.49 | B | 1.79 | B | ug/l | SW-23 | 3/5 | 1.3 - 1.3 | 1.79 | 1.3 | 260 N | 260 | Reg IX PRG | NO | BSL,BKG |
| 7440-66-6 | Zinc | 18.95 | B | 53.10 | | ug/l | SW-22 | 5/5 | NA | 53.10 | 19 | 11000 N | 11000 | Reg IX PRG | NO | BSL |
| 57-12-5 | Cyanide | 13.60 | | 18.60 | | ug/l | SW-21 | 3/5 | 10 - 10 | 18.60 | BDL | N/A | 200 | MCL | NO | NTX,BSL |

(1) Minimum/maximum detected concentration.

(2) Total of 5 surface water samples from Ley Creek and on-site drainageways used in COC screening.

(3) Maximum concentration used for screening.

(4) Off-Site sample SW-20 used as background sample - Refer to text for supporting information.

(5) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Tap Water used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(6) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)

Definitions:
N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
Reg IX PRG = EPA Region IX Preliminary Remediation Goals
NYS TOGS = New York State Technical and Operational Guidance Series for groundwater criteri
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 7
## TOWN OF SALINA LANDFILL
## OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN



Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate
Exposure Point: On-Site

| CAS Number | Chemical | Minimum Concentration (1) | Minimum Qualifier | Maximum Concentration (1) | Maximum Qualifier | Units | Location of Maximum Concentration | Detection Frequency (2) | Range of Detection Limits | Concentration (3) Used for Screening | Background Value | Screening Toxicity Value (4) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Contaminant Deletion or Selection (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | 3.8 | J | 3.8 | J | ug/l | L-1 | 1/3 | 10 - 10 | 3.8 | N/A | 0.32 C | 5 | MCL | YES | ASL,TX |
| 108-90-7 | Chlorobenzene | 10.3 | | 22 | | ug/l | L-1 | 2/3 | 10 | 22 | N/A | 110 N | 110 | Reg IX PRG | NO | BSL |
| 106-46-7 | 1,4-Dichlorobenzene | 2 | J | 2.2 | J | ug/l | L-1 | 2/3 | 10 | 2.2 | N/A | 0.47 C | 75 | MCL | YES | ASL |
| 12672-29-6 | Aroclor-1248 | 0.70 | JP | 1.00 | JP | ug/l | L-1, -2 | 3/3 | NA | 1.00 | N/A | 0.033 C | 0.5 | MCL | YES | ASL |
| 7429-90-5 | Aluminum | 1051.50 | ENJ | 12131.00 | ENJ | ug/l | L-2 | 3/3 | NA | 12131.00 | N/A | 37000 N | 50 | SMCL | NO | BSL,NUT |
| 7440-39-3 | Barium | 460.40 | EJ | 1501.60 | EJ | ug/l | L-2 | 3/3 | NA | 1501.60 | N/A | 2600 N | 2000 | MCL | NO | BSL |
| 7440-70-2 | Calcium | 219970.00 | ENJ | 263910.00 | ENJ | ug/l | L-2 | 3/3 | NA | 263910.00 | N/A | N/A | NA | NA | NO | NTX,NUT |
| 7440-47-3 | Chromium | 42.10 | EJ | 125.69 | EJ | ug/l | L-2 | 3/3 | NA | 125.69 | N/A | N/A | 100 | MCL | YES | ASL |
| 7440-48-4 | Cobalt | 3.36 | B | 13.04 | B | | L-2 | 3/3 | NA | 13.04 | N/A | 2200 N | 2200 | Reg IX PRG | NO | BSL |
| 7440-50-8 | Copper | 29.99 | EJ | 140.39 | EJ | ug/l | L-2 | 3/3 | NA | 140.39 | N/A | 1500 N | 1300 | MCL | NO | BSL |
| 7439-89-6 | Iron | 31183.00 | EJ | 156090.00 | EJ | ug/l | L-2 | 3/3 | NA | 156090.00 | N/A | 11000 N | 300 | SMCL | NO | NUT |
| 7439-92-1 | Lead | 29.43 | EJ | 198.93 | EJ | ug/l | L-2 | 3/3 | NA | 198.93 | N/A | N/A | 15 | MCL | YES | ASL,TX |
| 7439-95-4 | Magnesium | 52694.00 | EJ | 69371.00 | EJ | ug/l | L-2 | 3/3 | NA | 69371.00 | N/A | N/A | 35000 | NYS TOGS | NO | NUT |
| 7439-96-5 | Manganese | 412.49 | EJ | 1000.80 | EJ | ug/l | L-6 | 3/3 | NA | 1000.80 | N/A | 730 N | 50 | SMCL | YES | ASL |
| 7440-02-0 | Nickel | 40.36 | | 63.09 | | ug/l | L-6 | 3/3 | NA | 63.09 | N/A | 730 N | 1000 | MCL | NO | BSL |
| 7440-09-7 | Potassium | 42867.00 | EJ | 66501.00 | EJ | ug/l | L-6 | 3/3 | NA | 66501.00 | N/A | N/A | NA | NA | NO | NUT |
| 7440-22-4 | Silver | 1.60 | B | 1.60 | B | ug/l | L-2 | 1/3 | 1.6 - 1.6 | 1.60 | N/A | 180 N | 180 | Reg IX PRG | NO | BSL |
| 7440-23-5 | Sodium | 67612.00 | EJ | 190190.00 | EJ | ug/l | L-6 | 3/3 | NA | 190190.00 | N/A | N/A | 20000 | NYS TOGS | NO | NUT |
| 7440-62-2 | Vanadium | 19.33 | B | 19.33 | B | ug/l | L-2 | 1/3 | 1.3 - 1.3 | 19.33 | N/A | 260 N | 260 | Reg IX PRG | NO | BSL |
| 7440-66-6 | Zinc | 91.08 | EJ | 403.63 | EJ | ug/l | L-2 | 3/3 | NA | 403.63 | N/A | 11000 N | 11000 | Reg IX PRG | NO | BSL |

(1) Minimum/maximum detected concentration.

(2) Total of 3 on-site leachate samples used in COC screening.

(3) Maximum concentration used for screening.

(4) Risk-Based Concentration Table, Oct. 5, 2000. USEPA Region III. Values for Tap Water used.
(Cancer benchmark value = 1E-06; HQ=0.1)

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)

Definitions:
N/A = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
Reg IX PRG = EPA Region IX Preliminary Remediation Goals
NYS TOGS = New York State Technical and Operational Guidance Series for groundwater criteria
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
BDL = below detection limits

# TABLE 8
# TOWN OF SALINA LANDFILL
# MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY



Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site

| Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL of Normal Data | Maximum Detected Concentration | Maximum Qualifier | EPC Units | Reasonable Maximum Exposure | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Medium EPC Value | Medium EPC Statistic | Medium EPC Rationale |
| Benzo(a)anthracene | ug/kg | 1988.15 | N/A (1) | 8800 | D | mg/kg | 7.77 | 95% UCL -T | W- Test (1) |
| Benzo(a)pyrene | ug/kg | 1879.37 | N/A (1) | 8700 | D | mg/kg | 7.77 | 95% UCL -T | W- Test (1) |
| Benzo(b)fluoranthene | ug/kg | 3131.48 | N/A (1) | 13900 | | mg/kg | 12.6 | 95% UCL -T | W- Test (1) |
| Dibenz(a,h)anthracene | ug/kg | 494.16 | N/A (1) | 960 | | mg/kg | 0.96 | Max | W- Test (1,2) |
| Indeno(1,2,3-cd)pyrene | ug/kg | 1548.74 | N/A (1) | 5000 | D | mg/kg | 4.8 | 95% UCL -T | W- Test (1) |
| Aroclor 1248 | ug/kg | 491.76 | N/A (1) | 8400 | J | mg/kg | 1.08 | 95% UCL -T | W- Test (1) |
| Arsenic | mg/kg | 2.18 | N/A (1) | 7 | | mg/kg | 4.74 | 95% UCL -T | W- Test (1) |
| Lead | mg/kg | 136 | N/A (1) | 1163 | | mg/kg | 383.6 | 95% UCL -T | W- Test (1) |

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T).

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration.
(1) Shapiro-Wilk W Test indicates that data are log-normally distributed.
(2) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
Lower of maximum concentration and 95% UCL concentration selected as medium EPC value.

# TABLE 9
# TOWN OF SALINA LANDFILL
# SELECTION OF EXPOSURE PATHWAYS



| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | On-Site/ Off-Site | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|---|
| Current | Surface Soil | Surface Soil | On-Site | Trespasser | Adult | Dermal | On-Site | Quant | Historic waste disposal and surface runoff, tracking, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | | | | Child | Dermal | On-Site | Quant | Historic waste disposal and surface runoff, tracking, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | On-site area is mostly vegetated; generation of fugitive dusts expected to be minimal. No VOCs were identified as COCs in surface soils. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | On-site area is mostly vegetated; generation of fugitive dusts expected to be minimal. No VOCs were identified as COCs in surface soils. Pathway excluded from further analysis. |
| | Subsurface Soil | Subsurface Soil | On-Site | Trespasser | Adult | Dermal | On-Site | none | Although potential COCs exist in subsurface soil, no significant exposure routes were identified in the current land use scenario. Pathways excluded from further analysis. |
| | | | | | | Ingestion | On-Site | none | |
| | | | | | Child | Dermal | On-Site | none | Although potential COCs exist in subsurface soil, no significant exposure routes were identified in the current land use scenario. Pathways excluded from further analysis. |
| | | | | | | Ingestion | On-Site | none | |
| | Groundwater | Groundwater, Air | None | NA | NA | NA | none | none | There are no potable wells or industrial/agricultural wells at the site. All potable water supplied to the surrounding area is from an off-site municipal source that is unaffected by the site. No on-site exposure points for human contact with on-site groundwater was identified in the pathway analysis. Pathways excluded from further analysis. |
| | Sediment (on-site drainageways) | Sediment | On-Site (drainageways) | Trespasser | Adult | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | | | | Child | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in sediments. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | No VOCs were identified as COCs in sediments. Pathway excluded from further analysis. |
| | Surface Water (on-site drainageways) | Surface Water | On-Site (drainageways) | Trespasser | Adult | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to surface water in on-site drainageways. Ley Creek surface water not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | | | | Child | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to surface water in on-site drainageways. Ley Creek surface water not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in surface water. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | No VOCs were identified as COCs in surface water. Pathway excluded from further analysis. |

# TABLE 9
# TOWN OF SALINA LANDFILL
# SELECTION OF EXPOSURE PATHWAYS



| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | On-Site/ Off-Site | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|---|
| Current | Leachate | Leachate | On-Site | Trespasser | Adult | Dermal | On-Site | Quant | Historic waste disposal, other contaminated media, leaching/migration of contamination, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | | | | Child | Dermal | On-Site | Quant | Historic waste disposal, other contaminated media, leaching/migration of contamination, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | Only two VOCs identified as COCs in leachate. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | Only two VOCs identified as COCs in leachate. Pathway excluded from further analysis. |
| Future | Surface Soil | Surface Soil | On-Site | Trespasser | Adult | Dermal | On-Site | Quant | Historic waste disposal and surface runoff, tracking, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | | | | Child | Dermal | On-Site | Quant | Historic waste disposal and surface runoff, tracking, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | | | Construction Worker | Adult | Dermal | On-Site | Quant | Historic waste disposal and surface runoff, tracking, and spills have created COCs in this medium. Individual conducting future site work may be exposed to surface soil contaminants. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | On-site area anticipated to remain mostly vegetated; generation of fugitive dusts expected to be minimal. No VOCs were identified as COCs in surface soils. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | On-site area anticipated to remain mostly vegetated; generation of fugitive dusts expected to be minimal. No VOCs were identified as COCs in surface soils. Pathway excluded from further analysis. |
| | | | | Construction Worker | Adult | Inhalation | On-Site | none | On-site area anticipated to remain mostly vegetated; generation of fugitive dusts expected to be minimal. No VOCs were identified as COCs in surface soils. Pathway excluded from further analysis. |
| | Subsurface Soil | Subsurface Soil | On-Site | Trespasser | Adult | Dermal | On-Site | none | Although potential COCs exist in subsurface soil, no significant exposure routes were identified for trespassers in the future land use scenario. Pathways excluded from further analysis. |
| | | | | | | Ingestion | On-Site | none | |
| | | | | | Child | Dermal | On-Site | none | Although potential COCs exist in subsurface soil, no significant exposure routes were identified for trespassers in the future land use scenario. Pathways excluded from further analysis. |
| | | | | | | Ingestion | On-Site | none | |
| | | | | Construction Worker | Adult | Dermal | On-Site | Quant | Historic waste disposal, contaminant leaching/migration, and spills have created COCs in this medium. Individual conducting future site work may be exposed to subsurface soil contaminants. Pathways retained for further analysis. |
| | | | | | | Ingestion | On-Site | Quant | |

# TABLE 9
# TOWN OF SALINA LANDFILL
# SELECTION OF EXPOSURE PATHWAYS



| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | On-Site/ Off-Site | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|---|
| | Groundwater | Groundwater | On-Site | Construction Worker | Adult | Ingestion | On-Site | Quant | Individual conducting future site work may be exposed to groundwater contaminants via incidental ingestion. Pathway retained for further analysis. |
| | | | | | | Dermal | On-Site | none | It is surmised that appropriate protective clothing/equipment will be utilized by construction worker in the future so that dermal exposure pathway can be eliminated. Pathway thus excluded from further analysis. |
| | | Air | On-Site | Construction Worker | Adult | Inhalation | On-Site | none | Potential exposure to groundwater COCs is anticipated to be of short duration for construction worker in the future. Thus, inhalation pathway not retained for further analysis. |
| | Sediment (on-site drainageways) | Sediment | On-Site (drainageways) | Trespasser | Adult | Dermal<br>Ingestion | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | Child | Dermal<br>Ingestion | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | Construction Worker | Adult | Dermal<br>Ingestion | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in sediments. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | No VOCs were identified as COCs in sediments. Pathway excluded from further analysis. |
| | | | | Construction Worker | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in sediments. Pathway excluded from further analysis. |

# TABLE 9
# TOWN OF SALINA LANDFILL
# SELECTION OF EXPOSURE PATHWAYS



| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | On-Site/ Off-Site | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|---|
| | Surface Water (on-site drainageways) | Surface Water | On-Site (drainageways) | Trespasser | Adult | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to surface water in on-site drainageways. Ley Creek surface water not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | | | | Child | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to surface water in on-site drainageways. Ley Creek surface water not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | On-Site | Qual | |
| | | | | Construction Worker | Adult | Dermal | On-Site | Qual | Qualitative discussion provided in text for exposures to sediments in on-site drainageways. Ley Creek sediments not included in exposure analysis as per previous agreement. Pathways excluded from quantitative analysis. |
| | | | | | | Ingestion | | | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in surface water. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | No VOCs were identified as COCs in surface water. Pathway excluded from further analysis. |
| | | | | Construction Worker | Adult | Inhalation | On-Site | none | No VOCs were identified as COCs in surface water. Pathway excluded from further analysis. |
| | Leachate | Leachate | On-Site | Trespasser | Adult | Dermal | On-Site | Quant | Historic waste disposal, other contaminated media, leaching/migration of contamination, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | | | |
| | | | | | Child | Dermal | | Quant | Historic waste disposal, other contaminated media, leaching/migration of contamination, and spills have created COCs in this medium. Pathways retained for further analysis. |
| | | | | | | Ingestion | | | |
| | | | | Construction Worker | Adult | Dermal | On-Site | none | It is anticipated that leachate will be removed as needed prior to the commencement of future construction activities at the site. Thus, construction worker pathway excluded from further analysis. |
| | | | | | | Ingestion | | | |
| | | Air | On-Site | Trespasser | Adult | Inhalation | On-Site | none | Only two VOCs identified as COCs in leachate. Pathway excluded from further analysis. |
| | | | | | Child | Inhalation | On-Site | none | Only two VOCs identified as COCs in leachate. Pathway excluded from further analysis. |
| | | | | Construction Worker | Adult | Inhalation | On-Site | none | Only two VOCs were identified as COCs in leachate. Pathway excluded from further analysis. In addition, it is anticipated that leachate will be removed as needed prior to the commencement of future construction activities at the site. Thus, construction worker pathway excluded from further analysis. |

# TABLE 10
# TOWN OF SALINA LANDFILL
# NON-CANCER TOXICITY DATA -- ORAL/DERMAL



| Chemical of Potential Concern | Chronic/ Subchronic | Oral RfD Value | Oral RfD Units | Oral to Dermal Adjustment Factor | Adjusted Dermal RfD | Units | Primary Target Organ | Combined Uncertainty/Modifying Factors | Sources of RfD: Target Organ | Dates of RfD: Target Organ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichlorethane | N/A | 2.8E-01 (1) | mg/kg-day | 100% | 2.8E-01 (1) | mg/kg-day | N/A | N/A | EPA-NCEA: N/A | 2000 |
| 1,1-Dichloroethene | Chronic/Subchronic | 9E-03 | mg/kg-day | 100% | 9E-03 | mg/kg-day | liver | 1000 | IRIS:HEAST | 12/22/00: 1997 |
| 1,2-Dichloroethene (total) | Chronic/Subchronic | 9E-03 | mg/kg-day | 100% | 9E-03 | mg/kg-day | liver | 1000 | HEAST: HEAST | 1997 |
| Benzene | N/A | 3.0E-03 (1) | mg/kg-day | 100% | 3.0E-03 (1) | mg/kg-day | N/A | N/A | EPA-NCEA: N/A | 2000 |
| Chloroethane | N/A | 4.0E-01 (1) | mg/kg-day | 100% | 4.0E-01 (1) | mg/kg-day | N/A | N/A | EPA-NCEA: N/A | 2000 |
| Chloromethane | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Toluene | Chronic | 2E-01 | mg/kg-day | 100% | 2E-01 | mg/kg-day | liver | 1000 | IRIS:HEAST | 12/22/00: 1997 |
| | Subchronic | 2E+00 | mg/kg-day | 100% | 2E+00 | mg/kg-day | liver, kidney | 100 | HEAST: HEAST | 06/19/05 |
| Xylenes | Chronic | 2E+00 | mg/kg-day | 100% | 2E+00 | mg/kg-day | liver | 100 | IRIS: IRIS | 12/22/00 |
| Trichloroethene | N/A | 6.0E-03 (1) | mg/kg-day | 100% | 6.0E-03 (1) | mg/kg-day | N/A | N/A | EPA-NCEA: N/A | 2000 |
| Vinyl Chloride | Chronic | 3.0E-03 | mg/kg-day | 100% | 3.0E-03 | mg/kg-day | liver | 30 | IRIS: IRIS | 12/22/2000 |
| Benzo(a)anthracene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Benzo(a)pyrene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Benzo(b)fluoranthene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Benzo(k)fluoranthene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dibenz(a,h)anthracene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Indeno(1,2,3-cd)pyrene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 1,4-Dichlorobenzene | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Naphthalene | Subchronic | 2E-02 | mg/kg-day | 40% | 8.0E-03 | mg/kg-day | blood | 3000 | IRIS: IRIS | 12/22/00 |
| Aldrin | Chronic | 3E-05 | mg/kg-day | 100% | 3E-05 | mg/kg-day | liver | 1000 | IRIS: HEAST | 12/22/00: 1997 |
| Arochlor 1248 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Arochlor 1260 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Arsenic | Chronic/Subchronic | 3E-04 | mg/kg-day | 95% | 2.9E-04 | mg/kg-day | skin | 3 | IRIS: HEAST | 12/22/00: 1997 |
| Cadmium | Chronic | 5E-04 | mg/kg-day | 4.6% | 2.3E-05 | mg/kg-day | kidney | 10 | IRIS: IRIS | 12/22/00 |
| Chromium (TOTAL) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Lead | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Manganese | Chronic | 1.4E-01 | mg/kg-day | 100% | 1.4E-01 | mg/kg-day | CNS | 1 | IRIS: HEAST | 12/22/00: 1997 |

N/A = Not Applicable

(1) Indicates EPA-NCEA provisional value (derived from Region III RBC Tables 10/5/2000).

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

# TABLE 11
# TOWN OF SALINA LANDFILL
# CANCER TOXICITY DATA -- ORAL/DERMAL



| Chemical of Potential Concern | Oral Cancer Slope Factor | Oral to Dermal Adjustment Factor | Adjusted Dermal Cancer Slope Factor | Units | Weight of Evidence/ Cancer Guideline Description | Source | Date |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichlorethane | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 1,1-Dichloroethene | 6.0E-01 | 100% | 6.0E-01 | $(mg/kg\text{-}day)^{-1}$ | C | IRIS | 12/22/00 |
| 1,2-Dichloroethene (total) | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Benzene | 5.50E-02 | 100% | 5.50E-02 | $(mg/kg\text{-}day)^{-1}$ | A | IRIS | 12/22/00 |
| Chloroethane | 2.90E-03 | 100% | 2.90E-03 | $(mg/kg\text{-}day)^{-1}$ | N/A | EPA - NCEA (1) | 2000 |
| Chloromethane | 1.30E-02 | 100% | 1.30E-02 | $(mg/kg\text{-}day)^{-1}$ | C | HEAST | 1997 |
| Toluene | N/A | N/A | N/A | N/A | D | IRIS | 12/22/00 |
| Xylenes | N/A | N/A | N/A | N/A | D | IRIS | 12/22/00 |
| Trichloroethene | 1.10E-02 | 100% | 1.10E-02 | $(mg/kg\text{-}day)^{-1}$ | N/A | EPA - NCEA (1) | 2000 |
| Vinyl Chloride | 7.20E-01 | 100% | 7.20E-01 | $(mg/kg\text{-}day)^{-1}$ | A | IRIS | 12/22/00 |
| Benzo(a)anthracene | 7.30E-01 | 40% | 1.83E+00 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS/ EPA-NCEA(1) | 2000 |
| Benzo(a)pyrene | 7.30E+00 | 40% | 1.83E+01 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS | 12/22/00 |
| Benzo(b)fluoranthene | 7.30E-01 | 40% | 1.83E+00 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS/ EPA-NCEA(1) | 2000 |
| Benzo(k)fluoranthene | 7.30E-02 | 40% | 1.83E-01 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS/ EPA-NCEA(1) | 2000 |
| Dibenz(a,h)anthracene | 7.30E+00 | 40% | 1.83E+01 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS/ EPA-NCEA(1) | 2000 |
| Indeno(1,2,3-cd)pyrene | 7.30E-01 | 40% | 1.83E+00 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS/ EPA-NCEA(1) | 2000 |
| 1,4-Dichlorobenzene | 2.40E-02 | 40% | 6.00E-02 | $(mg/kg\text{-}day)^{-1}$ | C | HEAST | 1997 |
| Naphthalene | N/A | N/A | N/A | $(mg/kg\text{-}day)^{-1}$ | C | IRIS | 12/22/00 |
| Aldrin | 1.70E+01 | 100% | 1.70E+01 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS | 12/22/00 |
| Arochlor 1248 | 2.00E+00 | 96% | 2.08E+00 | $(mg/kg\text{-}day)^{-1}$ | N/A | EPA - NCEA (1) | 2000 |
| Arochlor 1260 | 2.00E+00 | 96% | 2.08E+00 | $(mg/kg\text{-}day)^{-1}$ | N/A | EPA - NCEA (1) | 2000 |
| Arsenic | 1.50E+00 | 95% | 1.58E+00 | $(mg/kg\text{-}day)^{-1}$ | A | IRIS | 12/22/00 |
| Cadmium | N/A | N/A | N/A | N/A | B1 | IRIS | 12/22/2000 |
| Chromium | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Lead | N/A | N/A | N/A | N/A | B2 | IRIS | 12/22/00 |
| Manganese | N/A | N/A | N/A | N/A | D | IRIS | 12/22/00 |

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

(1) Indicates EPA-NCEA provisional slope factor value derived from Region III RBC Table (10/5/2000).

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

# TABLE 12
# TOWN OF SALINA LANDFILL
# SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
# REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Child

| Medium | Exposure Medium | Exposure Point | Chemical | Carcinogenic Risk | | | | Chemical | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Soil | Surface Soil | On-Site | | | | | | | | | | | |
| | | | Benzo(a)anthracene | 3.15E-07 | N/A | 7.20E-06 | 7.52E-06 | Arsenic | skin | 6.20E-03 | N/A | 1.77E-02 | 2.39E-02 |
| | | | Benzo(a)pyrene | 3.15E-06 | N/A | 9.36E-05 | 9.68E-05 | | | | | | |
| | | | Benzo(b)fluoranthene | 5.12E-07 | N/A | 1.17E-05 | 1.22E-05 | | | | | | |
| | | | Dibenz(a,h)anthracene | 3.90E-07 | N/A | 8.89E-06 | 9.28E-06 | | | | | | |
| | | | Indeno(1,2,3-cd)pyrene | 1.95E-07 | N/A | 4.45E-06 | 4.65E-06 | | | | | | |
| | | | Arochlor 1248 | 1.20E-07 | N/A | 1.60E-06 | 1.72E-06 | | | | | | |
| | | | Arsenic | 3.96E-07 | N/A | 1.14E-06 | 1.54E-06 | | | | | | |
| | | | (total) | 5.08E-06 | | 1.29E-04 | 1.3E-04 | (total) | | 6.20E-03 | N/A | 1.77E-02 | 2.39E-02 |
| Leachate | Leachate | On-site | Benzene | 5.81E-09 | N/A | 7.86E-09 | 1.4E-08 | Benzene | N/A | 2.50E-04 | N/A | 3.33E-04 | 5.83E-04 |
| | | | 1,4-dichlorobenzene | 1.47E-09 | N/A | 2.16E-08 | 2.31E-08 | Manganese | CNS | 1.40E-03 | N/A | 9.40E-05 | 1.49E-03 |
| | | | Aroclor 1248 | 5.56E-08 | N/A | 1.84E-06 | 1.90E-06 | | | | | | |
| | | | (total) | 6.29E-08 | | 1.87E-06 | 1.9E-06 | (total) | | 1.65E-03 | N/A | 4.27E-04 | 2.08E-03 |

| | |
|---|---|
| Total Risk Across Surface Soil | 1.3E-04 |
| Total Risk Across Leachate | 1.9E-06 |
| Total Risk Across All Media and All Exposure Routes | 1.4E-04 |

| | |
|---|---|
| Total Hazard Index Across All Media and All Exposure Routes | 2.60E-02 |

| | |
|---|---|
| Total Skin HI = | 2.39E-02 |
| Total CNS HI = | 1.49E-03 |

# TABLE 13
# TOWN OF SALINA LANDFILL
# SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
# REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical | Carcinogenic Risk | | | | Chemical | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Soil | Surface Soil | On-Site | Benzo(a)anthracene | 7.99E-08 | N/A | 6.67E-07 | 7.47E-07 | Arsenic | skin | 1.70E-03 | N/A | 1.82E-03 | 3.52E-03 |
| | | | Benzo(a)pyrene | 7.99E-07 | N/A | 8.66E-06 | 9.46E-06 | | | | | | |
| | | | Benzo(b)fluoranthene | 1.30E-07 | N/A | 1.08E-06 | 1.21E-06 | | | | | | |
| | | | Dibenz(a,h)anthracene | 9.87E-08 | N/A | 8.24E-07 | 9.23E-07 | | | | | | |
| | | | Indeno(1,2,3-cd)pyrene | 4.94E-08 | N/A | 4.12E-07 | 4.61E-07 | | | | | | |
| | | | Arochlor 1248 | 3.04E-08 | N/A | 1.48E-07 | 1.78E-07 | | | | | | |
| | | | Arsenic | 1.00E-07 | N/A | 1.05E-07 | 2.05E-07 | | | | | | |
| | | | (total) | 1.29E-06 | | 1.19E-05 | 1.3E-05 | (total) | | 1.70E-03 | N/A | 1.82E-03 | 3.52E-03 |
| Leachate | Leachate | On-site | Benzene | 2.94E-09 | N/A | 6.55E-09 | 9.5E-09 | Benzene | N/A | 1.40E-04 | N/A | 3.09E-04 | 4.49E-04 |
| | | | 1,4-dichlorobenzene | 7.44E-10 | N/A | 1.80E-08 | 1.87E-08 | Manganese | CNS | 7.80E-04 | N/A | 8.70E-05 | 8.67E-04 |
| | | | Aroclor 1248 | 2.82E-08 | N/A | 1.53E-06 | 1.56E-06 | | | | | | |
| | | | (total) | 3.19E-08 | | 1.55E-06 | 1.6E-06 | (total) | | 9.20E-04 | N/A | 3.96E-04 | 1.32E-03 |

| | |
|---|---|
| Total Risk Across Surface Soil | 1.3E-05 |
| Total Risk Across Leachate | 1.6E-06 |
| Total Risk Across All Media and All Exposure Routes | 1.5E-05 |

| | |
|---|---|
| Total Hazard Index Across All Media and All Exposure Routes | 4.84E-03 |

| | |
|---|---|
| Total Skin HI = | 3.52E-03 |
| Total CNS HI = | 8.67E-04 |

**TABLE 14**
**TOWN OF SALINA LANDFILL**
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**
**REASONABLE MAXIMUM EXPOSURE**

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical | Carcinogenic Risk | | | | Chemical | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | | Primary Target Organ | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Soil | Surface Soil | On-Site | Benzo(a)anthracene | 3.65E-07 | N/A | 3.17E-07 | 6.82E-07 | Arsenic | skin | 3.60E-02 | N/A | 3.91E-03 | 3.99E-02 |
| | | | Benzo(a)pyrene | 3.65E-06 | N/A | 4.13E-06 | 7.78E-06 | | | | | | |
| | | | Benzo(b)fluoranthene | 5.92E-07 | N/A | 5.15E-07 | 1.11E-06 | | | | | | |
| | | | Dibenz(a,h)anthracene | 4.51E-07 | N/A | 3.92E-07 | 8.43E-07 | | | | | | |
| | | | Indeno(1,2,3-cd)pyrene | 2.26E-07 | N/A | 1.96E-07 | 4.22E-07 | | | | | | |
| | | | Arochlor 1248 | 1.39E-07 | N/A | 7.05E-08 | 2.10E-07 | | | | | | |
| | | | Arsenic | 4.58E-07 | N/A | 5.03E-08 | 5.08E-07 | | | | | | |
| | | | (total) | 5.88E-06 | | 5.67E-06 | 1.2E-05 | (total) | | 3.60E-02 | N/A | 3.91E-03 | 3.99E-02 |
| Subsurface Soil | Subsurface Soil | On-Site | Benzo(a)anthracene | 4.04E-07 | N/A | 3.51E-07 | 7.6E-07 | Arsenic | skin | 1.60E-01 | N/A | 1.72E-02 | 1.77E-01 |
| | | | Benzo(a)pyrene | 5.50E-06 | N/A | 6.21E-06 | 1.2E-05 | | | | | | |
| | | | Benzo(b)fluoranthene | 1.04E-06 | N/A | 9.07E-07 | 1.9E-06 | | | | | | |
| | | | Dibenz(a,h)anthracene | 7.05E-07 | N/A | 6.13E-07 | 1.3E-06 | | | | | | |
| | | | Indeno(1,2,3-cd)pyrene | 2.45E-07 | N/A | 2.12E-07 | 4.6E-07 | | | | | | |
| | | | Arochlor 1248 | 5.41E-05 | N/A | 2.74E-05 | 8.2E-05 | | | | | | |
| | | | Arsenic | 2.01E-06 | N/A | 2.21E-07 | 2.2E-06 | | | | | | |
| | | | (total) | 6.40E-05 | | 3.59E-05 | 1.0E-04 | (total) | | 1.60E-01 | N/A | 1.72E-02 | 1.77E-01 |
| Groundwater | Groundwater | On-site | 1,1-Dichloroethene | 1.67E-06 | N/A | N/A | 1.7E-06 | 1,1,1-Trichloroethane | N/A | 6.30E-04 | N/A | N/A | 6.30E-04 |
| | | | Benzene | 4.43E-08 | N/A | N/A | 4.4E-08 | 1,1-Dichloroethene | liver | 1.10E-02 | N/A | N/A | 1.10E-02 |
| | | | Chloroethane | 4.59E-09 | N/A | N/A | 4.6E-09 | 1,2-Dichloroethene (tot) | liver | 9.80E-01 | N/A | N/A | 9.80E-01 |
| | | | Chloromethane | 1.30E-08 | N/A | N/A | 1.3E-08 | Trichloroethene | N/A | 2.20E-02 | N/A | N/A | 2.20E-02 |
| | | | Trichloroethene | 4.19E-08 | N/A | N/A | 4.2E-08 | Vinyl Chloride | liver | 7.40E-02 | N/A | N/A | 7.40E-02 |
| | | | Vinyl Chloride | 4.56E-06 | N/A | N/A | 4.6E-06 | Benzene | N/A | 9.40E-03 | N/A | N/A | 9.40E-03 |
| | | | 1,4-Dichlorobenzene | 1.16E-08 | N/A | N/A | 1.2E-08 | Chloroethane | N/A | 1.40E-04 | N/A | N/A | 1.40E-04 |
| | | | Aldrin | 9.12E-09 | N/A | N/A | 9.1E-09 | Toluene | liver | 1.50E-03 | N/A | N/A | 1.50E-03 |
| | | | Arochlor 1248 | 1.69E-07 | N/A | N/A | 1.7E-07 | Xylenes | liver | 1.50E-03 | N/A | N/A | 1.50E-03 |
| | | | Arsenic | 2.66E-06 | N/A | N/A | 2.7E-06 | Naphthalene | blood | 1.10E-03 | N/A | N/A | 1.10E-03 |
| | | | | | | | | Aldrin | liver | 6.30E-04 | N/A | N/A | 6.30E-04 |
| | | | | | | | | Arsenic | skin | 2.10E-01 | N/A | N/A | 2.10E-01 |
| | | | | | | | | Cadmium | kidney | 1.30E-01 | N/A | N/A | 1.30E-01 |
| | | | | | | | | Manganese | CNS | 4.00E-02 | N/A | N/A | 4.00E-02 |
| | | | (total) | 9.18E-06 | N/A | N/A | 9.2E-06 | (total) | | 1.48E+00 | N/A | N/A | 1.48E+00 |

| | |
|---|---|
| Total Risk Across Surface Soil | 1.2E-05 |
| Total Risk Across Subsurface Soil | 1.0E-04 |
| Total Risk Across Groundwater | 9.2E-06 |
| Total Risk Across All Media and All Exposure Routes | 1.2E-04 |

| | |
|---|---|
| Total Hazard Index Across All Media and All Exposure Routes | 1.70E+00 |

| | |
|---|---|
| Total Skin HI = | 4.27E-01 |
| Total Liver HI= | 1.07E+00 |
| Total Kidney HI = | 1.30E-01 |
| Total Blood HI = | 1.10E-03 |
| Total CNS HI = | 4.00E-02 |

**TABLE 15**
**TOWN OF SALINA LANDFILL**
**HAZARD CHARACTERIZATION FOR SOIL INVERTEBRATES**

| ANALYTE | Earthworm TRV [1] | Soil Concentrations (dry weight) | | Hazard Quotients | |
|---|---|---|---|---|---|
| | | Maximum | Mean | Maximum | Mean |
| **VOCs** | (mg/kg, dw) | (mg/kg, dw) | (mg/kg, dw) | | |
| Acetone | --- | ND | ND | ND | ND |
| Bromoform | --- | 12 | 11.14 | --- | --- |
| Chlorobenzene | 40 | ND | ND | ND | ND |
| **SVOCs** | | | | | |
| 2-Methylnaphthalene | --- | 540 | 424 | --- | --- |
| 4-Chloroaniline | --- | 210 | 360 | --- | --- |
| Acenaphthene | --- | 1000 | 412 | --- | --- |
| Acenaphthylene | --- | 1800 | 482 | --- | --- |
| Anthracene | --- | 2500 | 673 | --- | --- |
| Benzo(a)anthracene | --- | 8800 | 1988 | --- | --- |
| Benzo(a)pyrene | --- | 8700 | 1879 | --- | --- |
| Benzo(b)fluoranthene | --- | 13900 | 3131 | --- | --- |
| Benzo(g,h,i)perylene | --- | 5200 | 1565 | --- | --- |
| Benzo(k)fluoranthene | --- | 3700 | 831 | --- | --- |
| bis(2-Ethylhexyl)phthalate | --- | 1360 | 560 | --- | --- |
| Carbazole | --- | 700 | 313 | --- | --- |
| Chrysene | --- | 9100 | 2259 | --- | --- |
| Dibenzo(a,h)anthracene | --- | 960 | 494 | --- | --- |
| Dibenzofuran | --- | 3700 | 465 | --- | --- |
| Fluoranthene | --- | 18000 | 4021 | --- | --- |
| Fluorene | 30000 | 1100 | 387 | 0.04 | 0.01 |
| Indeno(1,2,3-cd)pyrene | --- | 5000 | 1549 | --- | --- |
| Napthalene | --- | 670 | 434 | --- | --- |
| Phenanthrene | --- | 14000 | 2969 | --- | --- |
| Pyrene | --- | 16000 | 4638 | --- | --- |
| **Total PAHs** | 30000 (2) | 105560 | 28660 | **3.52** | 0.96 |
| **PCBs** | | | | | |
| Aroclor 1248 | --- | 8400 | 492 | --- | --- |
| Aroclor 1260 | --- | ND | ND | ND | ND |
| **INORGANICS** | | | | | |
| Aluminum | --- | 13000 | 7834 | --- | --- |
| Arsenic | 60 | 7.00 | 2.18 | 0.12 | 0.04 |
| Barium | --- | 530 | 115 | --- | --- |
| Beryllium | --- | 0.48 | 0.35 | --- | --- |
| Cadmium | 20 | 17.3 | 6.43 | 0.87 | 0.32 |
| **Chromium** | 0.4 | 127.1 | 47 | **317.75** | **117.97** |
| Cobalt | --- | 16.5 | 7.36 | --- | --- |
| **Copper** | 50 | 859.6 | 91 | **17.19** | **1.82** |
| Iron | --- | 19800 | 14698 | --- | --- |
| **Lead** | 500 | 1163.2 | 146 | **2.33** | 0.29 |
| Manganese | --- | 557 | 375 | --- | --- |
| **Mercury** | 0.1 | 2.60 | 0.63 | **26.00** | **6.33** |
| Nickel | 200 | 82.3 | 33 | 0.41 | 0.17 |
| Selenium | 70 | 22.8 | 12 | 0.33 | 0.17 |
| Silver | --- | 8.00 | 2.70 | --- | --- |
| Thallium | --- | 3.60 | 1.67 | --- | --- |
| Vanadium | --- | 22.4 | 16 | --- | --- |
| **Zinc** | 200 | 1732.6 | 219 | **8.66** | **1.10** |
| Cyanide | --- | 3.30 | 1.03 | --- | --- |

N/A = Not applicable because compound was not detected in soil.
ND = Not Detected in Soil

(1) Efroymson et al. (1997a)
(2) Value is actually the TRV for fluorene.

**TABLE 16**
**TOWN OF SALINA LANDFILL**
**FOOD CHAIN MODEL AND HAZARD QUOTIENTS FOR THE AMERICAN ROBIN**

**Maximum Contaminant Concentrations:**

| Contaminant | Earthworm Conc. | Soil Max Conc. | Water Max. Conc. | Food Ing. Rate (kg/day) | Soil Ing. Rate (kg/day) | Water Ing. Rate (L/day) | Body Weight (kg) | Area Use Factor | Calculated Dose (mg/kg BW-day, ww) | NOAEL (mg/kg BW-day, ww) | LOAEL (mg/kg BW-day, ww) | HQ NOAEL | HQ LOAEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pesticides/PCBs** | (ug/kg, ww) | (ug/kg, ww) | (ug/L) | | | | | | | | | | |
| Total PAHs | ND | 98170.8 | 10 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.00140 | 40 | 400 | 0.000035 | 0.000003 |
| Aroclor 1248 | ND | 6787 | 0.14 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.00002 | 0.18 | 1.8 | 0.0001 | 0.00001 |
| **Inorganics** | (mg/kg, ww) | (mg/kg, ww) | (ug/L) | | | | | | | | | | |
| **Aluminum** | 4.3 | 11830 | 238 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 1843 | 87.6 | 175.1 | **21.0** | **10.5** |
| Arsenic | 0.36 | 6.35 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 1.53 | 2.46 | 7.38 | 0.62 | 0.21 |
| **Barium** | ND | 488 | 77.8 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 75.7 | 20.8 | 41.7 | **3.64** | **1.82** |
| Beryllium | ND | 0.44 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.07 | --- | --- | --- | --- |
| **Cadmium** | 1.1 | 15.69 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 4.10 | 1.45 | 20 | **2.83** | 0.205 |
| **Chromium** | ND | 109 | 2.29 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 16.9 | 0.1 | 1 | **169** | **16.9** |
| **Cobalt** | ND | 14.32 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 2.22 | 0.0875 | 0.875 | **25.4** | **2.54** |
| **Copper** | 0.8 | 695 | 12.7 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 109 | 47 | 61.7 | **2.32** | **1.77** |
| Iron | 23.5 | 18216 | 702 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 2864 | --- | --- | --- | --- |
| **Lead** | 0.7 | 1010 | 5.6 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 158 | 1.13 | 11.3 | **140** | **14.0** |
| Manganese | 1.2 | 507 | 217 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 80.5 | 977 | 9770 | 0.082 | 0.0082 |
| **Mercury** | 0.05 | 2.36 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.44 | 0.0064 | 0.064 | **69.07** | **6.91** |
| Nickel | ND | 66.5 | 2.96 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 10.3 | 17.6 | 77.4 | 0.59 | 0.13 |
| **Selenium** | 0.65 | 21.43 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 4.31 | 0.4 | 0.8 | **10.8** | **5.39** |
| **Silver** | ND | 7.36 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 1.14 | 0.3 | 3 | **3.81** | 0.38 |
| Thallium | ND | 3.42 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.53 | --- | --- | --- | --- |
| **Vanadium** | ND | 20.6 | 1.8 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 3.20 | 0.15 | 1.5 | **21.3** | **2.13** |
| **Zinc** | 8.3 | 1400 | 53.1 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 230 | 14.5 | 131 | **15.9** | **1.76** |
| **Cyanide** | ND | 3.1 | 18.6 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.48 | 0.0143 | 0.143 | **33.8** | **3.38** |

**Mean Contaminant Concentrations:**

| Contaminant | Earthworm Conc. | Soil Mean Conc. | Water Mean Conc. | Food Ing. Rate (kg/day) | Soil Ing. Rate (kg/day) | Water Ing. Rate (L/day) | Body Weight (kg) | Area Use Factor | Calculated Dose (mg/kg BW-day, ww) | NOAEL (mg/kg BW-day, ww) | LOAEL (mg/kg BW-day, ww) | HQ NOAEL | HQ LOAEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganics** | (mg/kg, ww) | (mg/kg, ww) | (ug/L) | | | | | | | | | | |
| **Aluminum** | 4.3 | 7211 | 194 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 1126 | 87.6 | 175.1 | **12.85** | **6.43** |
| Barium | ND | 106 | 68.1 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 16.4 | 20.8 | 41.7 | 0.791 | 0.394 |
| **Cadmium** | 1.1 | 5.87 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 2.58 | 1.45 | 20 | **1.777** | 0.129 |
| **Chromium** | ND | 43.2 | 1.2 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 6.70 | 0.1 | 1 | **67.00** | **6.70** |
| **Cobalt** | ND | 6.79 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 1.05 | 0.0875 | 0.875 | **12.05** | **1.20** |
| Copper | 0.8 | 80.5 | 8.4 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 13.7 | 47 | 61.7 | 0.292 | 0.222 |
| **Lead** | 0.7 | 132 | 3.8 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 21.6 | 1.13 | 11.3 | **19.09** | **1.91** |
| **Mercury** | 0.05 | 0.58 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.17 | 0.0064 | 0.064 | **26.01** | **2.60** |
| **Selenium** | 0.65 | 10.9 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 2.67 | 0.4 | 0.8 | **6.69** | **3.34** |
| **Silver** | ND | 2.50 | ND | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.39 | 0.3 | 3 | **1.29** | 0.129 |
| **Vanadium** | ND | 14.5 | 1.2 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 2.25 | 0.15 | 1.5 | **14.98** | **1.50** |
| **Zinc** | 8.3 | 194 | 29.8 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 42.7 | 14.5 | 131 | **2.95** | 0.326 |
| **Cyanide** | ND | 0.96 | 11.16 | 0.117 | 0.012 | 0.0108 | 0.0773 | 1 | 0.15 | 0.0143 | 0.143 | **10.48** | **1.048** |

ND = Not Detected

**TABLE 17**
**TOWN OF SALINA LANDFILL**
**FOOD CHAIN MODEL AND HAZARD QUOTIENTS FOR THE SHORT-TAILED SHREW**

**Maximum Contaminant Concentrations:**

| Contaminant | Earthworm Conc. | Soil Max Conc. | Water Max. Conc. | Food Ing. Rate | Soil Ing. Rate | Water Ing. Rate | Body Weight | Area Use Factor | Calculated Dose | NOAEL | LOAEL | HQ NOAEL | HQ LOAEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pesticides/PCBs** | (ug/kg, ww) | (ug/kg, ww) | (ug/L) | (kg/day) | (kg/day) | (L/day) | (kg) | | (mg/kg BW-day, ww) | (mg/kg BW-day, ww) | (mg/kg BW-day, ww) | | |
| Total PAHs | ND | 98171 | 10 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.00200 | 1 | 10 | 0.002 | 0.0002 |
| Aroclor 1248 | ND | 6787 | 0.14 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.00003 | 0.01 | 0.1 | 0.003 | 0.0003 |
| **Inorganics** | (mg/kg, ww) | (mg/kg, ww) | (ug/L) | | | | | | | | | | |
| **Aluminum** | 4.3 | 11830 | 238 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 818 | 1.93 | 19.3 | **423.7** | **42.37** |
| **Arsenic** | 0.36 | 6.35 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.7 | 0.126 | 1.26 | **5.24** | 0.52 |
| **Barium** | ND | 488 | 77.8 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 33.6 | 5.1 | 19.8 | **6.59** | **1.70** |
| Beryllium | ND | 0.44 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.03 | 0.66 | 6.6 | 0.045 | 0.0045 |
| **Cadmium** | 1.1 | 15.7 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.8 | 1.0 | 10 | **1.76** | 0.176 |
| Chromium | ND | 109 | 2.29 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 7.5 | 2737 | 27370 | 0.0027 | 0.00027 |
| Cobalt | ND | 14.3 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.0 | 3 | 30 | 0.33 | 0.033 |
| **Copper** | 0.8 | 695 | 12.7 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 48.4 | 11.7 | 15.1 | **4.14** | **3.20** |
| Iron | 23.5 | 18216 | 702 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1270 | --- | --- | --- | --- |
| **Lead** | 0.7 | 1010 | 5.6 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 70 | 8.0 | 80 | **8.75** | 0.875 |
| Manganese | 1.2 | 507 | 217 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 35.7 | 88 | 284 | 0.41 | 0.126 |
| **Mercury** | 0.05 | 2.36 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.2 | 0.032 | 0.16 | **6.05** | **1.210** |
| Nickel | ND | 66.5 | 2.96 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 4.6 | 40 | 80 | 0.115 | 0.057 |
| **Selenium** | 0.65 | 21.4 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.9 | 0.2 | 0.33 | **9.39** | **5.69** |
| **Silver** | ND | 7.36 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.5 | 0.1 | 1.0 | **5.07** | 0.507 |
| **Thallium** | ND | 3.42 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.24 | 0.0074 | 0.074 | **31.84** | **3.18** |
| **Vanadium** | ND | 20.6 | 1.8 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.4 | 0.21 | 2.1 | **6.76** | 0.676 |
| Zinc | 8.3 | 1400 | 53.1 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 102 | 160 | 320 | 0.64 | 0.32 |
| **Cyanide** | ND | 3.1 | 18.6 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.2 | 0.023 | 0.23 | **9.45** | 0.945 |

**Mean Contaminant Concentrations:**

| Contaminant | Earthworm Conc. | Soil Mean Conc. | Water Mean Conc. | Food Ing. Rate | Soil Ing. Rate | Water Ing. Rate | Body Weight | Area Use Factor | Calculated Dose | NOAEL | LOAEL | HQ NOAEL | HQ LOAEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganics** | (mg/kg, ww) | (mg/kg, ww) | (ug/L) | (kg/day) | (kg/day) | (L/day) | (kg) | | (mg/kg BW-day, ww) | (mg/kg BW-day, ww) | (mg/kg BW-day, ww) | | |
| **Aluminum** | 4.3 | 7211 | 194 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 500 | 1.93 | 19.3 | **258.83** | **25.88** |
| **Arsenic** | 0.36 | 1.98 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.36 | 0.126 | 1.26 | **2.85** | 0.29 |
| **Barium** | ND | 106 | 68.1 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 7.31 | 5.1 | 19.8 | **1.43** | 0.37 |
| **Cadmium** | 1.1 | 5.87 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.09 | 1.0 | 10 | **1.09** | 0.11 |
| Copper | 0.8 | 80.50 | 8.4 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 6 | 11.7 | 15.1 | 0.52 | 0.40 |
| **Lead** | 0.7 | 132 | 3.8 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 9.54 | 8.0 | 80 | **1.19** | 0.12 |
| **Mercury** | 0.05 | 0.58 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.07 | 0.032 | 0.16 | **2.23** | 0.45 |
| **Selenium** | 0.65 | 10.89 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.15 | 0.2 | 0.33 | **5.77** | **3.49** |
| **Silver** | ND | 2.50 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.17 | 0.1 | 1.0 | **1.72** | 0.17 |
| **Thallium** | ND | 1.55 | ND | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.11 | 0.0074 | 0.074 | **14.43** | **1.44** |
| **Vanadium** | ND | 14.47 | 1.2 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 1.00 | 0.21 | 2.1 | **4.75** | 0.47 |
| **Cyanide** | ND | 0.96 | 11.16 | 0.0093 | 0.001034 | 0.003 | 0.015 | 1 | 0.07 | 0.023 | 0.23 | **2.96** | 0.30 |

ND = Not Detected

## Table 18. Cost Estimate Input Data for Selected Remedy
## Alternative 5

| | ITEM DESCRIPTION | | COST |
|---|---|---|---|
| | Earthwork & Drainage Parcel 1 | see note 7 | $ 521,000 |
| | Landfill Closure Parcel 2 | see note 7 | $ 4,885,000 |
| | Landfill Closure Parcel 3 | see note 7 | $ 2,464,000 |
| | Landfill Closure Parcels 4 | see note 7 | $ 1,397,000 |
| | Landfill Closure Parcels 5 | see note 7 | $ 1,409,000 |
| | Landfill Closure Parcel 6 By Relocating Waste | see note 7 | $ 2,072,000 |
| | Wetland Mitigation, Leachate Collection Trench and WWTP | see note 7 | $ 6,032,000 |
| | **SUBTOTAL** | | **$ 18,780,000** |
| 10% | General Conditions (if not included above) | | $ 1,878,000 |
| 5% | Design Contingencies (if not included in above) | | $ 1,032,000 |
| | **TOTAL CONSTRUCTION ESTIMATE** | | **$ 21,690,000** |
| | **Operations & Monitoring (Annual Cost)** | **$ 265,936** | |
| | **Present Worth of O&M Annual Costs Assuming 30 Years and 7% Discount Rate** | | **$ 3,300,000** |
| | **TOTAL PRESENT WORTH ALTERNATIVE 5** | | **$ 24,990,000** |

**Assumptions:**

1 Allowance for Hazardous Material Disposal of $227,760 (assume 1% of total volume of material moved)
2 Does not include any utility relocation costs
3 Assumes 5% Contingency
4 Does not include any escalation for extended construction schedule
5 Reduced O&M Costs due to lower flows compared to Alternative 4
6 Reduced Capital Costs for WWTP not shown but likely reduced due to lower flows compared to Alternat
7 See Figure 9 for location of Parcels

# APPENDIX III

## Administrative Record Index

# Administrative Record Index
# Town of Salina Landfill Site

(New York State Inactive Hazardous Waste Disposal Site #734036)

Document*

*Administrative Record Index*, Town of Salina Record of Decision (March 2007)

*Geotechnical Report,* Location of Leachate/Groundwater Pre-Treatment facility, Town of Salina Landfill (September 2009)

*Supplemental Sediment Sampling Letter Report,* Town of Salina Landfill (October 2009)

*Monitoring Well Installation and Sampling Report*, Town of Salina Landfill (November 2009)

*Cost Estimates to Relocate Waste Vs. Cap In Place*, Town of Salina Landfill (December 2009)

*Source Removal*, VOC-Contaminated Soil/Landfill Waste Excavation adjacent to MW-10 and Disposal, Town of Salina Landfill (March 2010)

*Proposed Plan* (May 2010)

*Fact Sheets of Public Meeting and Opportunity to Comment* (May 2010)

*Documentation and Transcript of Meeting* (Attached to Amended Record of Decision) (June 2010)

*Amended Record of Decision and Responses to Comments – Responsiveness Summary* (September 30, 2010)

*Data are summarized in several of these documents. The actual data, QA/QC, chain of custody, etc. are compiled at NYSDEC office locations and can be made available at the NYSDEC Region 7 office upon request. Bibliographies in these documents and in references cited in this Amended Record of Decision are incorporated by reference in the Administrative Record. Many of the documents referenced in the bibliographies are publicly available and readily accessible. Most of the guidance documents referenced in the bibliographies are available on USEPA and NYSDEC websites. If copies of the referenced documents cannot be located, contact the NYSDEC project manager (John Grathwol, 518-402-9775). Copies of administrative record documents that are not available in the administrative record files in the NYSDEC Region 7 office or at Atlantic States Legal Foundation can be made available at one of those locations upon request.

# APPENDIX IV

**Statement of Findings:**
**Wetlands & Floodplains**

# Appendix IV

# Record of Decision

# Salina Landfill Sub-Site of the Onondaga Lake Superfund Site

# Statement of Findings: Floodplains and Wetlands

**Need to Affect Floodplains and Wetlands**

Wetlands on or adjacent to the site can be seen in Figure 1. Wetland 1 is a shallow emergent marsh located on the western edge of the project area and straddles a drainage ditch which discharges to Ley Creek. Wetland 2 is a narrow wetland dominated by giant reed located on the northern edge of the project, adjacent to the New York State Thruway. Wetland 4 is a small wetland located adjacent to the Old Ley Creek Channel. Wetland 5 is a shallow emergent march located along the banks of Ley Creek.[1]

As discussed in the Feasibility Study (FS) report, an examination of applicable floodplains mapping indicates that portions of the Site, including some disposal areas, are located inside of the 500-year floodplain as designated by the Federal Emergency Management Agency.

Based upon the human health and ecological risk assessments and the fact that groundwater containing hazardous substances in excess of groundwater standards discharge unabated into Onondaga Lake, NYSDEC and EPA have determined that the Site poses an unacceptable threat which warrants remediation.

The response action described in this Record of Decision is necessary to address hazardous waste materials in the Town of Salina Landfill and the contaminated groundwater associated with the leaching of these materials. The response action will achieve the following remedial action objectives established for the Site:

- Reduce/eliminate contaminant leaching to ground water;
- Control surface water runoff and erosion;
- Prevent the off-Site migration of contaminated groundwater and leachate;

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[1] Wetland 3 consists of a monotypic stand of giant reeds located on top of the existing landfill cover material. Inspections conducted at the Site have determined that this area does not have the characteristics of a wetland (hydric soils, vegetation, and hydrology).

- Restore groundwater quality to levels which meet state and federal drinking-water standards;

- Prevent human contact with contaminated soils, sediment and ground water; and

- Minimize exposure of aquatic species and wildlife to contaminants in surface water, sediments, and soils.

The major components of the selected remedy include:

- Construction of groundwater/leachate collection trenches north and south of Ley Creek;

- Excavation of contaminated sediments in the western drainage ditch;

- Lining the drainage ditches located along the northern and eastern borders of the Site;

- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill area north of Ley Creek, as appropriate;

- Construction of 6 New York State Codes, Rules and Regulations (NYCRR) Part 360 caps over the landfill area north and south of Ley Creek;

- Engineered drainage controls and fencing;

- Installation of an on-Site, 150,000-gallon storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;

- Treatment of the collected contaminated groundwater/leachate at an on-Site treatment plant;

- Discharge of treated effluent to Ley Creek;

- Institutional controls;

- Operation and maintenance of the on-Site treatment plant and maintenance of the cap and groundwater/leachate collection trench(es); and

- Long-term monitoring.

**Effects of Proposed Action on the Natural and Beneficial Values of Floodplains and Wetlands**

Under the selected remedy, sediments in the western drainage ditch will be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek. Given the proximity of this wetland (Wetland 1) to Ley Creek, its primary function is likely to be to provide flood control.

The drainage ditches located along the northern and eastern borders of the Site will be lined with a low permeability material. The liner will be covered with either riprap or soil, depending on the expected surface water velocity. The primary function of this wetland (Wetland 2) appears to be to collect and convey stormwater runoff from the New York State Thruway and adjacent upland areas. These drainage ditches will be designed so as to allow surface water runoff to flow through the Site without coming in contact with contaminated sediments.

The consolidation of excavated material in the landfill and the construction of the landfill multi-media caps would alter the topography of the landfill and could potentially increase soil volume in the floodplain. However, part of the banks of landfill have steep slopes and may need to be regraded to meet maximum slope requirements under 6 NYCRR Part 360. This would result in the removal of soil volume in the floodplain, which may offset an increase in soil volume resulting from the consolidation of materials and the placement of the landfill caps. The effects of the consolidation of materials and the construction of the caps on the flood carrying potential of the floodplain will need to be evaluated during the remedial design.

**Compliance with Applicable State or Local Wetland and Floodplain Protection Standards**

Consistent with 40 CFR Part 6 Appendix A[2], "Statement of Procedures on Floodplains Management & Wetlands Protection," all Site wetlands will be delineated consistent with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989). In accordance with 40 CFR Part 6, Appendix A, Executive Order 11990, "Protection of Wetlands," and EPA's 1985 Statement of "Policy on Floodplains/Wetlands Assessments for CERCLA Actions," a wetlands assessment will be developed for project area wetlands which will be impacted by remedial activities.

The primary New York State standard for protection of freshwater wetlands applicable to the remediation is Environmental Conservation Law, Article 24, Title 7. For freshwater

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2 EPA has proposed regulations (71 Fed. Reg. 76082, 76086 (December 19, 2006)) that would rescind Appendix A and replace it with a general procedural requirement to determine the applicability, among other things, of Executive Orders 11988 and 11990. For purposes of this ROD, assessment of floodplain management and wetlands protection were made pursuant to Appendix A which remained in effect as of the date of the ROD.

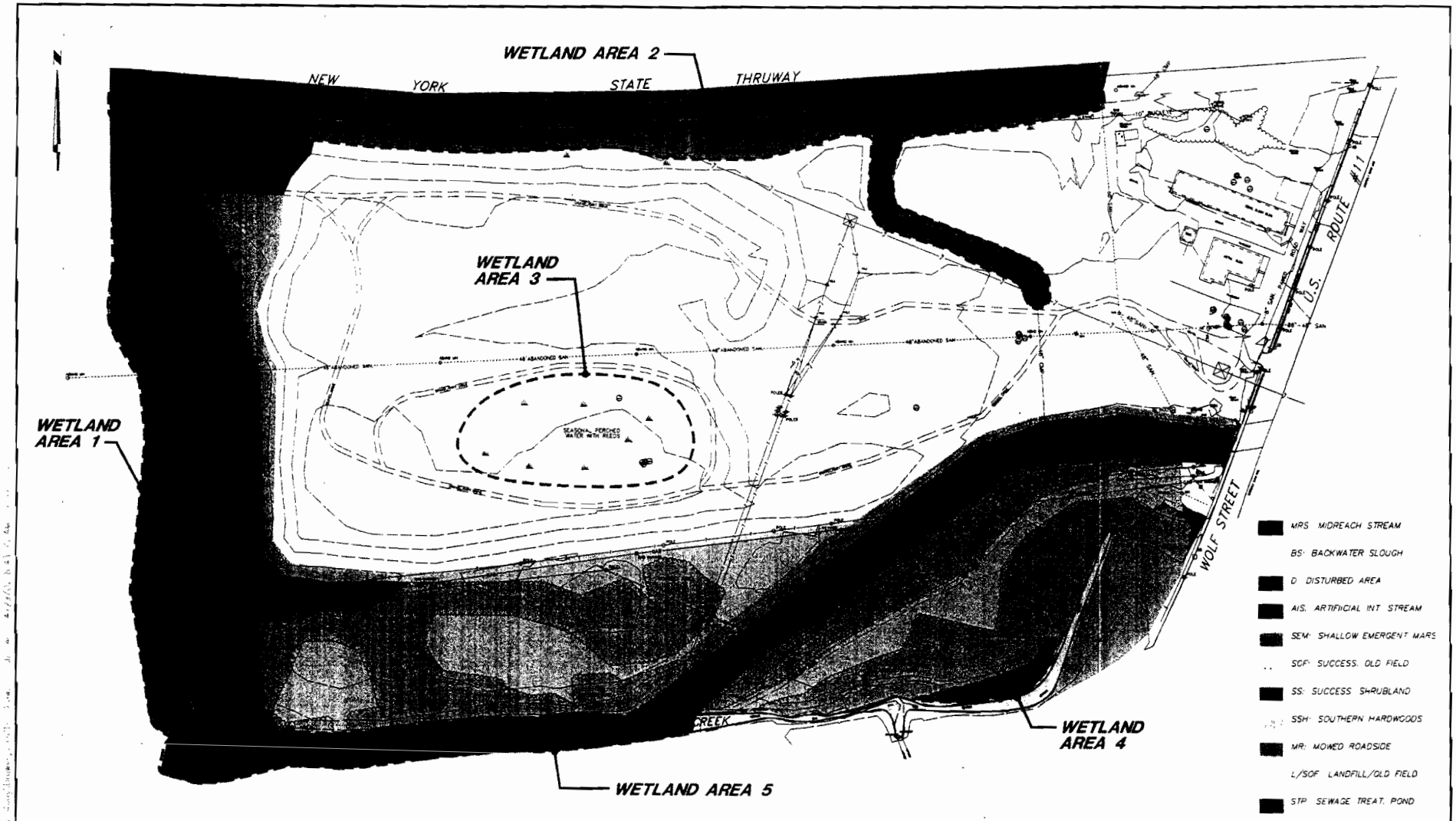
wetlands, 6 NYCRR Parts 662 through 665 regulate activities conducted in or adjacent to regulated wetlands. The selected remedy will comply with this standard.

Since remedial activities will take place within the 100- or 500-year floodplain, a floodplain assessment consistent with Executive Order 11988: "Floodplain Management," and 40 CFR Part 6, Appendix A will be performed to minimize or avoid the adverse effects of a 500-year event, as well as to protect against the spread of contaminants and the long-term disabling of remedial treatment systems due to flooding events. In addition, the substantive requirements of Title 6 of NYCRR Part 502, Floodplain Management Criteria for State Projects will also need to be met.

**Measures to Mitigate Potential Harm to the Floodplains and Wetlands**

Implementation of the selected remedy will include the excavation of sediments, soils and wastes during construction of groundwater/leachate collection trenches north and south of Ley Creek and excavation of contaminated sediments in the western drainage ditch. These actions will result in temporary physical disturbances to the wetlands and floodplains. Measures to minimize potential adverse impacts that cannot be avoided will be evaluated as part of, and incorporated into, the remedial design. Common practices include field demarcation of wetland/floodplain areas and implementation of soil/sediment erosion and/or resuspension control measures (e.g., installation of silt fencing, hay bales, hay/straw mulch, jute matting) to minimize impacts from construction activities. In addition, the FS Report notes that western drainage ditch receives surface water runoff from the western portion of the Site as well as from the eastern area of the Onondaga County Resource Recovery Agency transfer station to the west of the Wetland 1. Surface water drainage to this wetland from the Site will be evaluated, and if needed, incorporated into the remedial design, so as to maintain desired water levels for the wetland.

The selected remedy also includes lining of drainage ditches located along the eastern and northern borders of the site. This action will likely result in the loss of wetlands in or adjacent to these ditches, and mitigation for this loss will be necessary.




GRAPHIC SCALE

( IN FEET )

CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

Lawler, Matusky & Skelly Engineers, LLP
Environmental Science & Engineering Consultants

# FIGURE 1
## ECOLOGICAL COMMUNITY MAP
## TOWN OF SALINA LANDFILL

# APPENDIX V

## Responsiveness Summary

## INTRODUCTION

This Responsiveness Summary provides a summary of citizens' comments and concerns received during the public comment period related to the Salina Landfill Sub-Site (Site), Remedial Investigation and Feasibility Study (RI/FS) and Proposed Plans, and the responses of the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (EPA) to those comments and concerns. All comments summarized in this document have been considered in NYSDEC and EPA's final decision in the selection of a remedy to address the contamination at the Site.

## SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The 2001 RI report, 2002 FS report, 2003 Proposed Plan, 2006 revised Proposed Plan, 2009 *Geotechnical Report, Monitoring Well Installation and Sampling Report, Cost Estimates to Relocate Waste Vs. Cap In Place*, and 2010 Proposed Plan for Remedy Modification for the Site were made available to the public in both the Administrative Record and information repositories maintained at NYSDEC's Albany and Syracuse offices; Salina Town Hall, 201 School Road, Liverpool, New York; Salina Free Library, 100 Belmont Street, Syracuse, New York; Onondaga County Public Library, Syracuse Branch at the Galleries, 447 South Salina Street, Syracuse New York; and the Atlantic States Legal Foundation, 658 West Onondaga Street, Syracuse, New York.

In May 2010, fact Sheets were sent to over 450 addressees on the Site mailing list, articles appeared in the local newspapers, and selected mailings of the Proposed Plan for Remedy Modification were made to local officials and interested parties. The mailing list includes local citizens, businesses, local, state and federal governmental agencies, media, and environmental organizations. A notice of availability of the above-referenced documents was published in the *Post Standard* on May 21, 2010, the start of the public comment period. A public meeting was held at the Salina Town Hall on June 7, 2010. The meeting included presentations by NYSDEC officials on the results of the RI/FS and discussions of the preferred remedy. The power point slide presentation from the public meeting is available on the NYSDEC's public website. It can be accessed at the following link: http://www.dec.ny.gov/chemical/37558.html. The meeting provided an opportunity for the public to ask questions, discuss their concerns, and provide comment on the Proposed Plan. Approximately 40 people attended the meeting. The public comment period ended on June 21, 2010.

## SUMMARY OF COMMENTS AND RESPONSES

Attached to this Responsiveness Summary is Appendix V-a, a transcript of the public meeting for the Proposed Plan for the amendment.

Responses to the comments received at the public meeting and in writing during the public comment period are provided below.

**Comment #1:** NYSDEC advised the Onondaga Nation that since the Lake Bottom subsite does not allow for an influx of contaminants of concern, the remedy for the Salina Landfill subsite will be

designed to "break the soil to groundwater to surface water pathway." The Nation suggested that this statement be included in the Record of Decision (ROD).

**Response #1:** The Department and USEPA concur that "Break the soil to groundwater to surface water pathway" is the design objective for all inactive hazardous waste sites. In March 2010, the Department performed a removal action of soils heavily contaminated with VOCs. It is hoped that the source of VOC contamination on site was removed. Therefore, the soil to groundwater to surface water pathway may no longer apply. However, if there is a soil to groundwater to surface water pathway relative to this site, the remedy will address it.

**Comment #2:** The Onondaga Nation noted that the 2007 ROD and the Proposed Plan for the amendment presume that the reasonable future land use will be industrial. The Nation is concerned that the appropriate politicians and land managers/decision makers responsible for designating recommended future land use may not have been appropriately advised on options for future land use.

**Response #2:** A component of the selected remedy is to relocate and to consolidate landfill waste to minimize the footprint of the original site. While NYSDEC and EPA are not aware of any plans by the Town of Salina to change the site's land use, following the reduction of the footprint of the waste, it is possible that the zoning may be changed. The remedy will, however, be protective for other land uses, such as commercial or recreational. It should be noted that as part of the five-year review process, EPA will assess the protectiveness of the remedy every five years.

**Comment #3:** The Onondaga Nation noted that the Baseline Human Health Risk Assessment (BHHRA) does not include future traditional subsistence or current subsistence use of resources and many of the cleanup goals are not protective of subsistence users. The Nation recommends that the entire BHHRA section be revised, complete with Nation-specific exposure factors and durations of exposure, once the future land use has been determined. The Nation also notes that if the land use should change, the BHHRA should be revised, as well

**Response #3:** The BHHRA estimates the human health and ecological risks which could result from the contamination at the Site if no remedial actions are taken. Since the land use for the area associated with the Town of Salina Landfill Subsite is identified as industrial, the risk assessment conducted as part of the 1999 RI/FS evaluated exposures consistent with this land use, namely current and potential future trespassers and construction workers. While NYSDEC and EPA are not aware of any plans by the Town of Salina to change the site's land use, following the reduction of the footprint of the waste, it is possible that the zoning may be changed. The remedy will, however, be protective for other land uses, such as commercial or recreational. It should be noted that as part of the five-year review process, EPA will assess the protectiveness of the remedy every five years.

**Comment #4:** The Onondaga Nation noted that the Proposed Plan for the amendment indicates that the site is designated a Class 2 Inactive Hazardous Disposal Waste Site by NYSDEC (New York Registry No. 7-34-036). The Nation requested that this designation be defined and that the history and rationale for this designation be described.

**Response #4:** As defined in Section 375-1.2 of 6NYCRR, an inactive hazardous waste disposal site means any area or structure used for the long-term storage or final placement of hazardous waste including, but not limited to, dumps, landfills, lagoons and artificial treatment ponds, as to which area or structure no permit or authorization issued by NYSDEC or a federal agency for the disposal of hazardous waste was in effect after the effective date of this title and any inactive area or structure on the National Priorities List. A Class 2 inactive hazardous waste disposal site is one at which contamination constitutes a significant threat to public health and/or the environment.

**Comment #5:** The Onondaga Nation noted that the Proposed Plan for the amendment states that Ley Creek, a Class B stream, runs through the approximate eastern half of the Site and along the southern border of the approximate western half of the Site. The Nation believes that this designation is a consequence of contamination not being cleaned up prior to its designation under the Clean Water Act. This designation gives the false impression that this designation is now a design goal, when in reality, the goal should be to return the stream to Class A (or AA).

**Response #5:** One of the primary objectives of the remedy is to prevent the migration of contamination to surface water. This will be achieved through excavating wastes located south of Ley Creek and elsewhere on the site, consolidating those wastes on the landfill area north of Ley Creek capping the consolidated wastes and contaminated groundwater and leachate collection and treatment. The extent of the remedy is not influenced by the stream class designation.

**Comment #6:** The Onondaga Nation noted that the Proposed Plan for the amendment states that the sediments, surface waters, and banks of Ley Creek under and downstream of the Route 11 Bridge are a separate Class 2 New York State inactive hazardous waste disposal site known as the Lower Ley Creek site. The sediments, surface waters, and banks of the Old Ley Creek Channel (OLCC) are also a separate Class 2 New York State inactive hazardous waste disposal site known as the OLCC site. Further investigation of both the Lower Ley Creek and OLCC sites is necessary. The Nation asked for an explanation as to why the site has been balkanized in this manner.

**Response #6:** The Salina Landfill, OLCC, and Lower Ley Creek sites have been defined as discrete sites to facilitate their investigation and remediation. NYSDEC and USEPA continue to coordinate the remedial activities at these adjacent sites and will insure that the remedies for these sites are protective of human health and the environment.

**Comment #7:** The Onondaga Nation noted that the Proposed Plan for the amendment states that the results of the risk assessment indicate that the estimated excess cancer risks for the child trespasser (considering exposures to surface soil and leachate) in both the current and future land-use scenarios were $1.4 \times 10^{-4}$. This value represents the upperbound of EPA's acceptable risk range. Had a summation of hazard indices (HIs) been employed that sums over all contaminants of concern released from all media, along all pathways, the estimation of risk would have been much greater. The Nation notes that the exposure to surface water, sediments, and flora and fauna that rely on these two media were omitted from the assessment because they are considered to be in a separate subsite, meaning that the BHHRA does not adequately assess risk from this subsite. Had Nation-specific risk

factors been employed, the estimate of risk would have been even greater, requiring more stringent and more expensive clean-up measures.

**Response #7:** Non-cancer HIs were summed in the original HHRA. Recalculating the number does not change the need for action, nor the proposed action. As was noted in a previous response, the baseline human health risk assessment estimates the human health and ecological risks which could result from the contamination at the Site if no remedial actions were taken.

**Comment #8:** The Onondaga Nation noted that the Proposed Plan for the amendment states that Ley Creek surface water and sediments were not evaluated in the BHHRA and ecological risk assessments due to the presence of upstream sources of contamination. It further states that upstream contaminated surface water and sediments in Ley Creek are currently being investigated under an RI/FS for the Inland Fisher Guide Facility and Ley Creek Deferred Media subsite of the Onondaga Lake site and the sediments, surface waters, and banks of Ley Creek under and downstream of the Route 11 Bridge, as well as the sediments, surface waters, and banks of the OLCC, are being addressed as two separate subsites.

This approach is inconsistent with standard practices of risk assessment as described in the National Oil and Hazardous Substances Pollution Contingency Plan and Risk Assessment Guidance for Superfund (RAGS). As described elsewhere herein, the assessed risk which omits the surface water and sediments pathways, exceeds acceptable levels of risk when employing exposure factors for members of the general public—not subsistence users.

Finally, the source of contamination does not affect the risk to the given receptor (*i.e.,* the receptor does not care where it received it dose from). It appears that NYSDEC is balkanizing the Town of Salina Landfill Subsite based on attribution.

**Response #8:** The BHHRA and ecological risk assessment for this subsite have been and will be performed at the other subsites of the Onondaga Lake site to determine the risks which would result from the contamination at each subsite if no remedial actions are taken. It should be noted that performing risk assessments for each subsite presents a more conservative assessments of risk, rather than an overarching assessment of risk for the Site in its entirety. Each risk assessment is being conducted following national and regional guidance and policy consistent with the NCP and RAGS.

For the Town of Salina Landfill Subsite, the BHHRA was developed with consideration of site-specific information associated with land use and exposure scenarios. The risk assessment supported the need for remedial action at this subsite.

**Comment #9:** The Onondaga Nation noted that the Proposed Plan for the amendment states that not only are a landfill cap, measures to control landfill leachate, source-area groundwater control to contain the plume, and institutional controls to supplement engineering controls consistent with the Presumptive Remedy for CERCLA Municipal Landfill Sites, but the cost of complete excavation and removal of the landfilled wastes would be an order-of-magnitude greater than the remedial alternatives that were considered. It should also be noted that full removal of the waste would be

permanent and would allow for the restoration of the property for unrestricted use. The commentor stated that cost, not implementability, is the only restriction for the full removal of the waste.

**Response #9:** While the full removal of the waste would be permanent and would allow for the restoration of the property for unrestricted use, the complete excavation and removal of the landfilled wastes both north and south of Ley Creek was not considered to be a viable alternative and was, therefore, eliminated from further consideration.

The reference to implementability has been removed from this sentence.

**Comment #10:** A commentor notes that the Proposed Plan for the amendment states that NYSDEC will work closely with the Town in designing a cost-effective remedy and, under a State Assistance Contract with the Town. Here cost has been admittedly removed from the NCP selection process.

**Response #10:** Costs associated with each alternative is only one of nine criteria considered during the evaluation of each alternative.

**Comment #11:** There were several comments on the projected cost of the Remedial Action, whether or not the project would be funded by the Department, what is the Department's reimbursement rate, and when the project will begin.

**Response #11:** The entire remedy will cost an estimated $24 million. The landfill capping and waste relocation phase of the project will cost an estimated $20 million. The Department began the funding process by sending a State Assistance Contract to the Town to sign. The Department plans to reimburse the Town for 75% of the eligible Remedial Design and Remedial Action costs. In September 2010, the Town advertised for bids for the landfill capping and waste relocation phase of the project. This work is scheduled to begin in fall 2010.

# APPENDIX V-a

# TRANSCRIPT OF THE PUBLIC MEETING FOR THE PROPOSED PLAN

STATE OF NEW YORK

TOWN OF SALINA

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In the Matter of Town of Salina Landfill Site NYSDEC Site # 734036 Public Presentation and Hearing.

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Public Hearing, held at the Town of Salina Municipal Building, 201 School Road, Liverpool, New York, on Monday, 06/07/2010, before MARY AGNES DRURY, Court Reporter and Notary Public in and for the State of New York.

APPEARANCES:

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John Grathwol
Jack Aversa
Margaret Sheen, Esq.

CLOUGH HARBOUR & ASSOCIATES:

Chris Burns
Danielle Benati

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

Mark Granger

FOR THE DEPARTMENT OF HEALTH:

Richard Jones

TOWN OF SALINA:

Michael Del Vecchio, Jr.
Christopher Benz
V. James Magnarelli
Colleen A. Gunnip
Mark A. Nicotra, Town Supervisor
Jeannie Ventre, Town Clerk

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(Whereupon, the hearing commenced at 7:04 PM.)

PRELIMINARY INTRODUCTIONS

MS. CARLTON: Good evening everyone. I want to welcome everyone this evening to our meeting regarding the Salina landfill. My name is Diane Carlton, and I do citizen participation and public outreach. Before we get started this evening, I want to introduce some of the officials that are here, but some of these folks I just met this evening. For the town we have Colleen Gunnip, James Magnarelli, Chris Benz, Frank Pavia, Robert Ventre, Jeannie Ventre and Mark Nicotra, Town Supervisor. From the EPA we have Mark Granger. From Clough Harbour Associates we have Chris Burns and Jack Aversa. And from the DEC we have John Grathwol and myself, Diane Carlton, and I see Margaret Sheen is over there from our law office. And DOH, last but not least, Richard Jones.

And with that, just a couple of ground rules. I know this is a very small audience, but normally we go through the presentations and then we open it up to questions and answers. And if there was a big audience here, I'd give you all the rules and

regulations about letting your neighbors speak first, but I don't think I have to do that, this looks like a very good audience. So without further ado, I'll turn it over to John.

MR. GRATHWOL: Chris Burns from Clough Harbour.

MR. BURNS: Thank you, Diane. Rule number one, don't stand in front of a projector no one can see anything.

I think most folks know about the landfill project talk. We'll talk about the ROD that was published in 2007. ROD is Record of Decision, that's the remedial alternative selected for the site. Since 2007 we've done a number of predesign studies and that has led to a revised plan. We're also going to hear from DEC, they have staked out the source removal action just this spring. And we'll come in and talk about how the ROD and the Record of Decision is being amended currently, and there will be a statement from DEC and EPA towards the end, and the Town Board would also like to make a statement for the record, and

then we'll open it up for questions and answers.

So next slide, please. All right. So the landfill, according to records, started accepting waste in the early 60's, I think the 2007 ROD listed it as 1962. The landfill operated continuously until 1974. At that point the town was ordered to close the landfill, completely stop accepting waste '74/'75. And then in 1982 under approval of the DOH at that time, a soil cover was placed over the landfill, it was a two foot layer of soil, just to obviously protect from fugitive emissions, fugitive wastes. And then really not much happened until the early 90's. In the early 90's the DEC came in with some consultants and did a series of investigation, and those investigations led to the site being listed as what's known as a class 2 inactive hazardous waste site that basically puts it on a registry of hazardous waste sites in New York State. And unfortunately, the landfill was also listed as a subsite for the Onondaga Lake National Priority website, so it made two

different lists.

In 1997/1998, the town retained C&H at the time to start doing an investigation of the property, understanding the extent of soil and groundwater contamination. Now there was a feasibility study where we looked at a number of alternatives to clean up the site, and than we ran into a hiatus there. And then in 2007 the department, the DEC and EPA jointly issued the first Record of Decision. And since 2007 we've started to do a number of what we've called predesign studies, I'll run through those here in a minute to determine the exact components of the engineering design.

And as we did those studies, and as you'll see tonight, we realize that the 2007 Record of Decision really needed to be amended. We found a number of things during the additional studies, which led us to believe that we would come up with a more cost effective remedy and one that was equally protective of the environment. That puts us basically here tonight. This is the proposed

plan. The comment period I believe will run until June 24th, so the public will have an additional two weeks to enter comments on the record. And at that point the Department and EPA will generate a response to the summary, and within 30 to 60 days issue an Amended Record of Decision for the site. So that's the schedule and a kind of nutshell history for the project.

In the 2007 Record of Decision, these are some of the key points, and not to read from the slide but quickly go through them, the landfill was generating leachate, it's basically contaminated groundwater that was entering Ley Creek, so the Record of Decision required the installation of a collection trench on the north and south sides of Ley Creek. We had to coordinate with National Grid, there is a series of overhead power lines that crisscross the site, plus an underground natural gas pipeline, so the Record of Decision required us to coordinate with National Grid and have them to have access to their infrastructure, and yet

somehow install a cap.

Related to number one, the 2007 Record of Decision then was going to take that leachate that we collected and it allowed for two options; one was to build a full scale treatment plant on site, and once the leachate was treated, discharge the treated affluent back to Ley Creek, or at the time that the town had started talks with Onondaga County, and another option that was contemplated was to build a smaller, what we call a pretreatment plant, and once that leachate was treated just a little bit, we would then send it into the county sewer system for the final treatment at metro.

And number four, most importantly with every landfill, is what's called a part 360 cap, which is what we think of a modern landfill cap, multi layers of different earthen materials and a high density polyethylene geomembrane. This is all designed to limit installation of rainwater into the landfill and then hence cut down on the amount of leachate.

There is a 48-inch culvert that goes halfway through the landfill that was going to be buried under a cap, so the ROD called for that to be slip lined or another pipe to be inserted essentially within that metal pipe. And that was again to eliminate the inflow of leachate into this pipe, and this pipe discharges directly to Ley Creek.

And then finally, there are some other drainage ditches on site. The 2007 ROD required us to line those ditches with geomembranes. So that was a snapshot of the 2007 Record of Decision.

As we started to understand how we would actually implement all of these requirements, we started to do a number of what we call predesign studies. And there's eight primary studies that we've done. A geotechnical investigation, wetland delineation, another hydrogeologic investigation, a utility investigation, and these are both overhead and underground utilities. We looked at options for waste relocation. We investigated the culvert that I just mentioned. We also did

some additional sediment sampling. And finally, the DEC did come in and implement several of the slides.

The next slide -- so for the geotech investigation, when we -- in the 2007 ROD, because we didn't include the figure here, but we initially thought that the treatment plant would go in the southwest corner of the landfill, and it's actually off the slide, it would be over this way. And as we started to think about that we said, you know, that plant is too far away from Brewerton Road, it will be too expensive to build a road, we'll build it on top of waste, that was problematic, so we started to look at these two areas closer to Brewerton Road. This is south of Ley Creek, and obviously this is north of Ley Creek. So in the northeast and the southeast corners of the landfill respectively. Now we did a number of borings, soil borings to evaluate the type of soils that we would encounter and depth to water, things that we would have to understand to be able to redesign a foundation for the treatment plant.

And I'm going to come back to this later, but essentially all of these borings started to tell us that -- particularly up in the northeast corner of the site, the amount of waste there, and we think this is probably, because it was one of the last areas to be filled, it was much thinner, and the nature of the waste was more concrete and other debris, it was less garbage, and the depth of the water was down deeper, so that started to get us thinking about moving some of that waste. And again, because if we were going to build a plant on top of the actual landfill, it was going it make for a more expensive foundation, we were going to have to worry about landfill gas and a number of issues. So the geotech investigation started to have us think about some waste relocation.

The next slide. Another part of the 2007 Record of Decision was that a wetland delineation was required. So all the blue areas on the site are all essentially the wetlands are on and abutting the landfill. And in this case, the 2010 Record of Decision

is not changing this, we still have to mitigate every acre of wetland that we impact here when we implement the remedy, we have to mitigate it or provide for new wetlands and in an equal amount. So again, I'll come back to this one, but it is to show that we had a fair amount of wetlands that we had to account for as we did the remedial design.

Another issue that came up was, as you recall and I said in the earlier slide, the 2007 Record of Decision required for leachate collection trenches, both on the north side of the creek and the south side of the creek, and this was creating some engineering issues in that we would have to build collection trenches on both sides, drill underneath the creek, connect those two. It was leading to, you know, additional costs down the road, because the more leachate we collected, the more we would have to treat later on.

So in working with the DEC, we decided to put in a number of additional wells, here are seven new wells and three surface water gauges on Ley Creek. And we can do two things with

this, we wanted to understand really very well which way groundwater was flowing, and we wanted to understand groundwater quality. And as a result of this study, we can see these are groundwater contour lines, and you see how they are all parallel here, flow is always perpendicular to the contour lines, so this told us the flow was going into Ley Creek and not necessarily Old Ley Creek, so that eliminates the need for a trench potentially along Old Ley Creek. And moreover, as we sampled the wells and got up with the groundwater quality, we found that the groundwater is not very highly contaminated here; and again, I'll come back to this, but it was helpful in understanding the quality of groundwater, the flow of groundwater, and also through the additional borings we got additional information on the thickness of waste and the type of waste on that southeast corner of the land.

Next slide. The utility investigation, as I mentioned, we had a number of utilities. This is a 30-inch high pressure underground

natural gas main. This is a subtransmission line, another subtransmission line. The third set of transmission lines, and then these are transmission power lines, high voltage transmission lines. So we needed to understand a number of things here. We needed to know how deep each of those underground gas pipelines were. And oh, I guess I should mention there is a Buckeye petroleum gas -- or liquid petroleum pipeline up here, and two underground gas mains, and three sets of utilities. So we needed to know the condition of the poles holding up the utilities, and we needed to understand how high the wires were above the landfill basically. After we put a cap on it, we're adding height to the existing surface and reducing the clearance to the wires, and we wanted to know the depth of the pipes, because each of the utility companies have certain maximum thickness of cover that they will allow over the pipe. Put too much cover over the type of the pipe, it could damage it. So we did various utility surveys along the Buckeye petroleum pipeline and the

PRESENTATION

National Grid utility corridors.

Next. Again as I mentioned, we started to think as we got information about the type of waste and the depth and the groundwater and the thickness of waste, that maybe we can start to consolidate some of the footprint of the landfill. You know, essentially the area in green is almost all waste, it's kind of an odd shape, it has fingers and thumbs of waste. So with this data, this again started to give us the concept that rather than trying to cap the entire landfill, we might be able to reduce the footprint and essentially relocate waste as we went along.

Next slide. This is the culvert that I mentioned before, so it takes drainage from this ditch along the Thruway. This drains, there is an underground culvert here that goes underneath the Thruway, and there is an additional wetland area that drains basically under the Thruway to this ditch down through the open ditch, and then it goes underground through this culvert and the it goes underground and out into Ley Creek.

PRESENTATION

And we were concerned that once this pipe was buried under a big landfill cap, we'd never be able to get at it again, and so we did a TV inspection of the pipe, and we did find that the pipe was in relatively good shape, but it was installed some years ago, it was showing some signs of rust, some signs of leakage, and we want to take that into account.

I mentioned seven samples of the 2007 ROD required us to extract waste sediments from the western channel, and then also the ROD required us to line this entire ditch and this interior ditch. And a lot of the data that we were using was dating back from 1994, so it was 16 years old. Working with the DEC, we put together the plan to go and collect some more recent data, and this data -- there are two things that it actually confirmed; that there is still contamination in the western ditch that needs to be addressed, but there is really no contamination in this northern ditch or this interior ditch, and that's going to lead to some changes in the project.

PRESENTATION

And at this point, I'm going to turn it over to John, the DEC, they did an action in the spring. Are you going to multitask?

MR. JOHN GRATHWOL: I'll multitask, thanks. We'll use this prop first. MW-10 is around this area here. And while I'm pointing to it, we were able to blow that area up to here. In January of 2010 we saw some test pits with the purpose of trying to locate where the most contamination is on the site. As Chris mentioned before, there are many wells over the property to find the groundwater contamination. This is by far the most contaminated. We thought if we could find a soil source of contamination and the sediment, maybe we can save money on not only groundwater leachate treatment, but in the future when the town is maintaining any groundwater, that their OM cost would be much less, in fact go to zero much quicker in which the town is interested in saving money, so it's a savings, and savings for the town.

So what we did was install the test bit numbers. There is approximately 13 test bits,

and what we found is there was no real contamination really close to the well, but as you radiate out to the northwest, we found three types of contamination; the yellow is very heavily contaminated with VOC's that went down approximately nine feet. We found this green area, which was not as hazardous, it was determined not hazardous, but enough to contribute to the contamination for this well, and then we found a band of PCB's well over 50, so the state decided, you know, that wasn't our goal, and it also had VOC contamination, we remove this at the state's expense, the town was gracious enough to provide us backfill, so the state spent approximately $420,000 and the Town's backfill, I forgot, it was about 15 to 20,000 for the backfill. Well, approximately that much. So the smaller cost to the town, because they were able to remove the source in this area.

What we found outside the test bit area in the last few days there was contamination at 22-foot depth. We went down until we

couldn't find any -- basically not anymore on the detection devices that we had on site, so we stopped there, so from 9 to 22 feet we removed, you know, this waste. And what in the future we hope to, you know, again, sample the groundwater and leachate quality through a series of studies and, you know, towards the end of this year and through 2011, and maybe we'll be able to again save money on how much treatment we have to do.

MR. BURNS: So at this point the number of these studies that are leading to this change in the 2010 ROD amendment, and I want to be clear. Some of these are actually -- the first one is not a ROD amendment, the 2007 ROD contemplated a pretreatment plant, but through our design studies, we determined that the best place for this plant is the northeast corner of the site. And the second one, the wetland mitigation is also not a ROD amendment, but we had the requirement to mitigate one acre of wetlands for every acre disturbed. So this plan, this new plan is doing that, it's achieving the 1:1 ratio for

wetland mitigation. At this point it's also just contemplating the construction of the groundwater leachate collection trench on the north side of Ley Creek, we're going to consolidate waste on the south side of Ley Creek, which will eliminate the need for the collection trench on the south side.

The 2007 ROD indicated that we would essentially give National Grid complete access to their underground utilities and was somewhat silent about capping over those utilities. And then some of our early discussions with National Grid, they said you can't cap over our underground gas line, and our response was we can't comply with our DEC order to put a landfill cap if it's got big holes in it. So we are now -- we've devised a cap that will consist of different material, and the cap over the National Grid corridors will consist of clay, and the cap in the remaining portion of the landfill will consist of the geomembrane. So different types of caps, and we are in fact capping over the entire amount of waste, even through the

utility corridors, the benefit of clay is if National Grid has to go in to repair, it's much easier to repair a clay cap than it is a geomembrane cap.

And the waste of Ley Creek, again, we are removing waste from a large portion of the landfill, it's about five acres, we're consolidating the footprint of the landfill. We've done the cost estimates, and the cost to relocate waste is pretty close to the cost of capping it, but the benefit here is that it eliminates long-term operations and maintenance costs for the town, it's no longer a landfill, it's essentially reclaimed land.

We eventually are taking care of the problem of the 48-inch culvert, the underground culvert, so we don't have to worry about it collapsing in the future and being under the landfill cap, so we are diverting the swale and keeping it an open swale.

The findings as I mentioned, the sediment sampling we did showed that we don't have to line the northern drainage ditch and the interior drainage ditch, and again that's a

cost savings to the town.

So I think the next slide is really a picture of all of this. And so you see in the southeast corner we're relocating waste, and it will actually be moved up to this area. In the northeast corner we're also relocating waste and moving it into this area. So in the southeast corner this will essentially be reclaimed land, and the green here is an area where we have created wetlands.

In the northeast corner we've located our treatment plant for the future, and we've also created another large wetland area. So there are some other smaller wetland areas, but essentially these two main areas allow us to meet our requirements for the 1:1 mitigation of the wetlands. For the utility corridors, National Grid will be relocating some poles essentially putting in higher poles and raising their wires, so that will allow us to allow them to keep their minimum wire height clearance for safety, and allow us the room to install the landfill cap. Also as I mentioned, we will be using a clay type cap

throughout their utility corridors, and that will allow them access to their utilities and also allow for easier repairs in the future if required.

We're still excavating the sediments in the western drainage ditch, that's no change. We're now not lining these ditches, that's no longer required. And one other thing, this is not a ROD amendment, but we'll be relocating waste along the Buckeye line and pulling it back, so that the Buckeye pipeline will remain outside of the waste for the entire length, and therefore benefiting them, they don't have to worry about the landfill cap, and benefiting the town, because we don't have to worry about the maintenance of the cap over an underground utility.

So that's the essence of the revised plan. This picture looks quite different than it did in 2007. Most of these changes are leading to some cost savings likely to the town and to the state in the long run. Our waste relocation, we've picked areas where the waste is less thick, the waste appears to be

more concrete type materials, so it's less hazardous, and we're not going to have groundwater problems. That waste relocation is allowing for the smaller footprint of the landfill, and it's also allowed for us to question the pace we need for the wetland mitigation.

So that's a summary of the plan. I think at this point, John, you're next.

MR. GRATHWOL: Mark, if you want to step up too? We have -- his department has reviewed this plan along with Mark Granger at the EPA, and the state concurs that it's a benefit to the human health environment and concurs with this plan.

MR. GRANGER: EPA has worked closely with the State of New York to revise the plan, and EPA concurs as well.

MR. BURNS: Mr. Supervisor, would you like to make a statement, please?

MR. NICOTRA: Good evening. I want to read a brief statement on behalf of the Town Board regarding the on-going efforts the Town and DEC have undertaken for the closure of the

former Town of Salina landfill site.

First of all, I want to thank the DEC for allowing me to speak at this meeting, as well as to thank them for their efforts on this project. I think it is fair to say that without the DEC's hard work and the State of New York's significant financial contribution, the project would not exist.

Since the Record of Decision was issued in the 2007, the Town has taken a protective approach in persuing cost effective solutions, working cooperatively with the DEC on an almost daily basis to meet the technical and legal requirements associated with this project. As you can see, the project entails massive complicating factors that are not always under our control. And along the way there have been successes and challenges.

Because of the nature of these factors there have been unexpected setbacks and delays in our efforts to obtain control of the various properties that make up the landfill site in order to begin implementation of this important project. For example, the Town and

DEC have worked diligently in negotiating an agreement with National Grid to relocate the utility infrastructures, so the project may commence. The Town will continue the efforts to ensure that fair cost effective and timely agreement is reached between the Town, DEC and National Grid. We have also experienced delays in obtaining the necessary access and control of those parcels of the formal landfill site that are currently owned by other private parties. These efforts are on-going and require the continued assistance of DEC and the State of New York.

Despite these challenges, the Town has had successes, such as our negotiation of an inter municipal agreement with the County of Onondaga whereby leachate from the landfill site will be accepted and treated at the Onondaga County Metro Plant. This agreement has eliminated the need for the construction of an on-site treatment facility, resulting in the saving of millions of dollars to Town residents.

In addition, the DEC recently completed a

removal action and a portion of the landfill site that resulted in a further savings to the Town, as well as an expedited approach to addressing contamination at specific areas of the site.

Moreover, the Town has commenced efforts to pursue those parties who are responsible for contributing to the contaminated condition of the former landfill site. These efforts however are not without challenges. For example, General Motors, a major contributor of hazardous waste to both the formal landfill site and Lower Ley Creek filed for bankruptcy last year, essentially shielding itself for its environmental liabilities. Nevertheless, the Town filed both claims and objections in Court in an effort to limit the GM bankruptcy estate from addressing the liabilities.

Although we welcome the federal government's recent decision to make available the 850 million dollars to help clean up old GM sites national wide, we are frustrated that the federal government is also seeking to limit the distribution of such funds to only

GM owned properties, thus carving out the downstream liabilities of GM, such as those that exist at the former landfill site and Lower Ley Creek. It is our contention that these federal monies being made available must extend to non-owned GM sites where GM is responsible for significant contamination; otherwise, these liabilities will be placed squarely on the back of the taxpayers.

Unfortunately our concerns are not limited to the GM bankruptcy matter. The Town is frustrated that although it is incurring significant costs to address the former landfill site, the EPA has also named the Town as a potentially responsible party for the pollution being addressed in Lower Ley Creek and Onondaga Lake.

While the Town of Salina, along with Honeywell International appear to be the only parties taking proactive steps in response to EPA and DEC's requests, we continue to be obliged by governmental threats of litigation, as well as demands that the Town financially contributed beyond what it has already

undertaking.

Finally, an additional, significant concern facing the Town is what impact the current budgetary crisis in Albany may have on the state's commitment to fund 75 percent of the total capital cost of this project. Although we continue to work with DEC to implement a comprehensive and environmentally protective and cost effective solution to the former landfill site, it must be clearly understood by all the participants in this process, that the Town cannot proceed with this project in its current scope without the state's continued commitment to fund and 75 percent of the projected capital costs. Anything less than 75 percent would significantly and adversely impact the implementation of this project and the financial resources of the Town, particularly since the Town has also committed to pay 100 percent of the future operating and maintenance costs.

So thank you again for permitting me to speak tonight. The Town looks forward to

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continue working with the DEC on the completion about this project.

MR. GRATHWOL: Now we can open up to any questions.

MS. CHRISTINE SLOCUM: I came in a little late, I didn't know if there was a projected cost of this new land, what is it?

MR. GRATHWOL: Well, that's an excellent question. We are trying to minimize that cost. I believe it was 24 million. But we're also -- there is -- that's the current, if you asked me this second. But part of this source removal that I talked about, we're hoping to even greater lower that cost, but we don't have the results of yet, because the groundwater study that will go on this year and in 2011. And from that study we hope to even greater reduce the cost treating the groundwater and leachate, because we've eliminated a major source, so right now if you ask me, it's 24 million.

MS. CHRISTINE SLOCUM: And so 75 percent the State is somewhat committed to that or?

MR. GRATHWOL: Yes, I'll address that a

bit on the back of Supervisor Nicotra's statement. We have not committed to any amount as of yet. We are hoping that the budget will pass in the future, in which DEC management will review the allotted money that's for the entire state to hazardous waste projects, and it is my personal hope that, you know, grant that, what the supervisor and the Town want. But as I said, that's something well above me, and the budget has to pass before we can give you that answer. But we understand that the Town has come to Albany and expressed that to DEC, we are aware of the Town's needs, we are aware of the Town's economic situation, and as I said, once the budget passes, we hope that will be a successful answer to the Town's request.

Any other questions? By the way, I will be staying as late as you want, some people don't like, as myself, I'm not one to raise my hand and ask a question, I'll be happy to meet with anyone after, but it's nice, we have a reporter that will put into the record, if you have a question, it's good to ask it now,

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because then it will be part of the response of the summary for the Record of Decision. Any other questions? You can ask more than one, you are not limited to one.

MS. CHRISTINE SLOCUM: That PowerPoint presentation, is that available on the DEC website?

MR. GRATHWOL: No, but I could certainly -- did you leave me your E-mail address?

MS. CHRISTINE SLOCUM: No, but I will.

MR. GRATHWOL: Don't leave, and I'll make sure that you get it. That is public record.

MS. CHRISTINE SLOCUM: Okay.

MR. GRATHWOL: You'll get a copy E-mailed, okay? It saves money, no stamps. Any other questions?

MS. CHRISTINE SLOCUM: One more quick question. What would happen if there wasn't enough money at the State level at this point, there wasn't the 75 percent reimbursement available, what would the State still do for the Town? How would the Town then -- what would be the ramification of that?

MR. GRATHWOL: Well, say for instance,

pick -- as the question is said, what if it's less than 75 percent. The Town has mentioned they will come and meet with the State again, and the same thing, the Town Supervisor said last year and said hey, we can't, it's not reasonable for the Town to go into a negative bankruptcy or a low amount of money, we were counting on 75 percent, this is a very expensive project and very complex project, and we need that support to put the project in. And the State management will meet with the Town and discuss what the next step is. I can't tell you exactly what the next step will happen, because it will be 70 percent, you know, maybe it will be something we can work out, you know, where it might be workable with that. As I said, it's -- the first thing is first, the budget must pass, and then we'll discuss. There will be a meeting, just because we have the cooperation now with the Town, we're looking to continue the professional cooperation with the Town, and we're hoping to get the project down, and I'm not sure with the budgetary. The first

meeting is what happens next. The project will not end, it will have to discuss some -- we might have to sharpen the pencil more, we've sharpened our pencils pretty well along with the EPA, but we may have to come up with solutions, because this project does need to be done, and it's just a question of the funding issue. But first thing is first, you know, we're trying to meet that. And if we don't, we'll meet and discuss just like how we met to come up to this, it was probably 30 million before when the 2007 ROD was put into place, we've probably saved six million already right off the top, so it's already six million we don't have to fund. But it's an excellent question, I wish I had a better answer, it's just something we have to work together with the Town and hope it works out.

MS. CHRISTINE SLOCUM: I have a quick question. So do you anticipate that this project, as it gets approved, it will get started then next year?

MR. GRATHWOL: It's hoped to be started this year, but that's an excellent point, if

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for some reason, maybe there will be funding next year, then --

MS. CHRISTINE SLOCUM: Because it's been about what, 15 years that it's been 75 percent each year and 75 percent, it's been kind of push, push, push every year, because chances are it's probably not going to be in next year's budget for the 75 percent.

MR. GRATHWOL: No, there is a set amount of money for hazardous waste projects for the state.

MS. CHRISTINE SLOCUM: Right.

MR. GRATHWOL: And that did change slightly from 2009 to 2010, okay, but it's the amount of that change, that's the key number right now. I don't know, as I said, it would be in the approved budget, how much that would decrease, it's a slight decrease, then, you know, things will be good. If it's a large decrease, we might have to wait until 2011. That's one of the options. It is not a preferred option, but obviously the Town doesn't have -- you know, they don't have money to do the whole project themselves at 24

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million, but that might be an option, not the best, to defer it one year and then, you know, have the funding then, and that's again much -- that's a much higher level than me, the State DEC management will decide what. And this is one of the more important projects, we're discussing throughout the State of New York.

MS. CHRISTINE SLOCUM: Well, I guess my point was: Was it going to be this year that you were planning?

MR. GRATHWOL: Yes, we were planning, if everything goes smoothly, I think September is -- mid-September is the goal to start construction. Excellent questions by the way, you can ask more if you want.

MS. CHRISTINE SLOCUM: That's okay. Thanks.

MR. GRATHWOL: Anything else?

(Whereupon, no response was given.)

MR. GRATHWOL: Okay. I'd like to thank everyone for coming and thank you, Chris and Danielle for the presentation.

MR. AVERSA: I'd like to note people take

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questions afterwards, the comment period is open until June 24th to feel free to E-mail you.

MR. GRATHWOL: I have copies of the facts sheet, which have my physical address on it. Feel free, if you have another question, send it to me by E-mail, that will be included. Thank you, Jack. And that will be included in the responses to the summary. So the questions after the fact, after you leave the meeting or oh, yeah, I have a question, feel free to E-mail me and that will be part of the record.

MR. PAVIA: Thank you, John.

(Whereupon, the Public Hearing was concluded at 7:46 PM.)

* * * *

REPORTER'S CERTIFICATE

I, MARY AGNES DRURY, Court Reporter and Notary Public, certify:

That the foregoing proceedings were taken before me at the time and place therein set forth, at which time the witness was put under oath by me;

That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me and were thereafter transcribed;

That the foregoing is a true and correct transcript of my shorthand notes so taken;

I further certify that I am not a relative or employee of any attorney or of any of the parties nor financially interested in the action.

Mary Agnes Drury

MARY AGNES DRURY, RPR, CLR
Notary Public

# ERRATA SHEET

Transcript for the June 7, 2010 Town of Salina Landfill Public Presentation and Hearing
NYSDEC Site # 734036

| Page No. | Line No. | Correction | Reason for Change: |
|---|---|---|---|
| 5 | 13 | Delete the word "talk" after project | No meaning. |
| 5 | 19 | Remove "staked out the" and replace with "completed a" | Not correct. |
| 5 | 21 | Delete the 2nd "and". | Not correct. |
| 6 | 18 | Add 's' to investigation. Should read "investigations" | Not correct. |
| 7 | 3 | Change "C&H" to "CHA" | Not correct. |
| 7 | 6 | Change "Now" to "Then" | Not correct. |
| 7 | 10 | Capitalize "department". Should read "Department" | Capitalize word. |
| 7 | 10 | Add parentheses to "the DEC". Should read "(the DEC)" | Not correct. |
| 7 | 18 | Change "realize" to "realized" | Incorrect tense.. |
| 8 | 6 | Change "response" to "responsiveness" and delete "to the" | Incorrect wording |
| 9 | 8 | Change "affluent" to "effluent" | Incorrect spelling. |
| 9 | 16 | Capitalize "metro'. Should read "Metro" | Capitalize word. |
| 9 | 18 | Capitalize "part". Should read "Part" | Capitalize word. |
| 9 | 20 | Change "multi" to "multiple" | Not correct. |
| 9 | 23 | Change "installation" to "infiltration" | Incorrect word. |
| 11 | 4 | Delete "several of the slides." Replace with "a source removal action." | Incorrect wording |
| 11 | 25 | Change "redesign" to "design" | Not correct. |
| 14 | 13 | Delete "got up with the" and replace with "got updated data for" | Not correct. |
| 17 | 11 | Delete "seven samples of" | Not correct. |
| 18 | 3 | Delete "DEC, they did an" and replace with "DEC did a removal" | Not correct. |
| 18 | 9 | Delete "saw" and replace with "excavated" | Not correct. |
| 18 | 20 | Delete "OM" and replace with O and M | Not correct. |
| 18 | 24 | Change "bit" to "pit" | Incorrect word. |
| 18 | 25 | Delete "numbers" and replace with "as numbered" and change "bits" to "pits" | Not correct. |
| 19 | 12 | Add "ppm" after 50. Should read "50 ppm," | Added for clarification. |
| 19 | 18 | Add dollar symbols as noted: "$15" and "$20,000" | Added for clarification. |
| 19 | 21 | Change "they" to "we" | Not correct. |
| 19 | 23 | Change "bit" to "pit" | Incorrect spelling. |
| 20 | 12 | Change "the" to "a" | Not correct. |
| 20 | 13 | Delete "that" | Not correct. |
| 22 | 2 | Add period to end sentence at corridors, "....utility corridors." And "the" to "The" | Not correct. |
| 22 | 6 | Insert "south" after waste: "and the waste south of...." | Incorrect wording |
| 22 | 16 | Delete "eventually" and Insert "also" after are: "...are also taking care..." | Not correct. |

| | | | |
|---|---|---|---|
| 22 | 20 | Add period to end sentence at "cap." Delete "so" and replace with "We" | Not correct. |
| 22 | 22 | Delete "comma" after "mentioned," | Incorrect wording |
| 22 | 22 | Insert "in" after mentioned: "…I mentioned in the…." | Incorrect wording |
| 23 | 6 | After "area", insert statement "(points to northwest corner of site). | Added for clarification |
| 23 | 8 | After "area", insert statement "(points again to northwest corner of site). | Added for clarification |
| 25 | 7 | Delete "question the pace" and insert "create the space" | Not correct. |
| 25 | 12 | Delete "his department" and replace with "The Department" | Incorrect wording. |
| 26 | 11 | Remove "protective" and replace with "proactive" | Incorrect word. |
| 26 | 12 | Remove "persuing" and replace with "pursuing" | Incorrect spelling. |
| 27 | 10 | Remove "formal" and replace with "former" | Incorrect word. |
| 27 | 22 | Insert "full scale" between "on-site" and "treatment facility" | Added for clarification |
| 28 | 3 | Remove "resulted" and replace with "may result" | Changed for accuracy. |
| 28 | 13 | Remove "formal" and replace with "former" | Incorrect word. |
| 28 | 25 | Remove "contributed" and replace with "contribute" | Incorrect tense. |
| 31 | 8 | Remove "land" and replace with "Plan" | Incorrect word. |
| 31 | 11 | Insert "dollars" after "24 million" | Added for clarification |
| 31 | 22 | Insert "dollars" after "24 million" | Added for clarification |
| 32 | 5 | Add "State" before "budget" | Added for clarification. |
| 33 | 2-3 | Remove "response of the summary" and replace with "responsiveness summary" | Incorrect term or wording. |
| 34 | 7 | Remove the word "negative" | Incorrect wording |
| 34 | 15 | Remove "it will be" and replace with "if it were" | Added for clarification |
| 38 | 3 | Remove ""to feel" and replace with "so feel" | Incorrect word. |
| 38 | 10 | Remove "response of the summary" and replace with "responsiveness summary" | Incorrect term or wording. |