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Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Rose Valley Landfill Site
Town of Russia in Herkimer County
Site Number 6-22-017

March 2001

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Rose Valley Landfill Inactive Hazardous Waste Site
Town of Russia, Herkimer County, New York
Site No. 6-22-017

Statements of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Rose Valley Landfill class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Rose Valley Landfill inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents is included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents current or potential significant threats to public health and the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Rose Valley Landfill and the criteria identified for evaluation of alternatives, the NYSDEC has selected installation of a single layer cover over the major fill area, excavation and disposal of contaminated surface soils, treatment of the leachate by natural attenuation, monitoring of the wetland, replacement of the impacted homeowner well with a deeper well, and monitoring of the western groundwater plume. The components of the remedy are as follows:

- Excavation and disposal of contaminated surface soils from the older septic disposal pit into the on-site landfill;
- Installation of an alternative drinking water supply for the impacted well and long-term monitoring of the western groundwater plume containing low levels of DCA and TCA;

- Treatment of the leachate and contaminated groundwater plume by monitored natural attenuation . (Long term monitoring of the effectiveness of natural attenuation will be conducted and documented) and

- Installation of a single layer Part 360 (1982 regulations) cover over the eight(8) acres of major fill area encircled by a six foot high chain link fence.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/30/2001
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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RECORD OF DECISION

Rose Valley Landfill Site
Town of Russia, Herkimer County
Site No. 6-22-017
March 2001

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Rose Valley Landfill class 2, inactive hazardous waste disposal site. As more fully described in Sections 3 and 4 of this document, permit violations during the landfill's operation have resulted in the disposal of a number of hazardous wastes, including chlorinated solvents and poly-aromatic hydrocarbons (PAHs) at the site, of which there is no evidence of off-site migration with the exception of one private drinking water well (servicing a residence directly adjacent to the landfill entrance). These disposal activities have resulted in the following significant or potential threats to the public health and/or the environment:

- a significant threat to human health associated with contaminated drinking water with 8-21 parts per billion (ppb) of 1,1-dichloroethane (DCA) and 12-62 ppb of 1,1,1-trichloroethane (TCA).

- potential health and environmental threats associated with contaminated surface soils with seven(7) semi-volatile contaminants (dichorobenzene, chloroaniline, benz(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, benzo(k)flouranthene and phenol) found in the older septage disposal pit located on the plateau above the sand bank.

- a potential threat to human health associated with contaminated groundwater in the eastern plume with 5-9 ppb 1,1-dichloroethane (DCA) and 19-29 ppb 1,2-dichloroethene (DCE).

In order to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous waste disposed at the site has caused, the following remedy was selected:

- Excavation and disposal of contaminated surface soils from the older septic disposal pit into the on-site landfill;

- Installation of an alternative drinking water supply for the impacted well and long-term monitoring of the western groundwater plume containing low levels of DCA and TCA;

- Treatment of the leachate and contaminated eastern groundwater plume by monitored natural attenuation . Long term monitoring of the effectiveness of natural attenuation would be conducted and documented; and

- Installation of a single layer Part 360 (1982 regulations) cover over the eight(8) acres of major fill area encircled by a six foot high chain link fence

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site, in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: <u>SITE LOCATION AND DESCRIPTION</u>

The Rose Valley Landfill is located in a sparsely populated area of the Town of Russia in Herkimer County. It is bounded by Rose Valley, Bromley and Military Roads and includes a segment of an unnamed tributary of Hurricane Creek. (See the site location map, Figure1). The two landfill parcels cover 91 acres (unfenced) and include a 60 foot sand embankment. The major landfill area is located on the side of a hill, and is vegetated with brush and small trees. Rust-colored leachate flows out of this area into a wetland at the toe of the landfill slope. (See the site feature map, Figure 2).

SECTION 3: <u>SITE HISTORY</u>

3.1: <u>Operational/Disposal History</u>

The landfill was a privately-owned, unlined dump on the side of a hill in a remote part of Herkimer County. It was operated from 1963-1984, and served as a municipal landfill for the Villages of Poland and Cold Brook, and also, starting in 1972, the Towns of Coxsackie, Newport, Herkimer, and Manheim. Residential, commercial, industrial and septic tank (scavenger) type wastes were accepted.

The last landfill owner/operator was frequently cited for DEC permit violations. Leachate outbreaks were commonly noted and refuse was often left uncovered and uncompacted. The most notable violation was in 1979, which was the documented observation of chlorinated solvents, notably trichloroethane (TCA), being brought to this landfill and burned.

Improper disposal of trichloroethane and other solvents has resulted in groundwater contamination in excess of applicable class GA drinking water standards. A residential well adjacent to the landfill was sampled and found to be contaminated with 1,1,1-trichloroethane and 1 ,1-dichloroethane.

3.2: Remedial History

In 1982, Mr. Gerald Crouch, the last owner/operator, entered into a consent order with NYSDEC. The consent order required a hydrogeologic study of the site and an engineering plan to upgrade the landfill to comply with NYSDEC landfill regulations (6 NYCRR Part 360). NYSDEC did not accept the engineering plan, citing inadequate liner provisions.

In 1983, Mr. Crouch entered into a second consent order to close the landfill. In 1984, a landfill closure plan, in accordance with State regulations, was submitted. and was accepted by NYSDEC. Under order, the closure plan was to be completed in 1985, but it was never implemented. A partial cap was constructed and found to be totally inadequate. Over time it became eroded and was left in disrepair. The site owner abandoned the landfill and moved out of state. In 1986, a portion of the landfill property (not including the fill area) was separately deeded to Joyce Miller.

In 1988, a preliminary assessment of the existing data on the landfill was performed for the U. S. Environmental Protection Agency (EPA). The site was classified as "medium priority"; the ranking was attributed to uncontrolled leachate seeps discharging to surface water bodies at the base of the landfill.

The EPA's final site assessment was concluded in August, 1995. No further action was found to be necessary by EPA which determined that the landfill did not present a great enough risk to human health or the environment to warrant a cleanup by the federal government.

The New York State Department of Health (NYSDOH) collected two well samples in 1981 and three samples in 1986 from nearby residential wells and the Newport Village water supply. Beginning in 1986, the NYSDOH has monitored private drinking water wells in the neighborhood of the landfill (in 1986, 1989, 1991, 1992, 1993, 1994, 1996, 1999 and 2000). All samples that were evaluated were considered satisfactory with the exception, in 1991, of one private drinking water well. The residential well immediately adjacent and south of the landfill entrance was found to contain low levels of chlorinated hydrocarbons exceeding drinking water standards. Bottled water delivery was initiated for this residence; and in October, 1993, NYSDEC installed a granular activated carbon filter (GAC) to remove the contaminants from the impacted well water.

In 1989, NYSDOH collected and analyzed four leachate/sediment samples from the base of the major fill area at the landfill. The results indicated the presence of a variety of contaminants at relatively low levels which is indicative of mixed municipal/industrial refuse.

In 1990 and 1991, a site contamination assessment of the landfill was completed for the NYSDEC Division of Solid Waste. Subsequently, on March 24, 1992, the site was added to the New York State Registry of Inactive Hazardous Waste Sites as a Class 2 Site (significant threat to human health and the environment). In 1998, the Rose Valley Landfill site was referred to the State Superfund Program for action.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the potential threat to human health and the environment posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in 2 phases. The first phase was conducted between June, 1999 and January, 2000, and the second phase during September and October, 2000. A report entitled "Remedial Investigation Report of the Rose Valley Landfill Site, Town of Russia, New York" has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- Geophysical survey to determine the extent of landfill materials.
- Installation of soil borings and monitoring wells for analysis of soils and groundwater.
- Soil gas survey.
- Surface water and sediment sampling.

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the Rose Valley landfill Site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of New York State Sanitary Code (Public Drinking Water Supply Standards).

For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater and background conditions. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the NYSDEC "Technical Guidance for Screening Contaminated Sediments".

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb), parts per million (ppm), For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The site is located in Herkimer County in the Town of Russia on Rose Valley Road. The site exhibits moderate relief with an elevation change across the site of about 200 feet. The soils are a sand or loamy sand with thicknesses exceeding 100 feet. This sandy formation also includes occasional clay and silt lenses in several areas and lenses create localized areas of perched groundwater. Below this sand unit is a glacial till, below which are sedimentary rocks of Ordovician age.

The hydrogeology of the site is controlled partly by its topography, soil type and thickness. Groundwater flows radially from the site from an area centered near monitoring well MW-2. However, it does not exactly mimic the surface topography. Groundwater flow north and east of this area is to the east northeast towards Military Road. Groundwater flow west of this area is to the northwest and flow south of this area is to the south towards Rose Valley Road.

Three monitoring wells were drilled into the underlying glacial till to determine if a pathway existed for contaminant flow through that unit and into the bedrock below. The results of the potentiometric surface measurements within the till unit suggests a substantial aquatard exists which prevents an exchange of water between the upper and lower aquifers. Therefore, any contaminants within the sand unit should not penetrate the till nor flow into the underlying bedrock. This is important because most of the private wells in the area obtain their water from the bedrock. The exception to this is the overburden well adjacent to the site (which is located in the upper aquifer), which contains up to 18 parts per billion (ppb) DCA and up to 70 ppb TCA.

4.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater, surface water and sediment samples were collected at the site to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are inorganic compounds (metals), volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).

The inorganic contaminants of potential concern are: arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, zinc, and selenium. The VOC contaminants are; dichloroethane (DCA), dichloroethene (DCE) and trichloroethane (TCA). The SVOC contaminants are; dichlorobenzene, chloroaniline, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene and phenol. The SVOC contaminants only exceeded SCGs in the three soil samples collected from the older septic disposal pit area.

4.1.3: Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in soil and ground water and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure and/or ecological risks have been identified:

Soil

The site soils contained numerous inorganic compounds above SCGs, and an isolated area of SVOC contaminants of concern (in the older septic disposal pit). The SVOC contaminants exceeded SCG values in the three soil samples collected from the older septic disposal pit.

Sediments

The contaminants that exceeded SCGs in sediments were inorganic compounds with the exception of two locations which contained several semi-volatile compounds. One location was SED-11 which was located in the wetlands downgradient of the upper main landfill area. The other location was SED -9. See Figure 3: Locations of Sediment/Surface Water Samples. The duplicate sediment sample analysis detected benzo(a)pryene above SCGs, however this compound was not detected above SCG values in the original sample from this location.

The inorganics were iron, manganese, cadmium, lead, arsenic, copper, silver, zinc, antimony and perhaps selenium. No SCGs were identified for selenium in sediment.

Groundwater

There are three locations where the groundwater is impacted by contamination at the site. These locations are the TCA plume at the western end of the site. The trichloroethene (TCE) contamination in the area of HP-11 of the area of perched groundwater and the wetlands area at the toe of the landfill in the eastern end of the site. The western plume is a VOC plume containing TCA and DCA. It has impacted the well supplying water to the adjacent residence on Rose Valley Road. The source area of this plume is located in the vicinity of monitoring well MW-8. This groundwater contaminant plume is small in areal extent and does not impact any other off site wells. (See Figure 3.)

An area of groundwater contamination near HP-11 is smaller than the western plume. The contaminant detected in the HP-11 groundwater sample is TCE, and only one of its related breakdown products (DCE) was detected in adjacent, downgradient monitoring wells.

The groundwater contaminant plume at the base of the landfill contains low levels of DCA and DCE. This plume, like the previously discussed plumes, is of limited extent and does not leave the site. There are no private wells impacted by this plume.

Surface Water

Numerous surface water samples were collected and analyzed during the RI for this site. With the exception of three locations which had levels of phthalate (a plasticizer) exceeding SCGs, the contaminants exceeding SCGs in the surface water were inorganic. Iron was the inorganic which had the most exceedances, followed by aluminum, and selenium. Other inorganic substances were lead, zinc, cadmium, copper, cobalt, silver, thallium, cyanide and vanadium in the unfiltered samples. After filtering the surface water samples to remove fine sediments, the only inorganic substances exceeding SCGs were iron, aluminum, cobalt, thallium and zinc.

4.2: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 8 of the RI report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receiving population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

- ingestion of contaminated groundwater
- direct contact with contaminated surface soils.

4.3: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. Selenium compounds in the site's sediments have the potential to impact the wetlands on the site and migrate off site. The surface water and sediment are considered the primary potential pathways for wildlife exposure. However, additional sampling and analysis have demonstrated that selenium is not leaving the site via the surface drainage and therefore, has not impacted any off site areas. The wetland area is a depositional area and any selenium that leaches out of the landfill is contained in the wetlands.

Therefore the environmental exposure pathways that may exist at the site are:

- The direct contact with or ingestion of contaminated sediment by wildlife.
- Ingestion of contaminated biota by wildlife.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The two Potential Responsible Parties (PRP) for the site, documented to date, include: Joyce Miller and the estate of Gerald Crouch.

The PRPs declined to implement the RI/FS at the site when requested by the NYSDEC. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Eliminate, to the extent practicable, the risk of ingestion of contaminated groundwater affected in the western portion of the site.
- Eliminate, to the extent practicable, any potential risk of direct contact with contaminated surface soils in isolated areas on the plateau above the sand bank.

- Eliminate, to the extent practicable, the potential risk of direct ingestion of contaminated groundwater in the eastern portion of the site whose source is the migration of leachate from the major fill area .

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Rose Valley Landfill site were identified, screened and evaluated in the report entitled Feasibility Study for the Rose Valley Landfill, December, 2000.

Evaluation and selection of appropriate remedial action alternatives is a function of a number of factors common to many municipal landfill sites. Therefore it is possible to focus the FS and the selection of the remedy to those remedial actions employed at similar sites.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated surface soils, leachate and groundwater at the site. "No Action" alternatives are evaluated as a procedural requirement and as a basis for comparison. No action alternatives require continued monitoring only, allowing the site to remain in an unremediated state. This type of alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

The following alternatives address different areas of concern. The "A" series addresses the contaminated surface soil. The "B" series addresses the contaminated drinking water and western groundwater plume. The "C" series addresses the leachate and contaminated groundwater plume at the base of the major fill area. The "D" series addresses the major landfill area.

Alternative A-1: No Action for Contaminated Surface Soils in Isolated Areas of the Plateau Above the Sand Bank

Present Worth:	*$ Zero*
Capital Cost:	*$ Zero*
Annual O&M:	*$ Zero*
Time to Implement	*None*

No action or monitoring would need to be taken in this alternative.

Alternative A-2: One Foot of Soil Cover Over Contaminated Surface Soils

Present Worth:	$13,600
Capital Cost:	$10,500
Annual O&M:	$200
Time to Implement	1-2 months

This alternative would place a clean soil cover over 2500 square feet of contaminated surface soils found in the older septic pit. The cover would consist of six (6) inches of clean general fill soil under six (6) inches of topsoil. Both types of soils would have a lower permeability than the native soil. In order to maintain protection against exposure in the future, a fence would be installed around the capped area. The area would also be restricted from future use through deed limitations.

Alternative A-3: Excavation and Disposal of Contaminated Surface Soil

Present Worth:	*$10,500*
Annual O&M:	*Zero*
Capital Cost:	*$10,500*
Time to Implement	*1-2 months*

This alternative will excavate the contaminated soils (two to three feet deep) in the older septic disposal pit and backfill the pit with clean soil then cover with six (6) inches of topsoil and stabilized with a grass cover. The excavated soils will be placed into the on-site landfill, under the two foot deep soil cover, as per Alternative D-2.

Alternative B-1: No Further Action for Contaminated Drinking Water and Contaminated Groundwater in the Western Plume

Present Worth:	*$30,700*
Capital Cost:	*$ Zero*
Annual O&M:	*$2000*
Time to Implement	*none*

This alternative would involve no further action at the western plume. The contaminant-removal system would be maintained on the private well, and the nearby residential drinking water wells and the group of adjacent monitoring wells presently in place would be sampled and analyzed annually.

Alternative B-2: Installation of a New Private Drinking Water Well to Replace the Impacted Well and Long-term Monitoring of Contaminated Groundwater in the Western Plume.

Present Worth:	*$56,400*
Capital Cost:	*$25,700*
Annual O&M:	*$2000*

Time to Implement	*1-2 months*

The western plume of contaminated groundwater will be more fully delineated, and 14 wells would be monitored two times a year. A new, uncontaminated residential water supply will be installed for the residence with the impacted well.

Alternative B-3: Installation of a New Private Drinking Water Well to Replace the Impacted Well and the Extraction and Treatment of Contaminated Groundwater in the Western Plume Using Air Stripping

Present Worth:	*$648,200*
Capital Cost:	*$167,000*
Annual O&M:	*$ 31,300*
Time to Implement	*3-6 months*

Installation and operation of groundwater extraction well, air stripping treatment and surface water discharge systems. A new and deeper residential water supply well would be installed at the private residence with the impacted drinking water.

Alternative C-1: No Action for Leachate or Contaminated Groundwater in the Plume at the Base of the Landfill

Present Worth:	*$99,900*
Capital Cost:	*$ Zero*
Annual O&M:	*$6500*
Time to Implement	*None*

This alternative would require no action except annual sampling and analysis of surface water and sediment and the existing groundwater monitoring well system.

Alternative C-2: Trench Collection of all Leachate Followed by Pumping and Treating Via Sedimentation and Air Stripping and Discharge to the Wetland

Present Worth:	*$1,419,400*
Capital Cost:	*$497,000*
Annual O&M:	*$60,000*
Time to Implement	*6-9 months*

Installation of a trench collection system at the base of the major fill area to collect all leachate, and construction of sedimentation and air stripping treatment systems to remove suspended materials, some metals and chlorinated hydrocarbons before disposal into surface water. See Figure 4: Alternative C-2 to Collect and Treat Leachate.

Alternative C-3: Long Term Monitoring and Documentation of the Treatment of Leachate By Monitored Natural Attenuation.

Present Worth:	*$ 110,400*
Capital Cost:	*$6500*
Annual O&M:	*$10,500*
Time to Implement	*3-4 months*

Documentation will be assembled to document that monitored natural attenuation is removing contaminants of potential concern in the leachate.

Alternative D-1: No Action To Prevent Direct Contact With Waste or To Reduce Infiltration in the Major Fill Area

Present Worth:	*$ Zero*
Capital Cost:	*$ Zero*
Annual O&M:	*$ Zero*
Time to Implement	*None*

No action or monitoring would need to be taken in this alternative.

Alternative D-2: Installation of Two Feet of Final Cover At 2-33% Slope Over the Major Fill Area Including Grass Cover and Security Fence Enclosure.

Present Worth:	*$743,000*
Capital Cost:	*$620,000*
Annual O&M:	*$8000*
Time to Implement	*6-9 months*

The landfill area will be cleared and grubbed. All slopes greater than 33% will either be filled and graded or pulled back from the edge of the wetland and regraded. Eighteen inches of soil of lower permeability and six inches of top soil will be placed over the fill area, then seeded with grass and enclosed within a six foot high security fence. Any impacts to adjacent wetlands will be avoided by reducing the footprint of the landfill.

Alternative D-3: Installation of a Soil and Geomembrane Cap Over the Major Fill Area Including Grass Cover and Security Fence Enclosure.

Present Worth:	*$1,753,500*
Capital Cost:	*$1,599,000*
Annual O&M:	*$10,000*
Time to Implement	*6 months - 1 year*

Alternative D-3 is identical to D-2 except for the cap components. In place of 2 feet of low permeability soil and top soil, the cap would consist of twelve inches of gas venting sand bounded by a filter medium (with eight vertical vent pipes); 60 mil high density polyethylene (HDPE) geomembrane; 24 inch thick layer of sand; six inches of top soil and vegetative seeding material.

7.2 Evaluation of Remedial Alternatives For Contaminated Surface Soil

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

Neither A-1, the No Action Alternative, nor A-2, would comply with TAGM 4046. Only Alternative A-3, Excavation and Disposal of Contaminated Surface Soils into the on-site landfill will comply with soil guidance values in TAGM 4046.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

A-1, the No Action Alternative would provide no protection of Human Health. The direct contact risks posed by the surface soils contaminated with seven (7) semi-volatile organic chemicals would however be mitigated by A-2, placement of a foot thick layer of clean soil and vegetation over the surface, thereby significantly reducing risk of direct contact. A-3 will permanently eliminate the risk of direct contact at the site.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

The no action alternative would have no short term effects. The other two alternatives A-2 and A-3 would involve a small amount of site clearing and truck transport whose short term effects will be minimal.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

No action would have no long-term effectiveness. A-2, the clean soil cover, would limit the risk of direct contact as long as the cap and its surrounding fence were consistently maintained and protected from the erosion caused by off-road vehicles. A-3, excavation and off-site disposal, would permanently eliminate the on-site risk of direct contact with contaminated surface soils.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

A-1 and A-2 would have no effect on toxicity, mobility or volume of wastes. A-3, permanent removal and placement in a secure landfill facility, will reduce the toxicity, mobility and virtually eliminate contact with toxic soils of wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

No action would be the easiest alternative to implement. However, there will be no obstacles to implementing A-2 or A-3.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2 on page 25.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan are evaluated. A "Responsiveness Summary" will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

7.3 Evaluation of Remedial Alternatives For Contaminated Groundwater in the Western Plume

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs).

B-1, the No Action Alternative does not comply with groundwater standards or drinking water standards. Contamination would remain above Class GA standards for the foreseeable future. B-2, long-term monitoring and installation of a clean private drinking water well will comply with drinking water standards but not with groundwater standards except in the distant future. B-3, extraction and treatment of the western plume via air stripping and installation of a clean well, would also comply with drinking water standards and may comply with groundwater standards after 15 to 30 years.

2. Protection of Human Health and the Environment.

The western plume presents no present risk to human health and the environment, since a carbon filter has been installed on the one contaminated private drinking water well. The plume does however present a future potential risk of direct ingestion of contaminated drinking water. B-1, the No Further Action Alternative, does nothing to mitigate this potential future risk.

Alternative B-2, long-term monitoring and the permanent replacement of the contaminated well, will mitigate this potential risk by providing clean drinking water well to the impacted property and by monitoring the extent of the plume for the next 30 years. B-3 would go a step farther by actively reducing the contaminant loading of the plume with extraction wells and treatment system.

3. Short-term Effectiveness.

Alternative B-1 would create no short term impacts. Alternative B-2, installation of a well, will not create significant impacts and Alternative B-3, installation of extraction wells and treatment system would cause minor disruption.

4. Long-term Effectiveness and Permanence.

B-1, the No Further Action alternative, presents no risks for ingestion of contaminated groundwater as long as the carbon filter is properly maintained on the private well, and no further wells are installed in the contaminated aquifer of the western plume.

B-2 will provide a long-term effective solution for the present well that is contaminated by replacing it with a new well in the deeper aquifer. B-2 will also reduce the risk of future ingestion of contaminated groundwater on other adjacent properties by establishing a long-term program to monitor the concentration and physical extent of the western plume.

B-3 would not be significantly more effective than B-2 over the long-term. B-3 would install extraction wells and a groundwater treatment system to reduce the plume's limited contaminant loading. This system would cleanup the groundwater plume only slightly faster than the other alternative.

5. Reduction of Toxicity, Mobility or Volume.

All three alternatives will result in reduction over a long period of time of the groundwater plume. To a small extent, B-3 would accelerate the reduction of the low-level toxicity and volume of contaminated groundwater by installing an extraction and treatment system in the western plume.

6. Implementability.

There are no obstacles to implementing any of the alternatives.

7. Cost. The costs for each alternative are presented in Table 2 on page 25.

7.4 Evaluation of Remedial Alternatives For Leachate and Contaminated Groundwater in the Eastern Plume

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs).

The landfill leachate is a diluted source of contamination for the eastern plume, and reduce concentrations in the plume, contravene Class GA (groundwater) standards. None of the leachate alternatives will entirely capture the plume. C-2, leachate collection and treatment, would decrease the plume loading and, thereby, the extent of GA standard violations. However C-2 would require construction in the wetland and therefore would require a permit from the Army Corps of Engineers, and must comply with New York State requirements in Article 24 of Environmental Conservation Law (ECL). C-2 would comply with Article 24 by applying for a permit from the Army Corps of Engineers and by designing the system to mitigate or at least minimize impacts to wetlands.

C-1 (no action) and C-3 (long term monitoring and documentation of monitored natural attenuation) will have no impact on the wetland and therefore will not require a Army Corps Permit or compliance with New York State wetland regulations.

2. Protection of Human Health and the Environment.

There are no present uses of groundwater in the eastern plume, and organic plume contaminants disappear before discharging to surface water in the wetland. In addition, because of the age of the Rose Valley Landfill, it is probable that the contaminant loading and concentration of the leachate stream (and its associated risk) will continue to decrease in the future.

Therefore, all three alternatives would provide equal protection of human health. Potential future risks to human health would only occur if groundwater in this area is used for drinking water. In that case, the active alternative would more actively mitigate future risk than the no action alternative.

While presently the plume poses no significant risks to human health, adverse impacts to representative species from selenium levels were not ruled out based on the available information. Selenium has accumulated in the wetland sediments that triggered potential concern . These exceedances were evaluated in the Fish and Wildlife Impact Analysis, and potential adverse ecological risk was estimated. However, these potential impacts are likely to be overestimated. One of the conservative assumptions used to calculate risk was use of the total selenium concentration instead of limiting the calculation to those chemical forms that are bio-available or toxic.

Therefore, C-3 is expected to present acceptable risks to the environment. As part of the alternative, acceptable risk from selenium levels in the sediment will be confirmed and documented through actual sampling of biota and other testing.

3. Short-term Effectiveness.

C-1 and C-3, the no action alternative and the monitored natural attenuationwill have no short term impacts. However, C-2, the active leachate collection and treatment alternative, would have several major short term impacts, since this alternative would involve construction of a collection trench, access road and the treatment system in the wetland habitat.

4. Long-term Effectiveness and Permanence.

Even though surface infiltration over the eight acre major fill area will be reduced dramatically, some leachate will continue to be generated. Therefore, none of the three alternatives will be effective over the long term at attaining groundwater standards at the base of the landfill. C-1, C-2 and C-3 will all permanently treat the leachate. C-2, the treatment and collection system, would be more effective for as long as it was maintained and operated.

5. <u>Reduction of Toxicity, Mobility or Volume</u>.

Alternatives C-1 and C-3 will reduce toxicity, mobility and volume through treatment by natural processes . This is due to the attenuation of the low levels of chlorinated solvents before they reach the downgradient monitoring well . In addition, low levels of inorganic contaminants are getting bound up in the sediments (reduced mobility).

Alternative C-2 would probably reduce toxicity and mobility to a somewhat greater extent. The first step of the two step treatment operation, sedimentation, would transfer the inorganic contaminant loading in the groundwater into a non-toxic, non-mobile sludge. Sedimentation/site removal would eliminate the potential risk (in C-1 and C-3) for toxic levels of selenium to bio-accumulate in wetland species.

C-2's second treatment step, air stripping, would effectively eliminate the low level organic contamination in the groundwater.

6. <u>Implementability</u>.

There are no obstacles to implementing C-1 and C-3. However, C-2 would be technically difficult to implement because a collection trench, treatment system and access road would have to be constructed in the wetland or in the steep boundary between the landfill and the wetland. In addition, the sedimentation treatment equipment would require either a full-time operator or a considerable amount of remote supervision that would be difficult to provide at this remote location.

C-2 would also be more administratively difficult to implement than C-1 and C-3. A permit to disturb a wetland would need to be obtained from the Army Corps of Engineers (ACOE). It is also likely that ACOE would require replacement of any lost areas of wetland habitat.

7. <u>Cost</u>. The costs for each alternative are presented in Table 2 on page 25.

7.5 Evaluation of Remedial Alternatives
To Prevent Direct Contact With Waste and to Reduce Infiltration in the Major Fill Area

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs).

6NYCRR Part 360, soil waste regulations, are an action-specific requirement for landfills. Specifically, for the Rose Valley Landfill whose DEC landfill permit was suspended in 1985, the Part 360 regulations that were effective on March 9, 1982 have been identified as the appropriate standard. D-1, the no action alternative, does not meet the requirement for closure of a landfill under Part 360. The other alternatives, D-2 and D-3, do comply with these regulations.

2. Protection of Human Health and the Environment.

The landfill does not present a direct contact threat to human health and the environment, therefore all the alternatives (including D-1, no action) are essentially equally protective of human health and the environment. Impacts from the landfill are limited to those caused by the leachate/contaminated groundwater.

There are no human uses of groundwater in the eastern plume, and the plume poses no present risks to human health. Organic contaminants appear to be degraded before discharging to surface water in the wetland. Certain metals have accumulated in the wetland sediments which exceed sediment screening criteria. However, these exceedances were evaluated in the Fish and Wildlife Impact Analysis and a potential adverse ecological risk was estimated. However, this quantitative analysis overestimates the potential adverse impacts because not all metabolic forms are bio-available or toxic.. In addition, because Rose Valley Landfill has been closed for more than 15 years, it is very likely that the contaminant loading of the leachate stream (or its potential risk) will continue to decrease in the future.

3. Short-term Effectiveness.

D-1, the no action alternative would have no short term effects. D-2 and D-3 will have short term impacts during construction of the cap. The present vegetation will have to be cleared and some of the steeper slopes near the wetlands will have to be graded to less than a 33% slope. Erosion control measures will be employed to mitigate the migration of sediment into the wetland during grading and cap construction. However, there will still be the potential for severe weather to overwhelm erosion control measures. In addition, truck traffic will increase during delivery of the top soil needed for a cap in D-2 and D-3. D-3 would take longer to construct than D-2.

4. Long-term Effectiveness and Permanence.
D-1, no action, would not reduce the volume of leachate. With proper maintenance of the cap, D-2 and D-3 will reduce leachate generation over the long-term. Proper maintenance of D-2 and D-3 will

involve mowing and erosion repair. D-3 would reduce infiltration to a greater extent and therefore would probably limit leachate generation more effectively.

The landfill property is remote and heavily used by ATVs in summer and winter. With thick tree growth present in D-1, ATVs have no access to the major fill area. However, a graded, Part 360 cap will provide an attractive area for ATVs, however, fencing will discourage use.

5. Reduction of Toxicity, Mobility or Volume.
No action would have no reductions. The D-2 and D-3 alternatives would reduce the toxicity, mobility and volume of groundwater contamination to same extent that they reduce leachate generation.

6. Implementability.

All three alternatives are implementable.

7. Cost. The costs for each alternative are presented in Table 2.

8. Community Acceptance -Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary", included as Appendix A, presents the public comments received and the Department's response to the concerns.

In general the public comments received were supportive of the selected remedy. Twenty comments were received. One meeting participant was concerned about the possibility of radioactive wastes leaching from the landfill. Limited radio nuclear sampling was added to the wetland study during remedial design in order to confirm the absence of human/and exposure to radioactive wastes on site.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the results of the RI/FS, and the evaluation discussed in Section 7, the NYSDEC is selecting Alternatives A-3, B-2, C-3 and D-2 as the remedy for this site. The selected remedy includes:

- Excavation and disposal of contaminated surface soils from the older septic disposal pit into the on-site landfill;
- Installation of an alternative water supply to replace the impacted private well and long-term monitoring of the western groundwater plume;
- Treatment of the leachate and contaminated groundwater plume by monitored natural attenuation . Long term monitoring of the effectiveness of natural attenuation will be conducted and documented; and

- Installation of a single layer, Part 360 cover at 2-33% slope over the major fill area, and a 6 foot high chain link fence.

This selection of remedy is based on the evaluation of the twelve alternatives developed for this site. With the exception of the four, no action alternatives, each of the alternatives would comply with the threshold criteria.

Surface Soils

The selected alternative for contaminated surface soils is Alternative A-3: Excavation and Disposal. Only Alternative A-3 provides complete compliance with the TAGM 4046 guidance values. Although Alternative A-2 would prevent risks by eliminating the route of exposure, it would require ongoing maintenance to maintain this protection, and thus does not represent a permanent remedy. Therefore, Alternative A-3 was selected.

Western Groundwater Plume

The selected alternative for the western plume is Alternative B-2: Alternative water supply, and long-term monitoring. There are currently no unaddressed risks posed by this plume, and replacement of the current wellhead treatment system with an installation of a new well in the uncontaminated aquifer below the grey clay layer will ensure that prevention of future exposures are not dependant on the operation of the wellhead treatment system.

Alternative B-3 would provide more active remediation but little additional reduction in risk of human exposure. In addition, it would take a system of extraction wells more than 15 years to remove 5 plume volumes. This length of time is not likely to be sufficient to meet maximum contaminant levels (MCLs), especially if additional contamination is introduced(from the presumed area of the original spill near MW-08). More likely, more than 10 plume volumes or thirty years of treatment would be required to meet MCLs.

During this treatment period, risks equivalent to those posed by Alternative B-2 (to any future wells installed in the plume), would still be posed by Alternative B-3. Because there is little additional reduction in risks provided by Alternative B-3, its additional estimated $584,000 in present worth costs does not justify the implementation of B-3. Therefore, Alternative B-2 was selected as being equally protective of future human health.

Eastern Groundwater Plume

The selected alternative for the Eastern Plume is Alternative C-3: Long Term Monitoring and Documentation of Natural Attenuation. Comparison of concentrations in groundwater indicate that natural degradation processes may be occurring.

Since no site-related, volatile organic compounds have been detected in the wetland, Alternative C-3 will provide as effective treatment of the organic contamination in the plume as would the collection and treatment mechanisms that would be employed by Alternative C-2.

Part of the implementation of the C-2 remedy will be to confirm the effectiveness of natural attenuation and to assess potential selenium impacts to biota in the wetland. An added benefit of Alternative C-3 is that it will incur only about 20% of the cost of Alternative C-2. C-3 will also cause much less short term impact to the site during its implementation. C-3 is therefore the selected alternative for the groundwater plume in the wetland.

Landfill

The selected alternative for the landfill is D-2: Two Feet of Final Cover and Six Foot Fencing. All three action alternatives considered meet action-specific requirements. Alternative D-3,would install for a more impermeable cap than Alternative D-2 which might reduce infiltration into the landfill (and thus leachate generation) to a greater extent. The incremental benefits of Alternative D-3 over D-2 would be minor, and would not justify the added 1.2 million dollars in cost over Alternative D-2. Thus Alternative D-2 (and not D-3) was selected as the remedy for the landfill.

The total estimated present worth cost to implement the selected remedy is $920,300. The cost to construct the remedy is estimated to be $656,700 and the estimated average annual operation and maintenance cost for 30 years is $16,500.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program.

2. Any uncertainties identified during the RI/FS will be resolved. For example, additional areas where illegal dumping of liquid wastes may have occurred will be investigated, especially in the vicinity of the impacted private well.

3. Excavation and disposal of contaminated surface soils from the older septic disposal pit into the on-site landfill;

4. Installation of an alternative drinking water supply for the impacted well and long-term monitoring of the western plume;

5. Treatment of the leachate and contaminated eastern groundwater plume by monitored natural attenuation . Long term monitoring of the effectiveness of natural attenuation will be conducted and documented;

6. Installation of a single layer Part 360 cover over the eight(8) acres of major fill area encircled by a six foot high, chain link fence.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- Mailing of the first fact sheet describing the proposed field investigation (RI) work plan to all persons on the contact list.
- Public information meeting to hear comments and answer questions about the upcoming field investigation.
- Fact sheet mailing describing the results of the field investigation to all persons on the amended contact sheet.
- Public information meeting to hear comments and answer questions about the results of the field investigation
- Fact sheet mailing to contact list describing the Proposed Remedial Action Plan (PRAP) and announcing the comment period and public hearing date.
- Thirty day comment period for the PRAP
- Public meeting to discuss the PRAP and gather public comments.
- In March 2001, a Responsiveness Summary was prepared and made available to the public to address the comments received during the public comment period for the PRAP.

Table 1: Nature and Extent of Contamination

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs/ Background	SCG/ Bkgd. (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Trichloroethylene (TCE)	ND-14	2/58	5
		Dichloroethylene (DCE)	ND-29	3/58	5
		Trichloroethane (TCA)	ND-81	10/58	5
		1,1-Dichloroethane (DCA)	ND-19	10/58	5
Surface Soils	Semivolatile Organic Compounds (SVOCs)	1,2-Dichlorobenzene	ND-23,000	1/8	7,900
		4-Chloroaniline	ND-14,000	3/8	220
		Benz(a)anthracene	ND-1,800	3/8	224
		Benzo(a)pyrene	ND-800J	3/8	61
		Benzo(b)fluoranthene	ND-1,800J	3/8	1100
		Benzo(k)fluoranthene	ND-1,300J	2/8	1100
		Phenol	ND-1,400	1/8	30
	Inorganic Compounds (Metals)	Arsenic	1100J-27,100	1/6	7,500
		Barium	10,900J-1,230,000	2/6	300,000
		Beryllium	160J-5005	1/6	360
		Cadmium	86J-12,200	1/6	10,000
		Chromium	1900J-58,500	3/6	10,000
		Copper	5,500-1,430,000	3/6	124,000
		Lead	1200-669,000	2/6	400,000
		Mercury	ND - 4,400	2/6	330
		Nickel	3,700J-58,500	3/6	13,000
		Zinc	16.5J-2,410,000J	3/6	205,000

Table 1
Nature and Extent of Contamination
(CONTINUED)

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs/ Background	SCG/ Bkgd. (ppb)
Sediments	Inorganic Compounds	Antimony	ND-11,900	3/18	2,000
		Arsenic	1,100J-23,600	7/18	6,000
		Cadmium	1,100J-6,000	12/18	600
		Copper	1,600J-29,500	3/18	16,000
		Iron	5,420,000-219,000,000	10/18	20,000,000
		Lead	2,400-45,300	1/18	31,000
		Manganese	66,300-9,610,000	13/18	460,000
		Selenium	3500-58,200	NA	NA
		Silver	710J-2,800	5/18	1,000
		Zinc	12,200-211,000	1/18	120,000

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
A-1: No Action for Surface Soils	0	0	0
A-2: Soil Cover over Surface Soils	10,500	200	13,600
A-3: Excavation/Off-site Disposal	10,500	0	10,500
B-1: No Further Action Western Plume	0	2000	30,700
B-2: New Well/Long term Monitoring	25,700	2000	56,400
B-3: New Well/Pumped Treat Plume	167,000	31,300	648,200
C-1: No Action for Leachate	0	6500	99,900
C-2: Trench Collection of Leachate	497,000	60,000	1,419,400
C-3: Natural Attenuation in Eastern Plume	10,500	6500	110,400
D-1: No Action to Cap Landfill	0	0	0
D-2: Soil Cover/Fence Over Landfill	620,000	8000	743,000
D-3: Geomembrane Cap/Fence	1,599,800	10,000	1,753,500

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Rose Valley Landfill
Proposed Remedial Action Plan
Town of Russia, Herkimer County
Site No. 6-22-017

The Proposed Remedial Action Plan (PRAP) for the Rose Valley Landfill, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 17, 2001. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Rose Valley Landfill. The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A Public Meeting was held on March 8, 2001 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received (via E-mail) on March 14th from John Sandwick, a property owner on Rose Valley Road. The public comment period for the PRAP ended on March 20, 2001.

The Responsiveness Summary responds to all questions and comments raised at the March 8th public meeting and to the written comment received.

The following are the comments received at the public meeting, with the responses by NYSDEC and NYSDOH:

COMMENT 1: What concentrations of contaminants were found on site by the RI?

RESPONSE 1: In the onsite groundwater, four volatile compounds are found exceeding the groundwater standard of 5 parts per billion (ppb) for these compounds. (ppb). These were trichloroethylene (up to 36 ppb), dichloroethylene (up to 25 ppb), trichloroethane (up to 78 ppb) and dichloroethane (up to 14 ppb). Contaminated groundwater onsite was found in two plumes. The first plume is found in the western portion of the site which has impacted one private drinking water well adjacent to the site boundary. The second plume is found at the base of the major fill area in the eastern portion of the site . The western groundwater plume contains trichloroethane (TCA) up to 78 ppb and dichloroethane (DCA) up to 14 ppb. The impacted private drinking water well tapping into this plume contains 12-62 ppb of TCA and 8-21 ppb DCA. The eastern groundwater plume contains up to 29 ppb of dichloroethylene (DCE) and up to 9 ppb of DCA.

In the surface soils inside the older septic waste disposal pit, seven (7) semi-volatile compounds were found exceeding soil guidance values. These were dichlorobenzene up to 23 ppm, chloroaniline up to 14 ppm, benz(a)anthracene up to 1.8 ppm, benzo(a)pyrene up to 0.8 ppm, benzo(b)flouranthene up to 1.8 ppm, benzo(k)flouranthene up to 1.3 ppm and phenol up to 1.4 ppm.

Also found in surface soils and in wetland sediments were certain inorganic compounds (metals) at concentrations that exceeded soil and sediment guidance values. However, metals are naturally occurring in both these media. And while these exceedances are noted in Table 1 of the PRAP and ROD documents as contaminants of concern, these concentrations were not determined to be a significant human health or environmental threat. Nevertheless, as part of the remediation plan, the impact of the present selenium concentrations found in the wetland sediments will be assessed in order to confirm that there is no impact.

COMMENT 2: According to Table 1 in the PRAP document, the main categories of contaminants tested for in the RI are volatiles, semi-volatile compounds, and metals. Is that right? How many samples exceeded standards? What are the standard, criteria or guidance limits (SCGs) for each compound?

RESPONSE 2: The RI tested for volatiles, semi-volatiles, inorganics, pesticides/PCBs and cyanide in soils, surface water, sediment, groundwater and leachate (groundwater that has percolated through landfill waste). In Table 1, the fourth column provides the concentration range of each contaminant compound of possible significance that is found in one of the environmental media. The fifth column gives the number of times each analysis exceeded SCGs; and the sixth column displays the SCG value for each compound.

COMMENT 3: How deep will the contaminated surface soils in the septic disposal pit be excavated?

RESPONSE 3: The actual depth of the excavation has not been determined. For costing purposes in the Feasibility Study, the soil excavation was estimated to be three feet deep. During remedial design, sampling at various depths in the pit will be performed in order to more accurately estimate excavated volumes for the contract documents. More importantly, during the actual excavation, confirmatory sampling in the field will ensure that all contaminated soils are removed.

COMMENT 4: Are the metals concentrations found on the site a contamination problem?

RESPONSE 4: No. Even though some metals concentrations exceeded guidance values in the surface soil samples taken down gradient of the older dump site, the levels found do not trigger concern about a possible contamination problem with the exception of selenium (for which there is no guidance value). Regarding the metals exceeding sediment criteria, these concentrations are not great enough to trigger ecological concern. Actual sampling of selenium found in wetland plants and invertebrates will be completed during remedial design to affirm that there is no impact from selenium contamination.

COMMENT 5: Was there testing done for radioactive wastes in the landfill? If radioactive waste was buried deep within the fill area, would the field investigation have detected it?

RESPONSE 5: Radiation monitoring was not performed on environmental media in the RI; however (the lack of) radiation exposure for field personnel was documented in two ways. During the first week of the field investigation, a radiation exposure instrument was carried over the entire site, and no radiation above normal was detected at any time. In addition, field personnel wore Thermoluminescent Dosimeter (TLD) badges which detect gamma radiation doses of 5 millrems. (A safe annual exposure for humans has been determined to be under 100 millrems.).

There are no records or previous site investigations that indicate that radioactive materials may have been disposed at the landfill. However, in response to the public's concern that a large amount of illegal dumping was allowed by the last landfill operator, NYSDEC will add radio nuclide measurement to the wetland studies to be completed during the remedial design. The sole purpose of these added analyses will be to assure the public that direct measurement of groundwater leaching through the landfill wastes present no danger from radioactive wastes.

COMMENT 6: Why was the single layer, soil cover chosen over the more impermeable geomembrane cap?

RESPONSE 6: Present conditions in the Rose Valley Landfill (and the minimal benefits of a more impermeable landfill cap) do not justify the large capital expenditures that would be required to construct a geomembrane cover. A geomembrane cap was estimated to cost about $1 million dollars more than the single layer cover. ($1,599,800 compared to $620,000.)

The selected, soil cover will be constructed of an 18 inch thick layer of low permeability soils (clay, for example) underlying a 6 inch layer of grass-covered topsoil. The present, low level contamination loadings in the groundwater (originating in the landfill leachate) will be greatly reduced once the soil cap is installed. In addition, steep slopes present over much of the fill area will further reduce the volume of rainwater that will penetrate the cap. The existing volume of lightly contaminated groundwater is presently being treated by natural attenuation . Therefore the construction and maintenance of a single layer soil cover is a cost effective method for protecting human health and the environment.

COMMENT 7: The estimated geological cross-section of the major fill area (displayed at the public hearing) showed the interpreted water table below the fill. Is this watertable part of the shallow aquifer or the deeper aquifer?

RESPONSE 7: The landfill cross-section shows the upper (shallow) aquifer. Leachate percolating through the fill has only impacted the shallow aquifer and not the aquifer below.

COMMENT 8: Why are the ground surface (topographic) contours different from the groundwater contours of the shallowest aquifer?

RESPONSE 8: The subsurface of the landfill property has a very deep layer of homogeneous and highly permeable sands overlying mainly impermeable till. Rainwater sinks through these deep sands very rapidly and finally settles on top of the first clay/till layer. Therefore, the groundwater contours mirror the contours of this much less permeable subsurface layer. In most areas west of the fill area, the watertable is more than 80 feet deep.

COMMENT 9: The selected remedy calls for contaminated surface soils (being excavated from the septic waste disposal pit) to be placed under the newly constructed landfill cover. Will the contaminants from the excavated soil migrate out of the landfill and into the groundwater ?

RESPONSE 9: No. Once the contaminated soils are placed under the landfill cover, they will not migrate. The majority of semi-volatile substances are not very leachable or soluble. At the very most, these trace amounts will be dispersed only a short distance from their source. In addition, the volume of leachate percolating through the waste will be greatly reduced once the landfill cover is constructed.

COMMENT 10: Have the young people who frequent the landfill and ride all terrain vehicles (ATVs) on the sand slopes above the landfill been exposed to unhealthy amounts of contamination?

RESPONSE 10: We do not believe so, although we cannot accurately postulate what exposures existed ten years ago. Exposure would result from direct contact, inhalation or ingestion of the contaminated soil rather than from just riding over the surface on an ATV. In addition, we are removing the single identified area of surface soil contamination. We will continue to investigate other possible spill sites during the remedial design and construction.

COMMENT 11: NYSDEC's remedial investigation failed to pinpoint the exact source (location of the solvent spill) of the groundwater plume that contaminated the private well. Why wasn't locating, sampling and cleaning up this spill site part of the field investigation and selected remedy?

RESPONSE 11: The source of contamination for the western groundwater plume was looked for during the Remedial Investigation. Predesign activities will also attempt to locate the source. The investigation in that area utilized a soil gas survey, a hydropunch survey and the installation of groundwater monitoring wells to identify the extent of contamination. The results of the investigation identified an area within an approximately 200 foot radius of MW-08, where the historical spill or dumping may have occurred. Based on the soil gas survey results, and on the minor levels of groundwater contamination, it is concluded that the source area of the groundwater contamination has probably dissipated to the point where the low levels of remaining soil contamination do not act as a (significant) continual source of future contamination to the groundwater. Remaining low levels of contaminated soil would not pose a threat to the viability of the remedy for that area, nor to human health or the environment.

COMMENT 12: The Black Powder Club is considering drilling a well near the northeast corner of the site. Is there a possibility that this new well will be impacted by the western plume? Should this well bypass the shallow aquifer and tap into the deeper aquifer?

RESPONSE 12: There is little possibility that the plume would impact a new well near Bromley and Military Roads. The plume is small and it is not likely to expand in the future. Once the remedy is implemented, the plume is expected to shrink. In addition, semi-annual monitoring of the leading edges of the plume will keep track of any plume migration. Bypassing the upper aquifer and tapping into the deeper aquifer would provide even more assurance that the new well will be clean.

COMMENT 13: Should people be warned against building new homes in the vicinity of the Bromley and Rose Valley Roads?

RESPONSE 13: No. However, tapping into the deeper aquifer (and bypassing the shallow aquifer) would provide even more assurance that a new well will be clean. The Building Code Enforcement Officer for the Town of Russia will be advised of this by a letter from NYSDOH District Office in Herkimer. With the exception of the shallow aquifer within the area of the western plume, the NYSDOH is not concerned that property owners will be at risk from site-related groundwater contamination.

COMMENT 14: During the period of landfill operation, neighbors heard a large number of truck deliveries being made in the middle of the night. We imagine/fear that the illicit nature of these deliveries means that the waste being disposed of was very hazardous. Was much testing done on the landfill waste itself? We don't want the waste just covered up and left on site. We want to know what was buried on site.

RESPONSE 14: Testing of the landfill waste was not done during the remedial investigation. The work plan for the Rose Valley remedial investigation was based on experiences of NYSDEC and USEPA with studying and remediating numerous landfills across the state and country. In light of the vast amount and mix of disposed material at Rose Valley, testing the waste would only be "hit and miss" and was not an effective use of investigative resources.

It is regrettable that the landfill was operated in this very disturbing manner. However, the remedial investigation (RI) made direct measurements of the contaminant loading of the leachate (which is the groundwater that percolated down through the waste). The RI found only light concentrations of volatile contaminants and metals which do not appear to be significantly impacting the wetland and are indicative of a mixed use residential/commercial/industrial landfill.

However, if in the course of consolidating, regrading and covering the landfill, we discover drums of hazardous waste, it is standard practice that the drums will be carefully excavated, overpacked in leakproof containers and disposed of at a hazardous waste facility. After the landfill cover is constructed and the fence installed, DEC will maintain and monitor the site.

COMMENT 15: How can the public find out the results of the long-term groundwater monitoring? How do we know the monitoring will be carried out?

RESPONSE 15: The long-term monitoring is an element of selected remedy in the Record of Decision. Records of the monitoring results will be kept in DEC files. These files will be a matter of public record and may be requested for inspection at any time. If requested, a mailing list can be established to distribute the testing results.

COMMENT 16: Can the Town of Russia receive a copy of the Record of Decision?

RESPONSE 16: Yes, we will send copies of the document to town officials on our contact list. Copies of the other Rose Valley documents will also be sent to the Town Clerk.

COMMENT 17: Was there sand mining permitted at the landfill?

RESPONSE 17: Yes. In 1985, Mr. Crouch applied for and received a three year mining permit. In 1988, Mr. Crouch applied for a renewal of the permit. However, his application to renew was denied because he was observed mining into areas containing waste to gain access to virgin sand.

COMMENT 18: Who will own the site once remediation is completed? Can't the owners be held responsible for some of the cleanup costs?

RESPONSE 18: The two parcels that encompass the site property will remain under the present ownership. The DEC will pursue cost recovery from any Potential Responsible Parties in the future. Property liens are sometimes part of a cost recovery program.

Written comments dated March 15 and 19 were received by way of E-mail from John Sandwick, an adjacent property owner, which include the following:

COMMENT 19: It is imperative that the project includes a larger fenced area beyond the limits of the eight acre landfill cover. The fence should limit access to the landfill from the south and also the sand pit area which attracts many ATV riders.

RESPONSE 19: Once the landfill site is remediated, there will be no justification for using State Superfund monies to maintain a fence that discourages ATV riders from using the sand pit (since there will be no known risk or exposures to them from contamination). Only the six foot security fence (which will protect the eight acres of landfill cover from vandalism and ATV use) will be installed and maintained using remediation monies

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

For following documents are in the Administrative Record for the Rose Valley Landfill inactive hazardous waste site:

1. For Gerald Crouch, Owner/Operator, Rose Valley Landfill, Town of Russia, Herkimer County , New York, Closure Plan for Active Landfill, January 1984.

2. For USEPA Superfund Division, Preliminary Assessment of the Rose Valley Landfill Site, 1988.

3. For NYSDEC Division of Solid Waste, Contamination Assessment of Selected Landfills in New York State, Rose Valley Landfill, Town of Russia, April, 1991.

4. For USEPA Superfund Division, Final Inspection Report, J&J Trucking (a.k.a. Rose Valley Landfill) CERCLIS ID No NYD986868222, January 14, 1994.

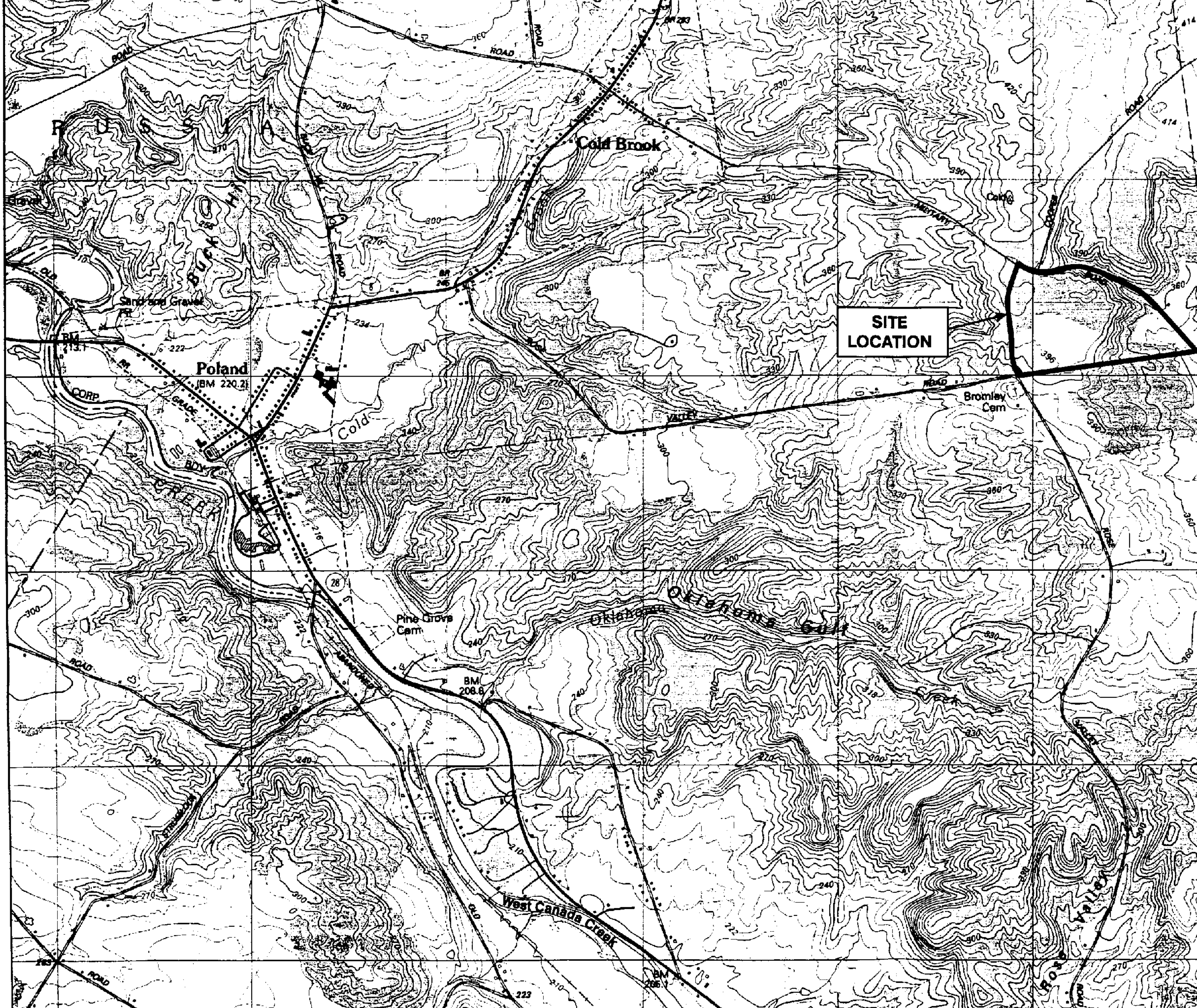
5. For NYSDEC Division of Environmental Remediation, Work Plan for the Remedial Investigation. Feasibility Study at the Rose Valley Landfill, May 1999.

6. For NYSDEC, Remedial Investigation Report, Rose Valley Landfill Site No. 6-22-017, January 2001.

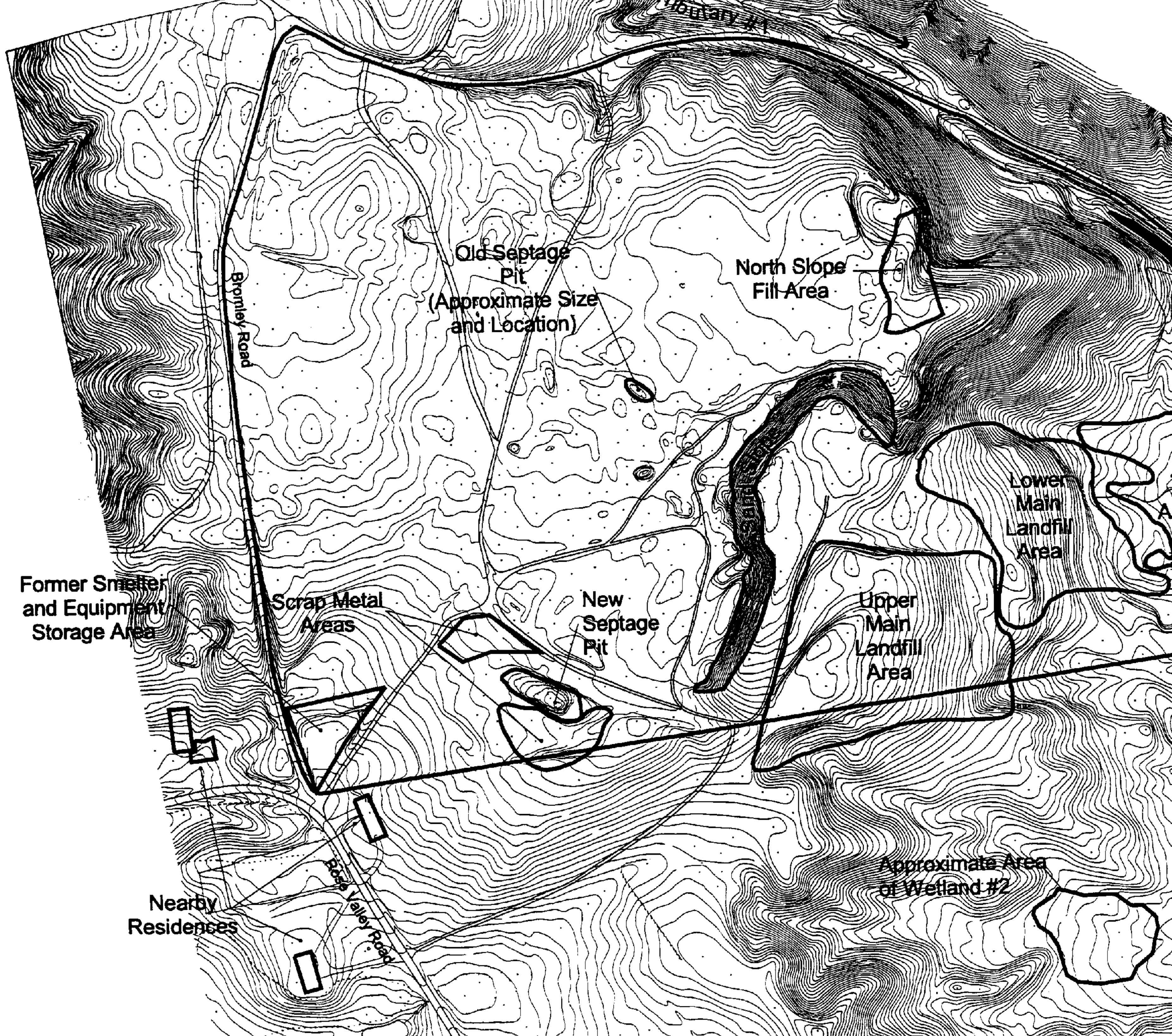
7. For NYSDEC, Feasibility Study Report, Rose Valley Landfill Site No. 6-22-017, February 2001.

8. NYSDEC, Proposed Remedial Action Plan, Rose Valley Landfill Site No 6-22-017, February 2001.

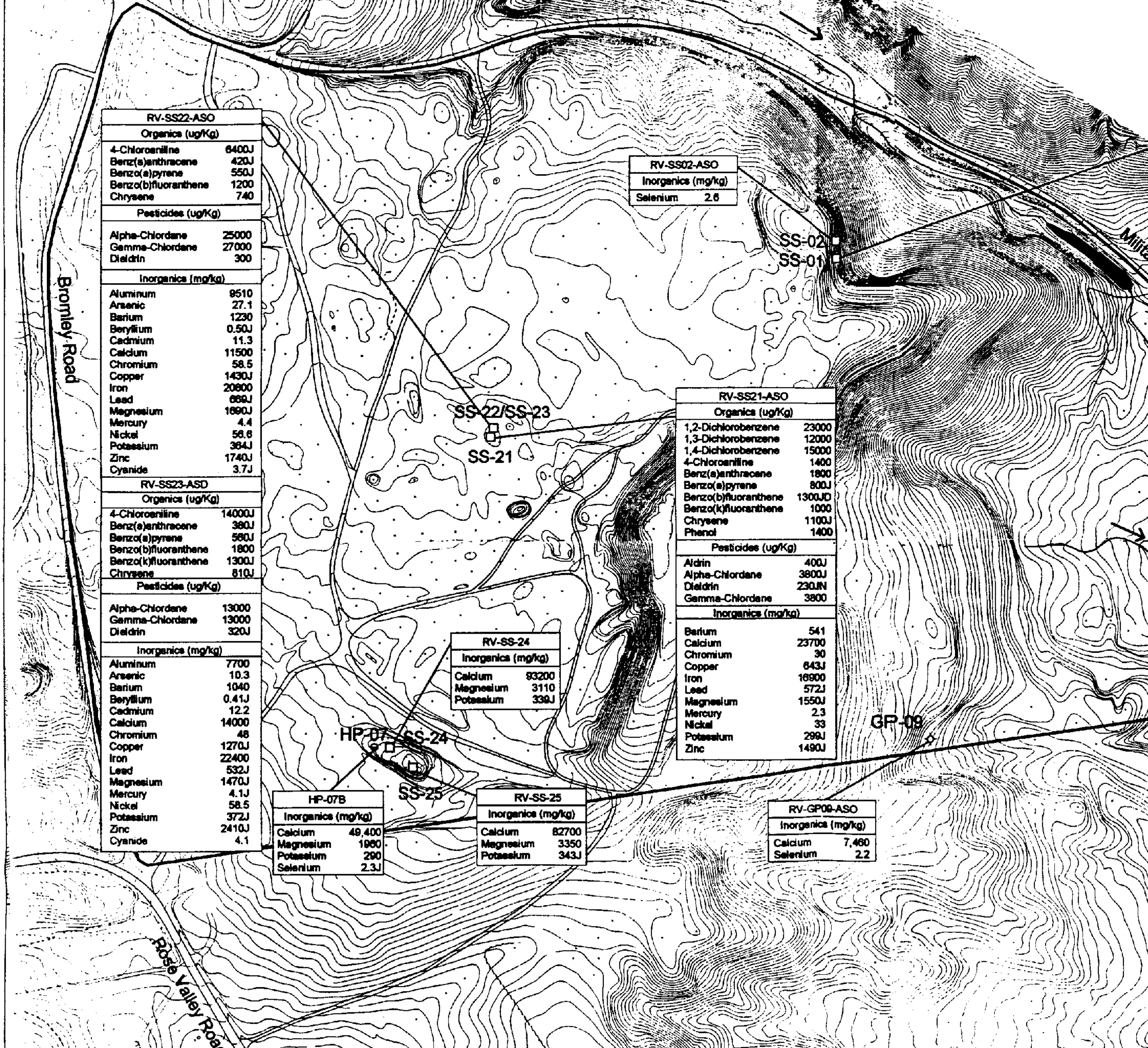
9. NYSDEC, "Responsiveness Summary, Rose Valley Landfill Site No 6-22-017", March 2001.



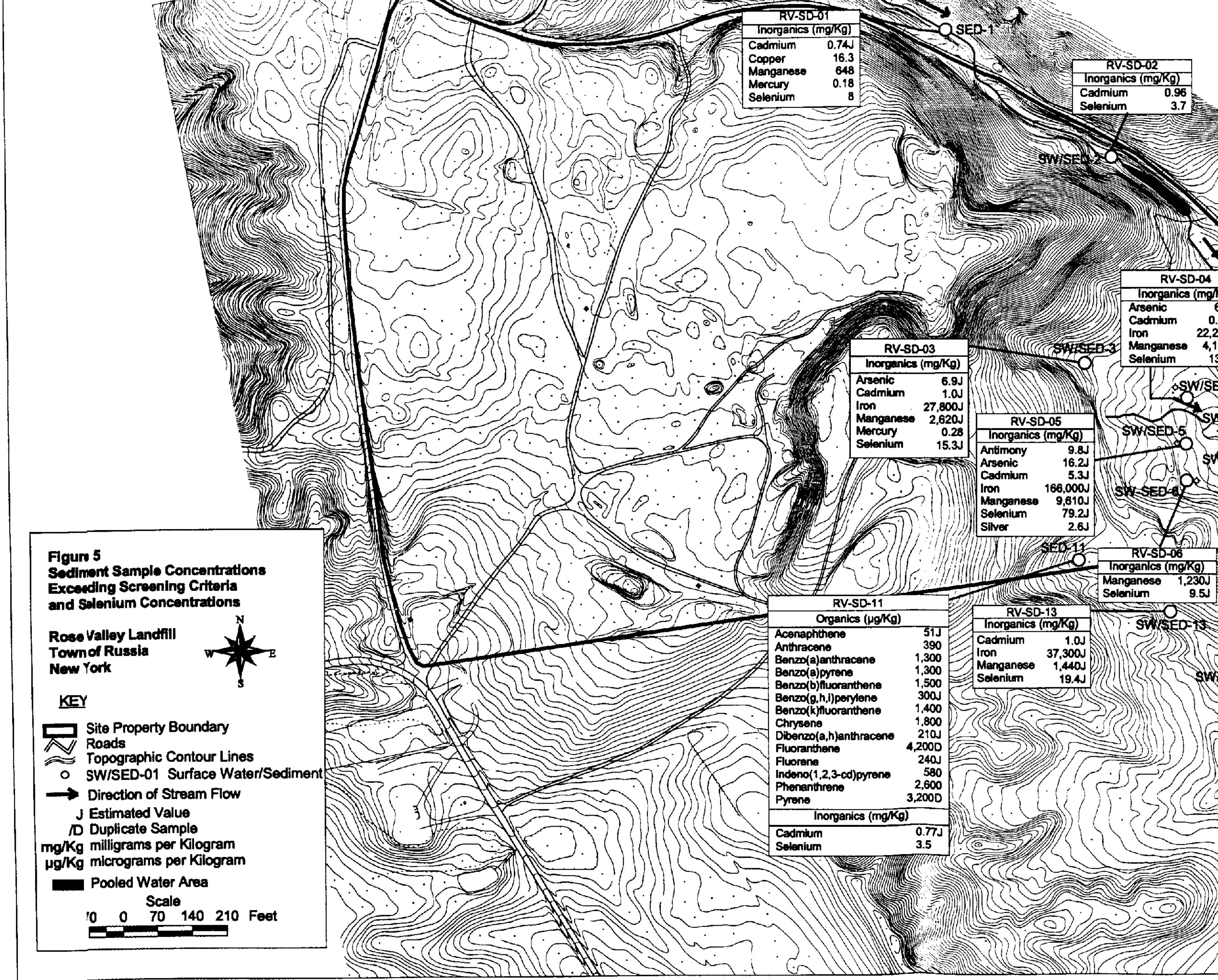
SITE LOCATION
Poland
BM 220.2
BM 213.1
Cold Brook
Cold
Sand and Gravel Pit
Pine Grove Cem
BM 208.6
Bromley Cem
West Canada Creek
Oklahoma Gulf
CREEK
CORP
BDY
ROAD


Tributary #1
Bromley Road
Old Septage Pit (Approximate Size and Location)
North Slope Fill Area
Sand Slope
Lower Main Landfill Area
Former Smelter and Equipment Storage Area
Scrap Metal Areas
New Septage Pit
Upper Main Landfill Area
Rose Valley Road
Nearby Residences
Approximate Area of Wetland #2


MW-14
HP-12/PZ-06
MW-13
MW-01
MW-15
MW-17
HP-11/PZ-05
GP-04
HP-10/PZ-04
MW-12
GP-01/PZ-08
GP-02
GP-03
HP-09/PZ-03
GP-05
GP-10
HP-07
GP-09
HP-05
100
HP-06/PZ-01
MW-07
MW-02
HP-08
MW-B4
MW-10
MW-05
HP-04
GP-06
GP-07
MW-09
HP-01
GP-08/PZ-07
Western
Plume
30
HP-02



Bromley Road
Rose Valley Road
Milita
RV-SS22-ASO
Organics (ug/Kg)
4-Chloroaniline 6400J
Benz(a)anthracene 420J
Benzo(a)pyrene 550J
Benzo(b)fluoranthene 1200
Chrysene 740
Pesticides (ug/Kg)
Alpha-Chlordane 25000
Gamma-Chlordane 27000
Dieldrin 300
Inorganics (mg/kg)
Aluminum 8510
Arsenic 27.1
Barium 1230
Beryllium 0.50J
Cadmium 11.3
Calcium 11500
Chromium 58.5
Copper 1430J
Iron 20800
Lead 669J
Magnesium 1690J
Mercury 4.4
Nickel 56.6
Potassium 364J
Zinc 1740J
Cyanide 3.7J
RV-SS23-ASD
Organics (ug/Kg)
4-Chloroaniline 14000J
Benz(a)anthracene 380J
Benzo(a)pyrene 560J
Benzo(b)fluoranthene 1800
Benzo(k)fluoranthene 1300J
Chrysene 810J
Pesticides (ug/Kg)
Alpha-Chlordane 13000
Gamma-Chlordane 13000
Dieldrin 320J
Inorganics (mg/kg)
Aluminum 7700
Arsenic 10.3
Barium 1040
Beryllium 0.41J
Cadmium 12.2
Calcium 14000
Chromium 48
Copper 1270J
Iron 22400
Lead 532J
Magnesium 1470J
Mercury 4.1J
Nickel 58.5
Potassium 372J
Zinc 2410J
Cyanide 4.1
RV-SS02-ASO
Inorganics (mg/kg)
Selenium 2.6
SS-02
SS-01
SS-22/SS-23
SS-21
RV-SS21-ASO
Organics (ug/Kg)
1,2-Dichlorobenzene 23000
1,3-Dichlorobenzene 12000
1,4-Dichlorobenzene 15000
4-Chloroaniline 1400
Benz(a)anthracene 1800
Benzo(a)pyrene 800J
Benzo(b)fluoranthene 1300JD
Benzo(k)fluoranthene 1000
Chrysene 1100J
Phenol 1400
Pesticides (ug/Kg)
Aldrin 400J
Alpha-Chlordane 3800J
Dieldrin 230JN
Gamma-Chlordane 3800
Inorganics (mg/kg)
Barium 541
Calcium 23700
Chromium 30
Copper 643J
Iron 16900
Lead 572J
Magnesium 1550J
Mercury 2.3
Nickel 33
Potassium 299J
Zinc 1490J
RV-SS-24
Inorganics (mg/kg)
Calcium 93200
Magnesium 3110
Potassium 339J
HP-07
SS-24
SS-25
GP-09
HP-07B
Inorganics (mg/kg)
Calcium 49,400
Magnesium 1960
Potassium 290
Selenium 2.3J
RV-SS-25
Inorganics (mg/kg)
Calcium 82700
Magnesium 3350
Potassium 343J
RV-GP09-ASO
Inorganics (mg/kg)
Calcium 7,460
Selenium 2.2



RV-SD-01
Inorganics (mg/Kg)
Cadmium 0.74J
Copper 16.3
Manganese 648
Mercury 0.18
Selenium 8
SED-1
RV-SD-02
Inorganics (mg/Kg)
Cadmium 0.96
Selenium 3.7
SW/SED-2
RV-SD-04
SW/SED-3
RV-SD-03
Inorganics (mg/Kg)
Arsenic 6.9J
Cadmium 1.0J
Iron 27,800J
Manganese 2,620J
Mercury 0.28
Selenium 15.3J
RV-SD-05
Inorganics (mg/Kg)
Antimony 9.8J
Arsenic 16.2J
Cadmium 5.3J
Iron 166,000J
Manganese 9,610J
Selenium 79.2J
Silver 2.6J
SW/SED-5
SW-SED-6
SED-11
RV-SD-06
Inorganics (mg/Kg)
Manganese 1,230J
Selenium 9.5J
RV-SD-13
Inorganics (mg/Kg)
Cadmium 1.0J
Iron 37,300J
Manganese 1,440J
Selenium 19.4J
SW/SED-13
RV-SD-11
Organics (µg/Kg)
Acenaphthene 51J
Anthracene 390
Benzo(a)anthracene 1,300
Benzo(a)pyrene 1,300
Benzo(b)fluoranthene 1,500
Benzo(g,h,i)perylene 300J
Benzo(k)fluoranthene 1,400
Chrysene 1,800
Dibenzo(a,h)anthracene 210J
Fluoranthene 4,200D
Fluorene 240J
Indeno(1,2,3-cd)pyrene 580
Phenanthrene 2,600
Pyrene 3,200D
Inorganics (mg/Kg)
Cadmium 0.77J
Selenium 3.5
Figure 5
Sediment Sample Concentrations
Exceeding Screening Criteria
and Selenium Concentrations
Rose Valley Landfill
Town of Russia
New York
N
W
E
S
KEY
Site Property Boundary
Roads
Topographic Contour Lines
SW/SED-01 Surface Water/Sediment
Direction of Stream Flow
J Estimated Value
/D Duplicate Sample
mg/Kg milligrams per Kilogram
µg/Kg micrograms per Kilogram
Pooled Water Area
Scale
70 0 70 140 210 Feet

Bromley Road
Extent of
Landfill Capping
Rose Valley R