Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

McKenna Landfill Site
Town of Albion, Orleans County
Site Number 8-37-003

March 1995

New York State Department of Environmental Conservation

GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT-RECORD OF DECISION

McKenna Landfill
Albion, New York
Site #8-37-003

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the McKenna Landfill Inactive Hazardous Waste Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300)

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the McKenna Landfill Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix A of this ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site will be addressed by remedial construction activities to be completed as specified in this ROD.

Description of the Selected Remedy

The selected remedial action plan provides for the protection of human health and the environment by removing exposure to contaminants at the site. The Remedial Plan is technically feasible and it complies with statutory requirements. Briefly, the selected remedial action plan includes the following:

- a low permeability landfill cap in conformance with 6 NYCRR Part 360 requirements for landfill closure;

- a passive landfill gas venting system;

- surface drainage improvements to promote positive conveyance of runoff;

- perimeter leachate/groundwater collection system piping, connections to existing system and wet-well collection manholes and tankage as needed;

- leachate/groundwater collection, transportation and treatment/disposal;

- a long term monitoring program to evaluate the effectiveness of the remedy.

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 statutory preference for remedies that reduce toxicity, mobility or volume as a principal element.

3/28/95
Date

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

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Record of Decision

"McKENNA LANDFILL"
Albion, Orleans County, New York
Site No. 8-37-003
March 1995

SECTION 1: SITE LOCATION AND DESCRIPTION

The McKenna Landfill (site #8-37-003) is located on Yager Road in the Town of Albion, Orleans County, New York. The site consists of an inactive landfill, approximately 15 acres in size, which is bounded by the Erie Barge Canal to the north and the Orleans Sanitary Landfill (OSL) property to the east, south and west. (See Figure 1). The surrounding area is rural in nature with sparsely located residences and is relatively flat.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The landfill was operated by Mr. Alan J. McKenna from 1969 to 1983 and received municipal refuse from several townships and industrial wastes from several companies. The industrial wastes were reported to include vinyl chloride from Bayex, paint sludge and spent cleaning solvent from Fisher Price Toys, tetrachloroethylene from Aurora Cleaners.

2.2: Remedial History

Prior to the closing of the landfill in 1983, the landfill had been cited for numerous operational violations of regulations regarding Solid Waste Management Facilities, New York Code of Rules and Regulations, Title 6 (6NYCRR), Part 360. These violations included open burning, uncovered refuse, refuse protruding through the cover, uncontrolled leachate seeps, methane gas leaking from landfilled areas in concentrations exceeding the lower explosive limit and leachate seeping off site.

In 1983 the NYSDEC executed an Order on Consent with the site owner, Mr. McKenna, requiring proper closure and post closure maintenance of the site. Inspections of the site since execution of this Order indicate that several Part 360 violations still exist, with the most prominent being the off-site migration of leachate.

In an attempt to control the methane gas release problem, six methane gas vents were installed by the site owner into the landfill in 1984. The owner also installed a leachate collection system along the northern edge of the landfill in an attempt to address the leachate migration problem. This system was extended along the western perimeter and a portion of the southern perimeter of the site in 1987. Leachate was pumped from this

system into tankers and taken to the Albion Wastewater Treatment facility for disposal. Since construction of the leachate system, the site owner has not regularly pumped leachate as needed. Further, it has been determined that the constructed collection system was not properly installed. As such, significant leachate problems continue. Additionally, the gas venting system at the site is inadequate, because so few vents were installed.

In 1984 the site was placed on NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site, meaning that the site was suspected to be a problem, but not enough information was available. This classification was changed in 1991 after a Phase II Investigation was conducted. This investigation determined that groundwater in the immediate vicinity of the site contained compounds in excess of 6NYCRR Part 703 Groundwater Standards and that hazardous wastes had been disposed at the site. The contaminants detected are in contact with the aquifer used by area residents for domestic purposes. For these reasons the classification was changed to Class 2, meaning the site posed a threat to human health and the environment and that action was required.

SECTION 3: CURRENT STATUS

This site is a solid waste landfill that also accepted industrial wastes. Some of the industrial waste was hazardous in nature. The NYSDEC has evaluated the data available for this site and concluded that enough information exists to move forward with final closure of the landfill site. This decision is consistent with CERCLA and the NYSDEC has prepared this presumptive remedy Record of Decision (ROD) using the guidance developed by the NYSDEC in Technical and Administrative Guidance Memorandum (TAGM) No.4044 and by the EPA in its guidance, "Presumptive Remedy for CERCLA Municipal Landfill Sites". It must be noted that this ROD is only for the final closure of the landfill and does not address any off-site contamination that may be associated with the site.

The NYSDEC initiated a Phase II Investigation in 1988 to determine the presence of contamination at the site. The purpose of the Phase II Investigation was to collect information needed to complete the Hazard Ranking System score, evaluating the geologic and hydrogeologic site conditions and identifying and evaluating the presence and nature of contamination at the site.

Waste Management of New York, Inc. (WMNY) has been conducting investigations in the vicinity of the site, in its efforts to develop a Part 360 permit application to open and operate a landfill adjacent to the former OSL facility location. Part of this investigation has included characterization of the geology and hydrogeology of the McKenna site. This investigation included the installation of groundwater monitoring wells on the north side of the Erie Barge Canal. These wells were sampled on separate occasions by WMNY and NYSDEC.

3.1: Summary of Site Investigations

As stated above, investigations at and around the McKenna Landfill site have been conducted by the NYSDEC and WMNY. These investigations allowed adequate characterization of the site to evaluate the need for final closure of the landfill.

The investigative activities consisted of the following:

- *Geophysical survey to determine the limits of fill material.*
- *Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.*
- *Sampling and analysis of surface water from the Erie Barge Canal.*
- *Sampling and analysis of leachate seeps from the site.*
- *Installation, sampling and analysis of groundwater wells on the north side of the barge canal.*

The analytical data obtained from these investigations were compared to Applicable Standards, Criteria, and Guidance (SCGs) in determining remedial alternatives. Groundwater, drinking water and surface water SCGs identified for the McKenna Landfill site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and on Part V of NYS Sanitary Code.

Based upon the comparison of investigation results to the SCGs and consideration of potential public health and environmental exposures, certain areas and media of the site require remediation.

The following is a summary of the characteristics and conditions at this site.

Geology

The overburden at the site has been identified as glacial till. This till is composed of sand and silt, with small amounts of clay and gravel. The thickness of the overburden varies from 0 to 10 feet.

The upper most bedrock unit underlying the site is the Grimsby Sandstone formation. This bedrock is nearly flat-lying and dips slightly to the south at approximately 1/2 degree. In the vicinity of the site, the erosional surface of the bedrock slopes to the north. In the area of the site the Grimsby formation is approximately 60 to 75 feet thick.

The Queenston Shale underlies the Grimsby formation. The Queenston formation consists mostly of brick-red, sandy shale and thin beds of greenish-gray shale and greenish-gray sandstone. The formation is approximately 1,200 feet thick. Groundwater within this formation near the site was analyzed and found to be brackish to saline, with high concentrations of chloride and sodium.

Hydrogeology

Generally, groundwater in the area of the site flows north toward Lake Ontario. Locally, bedrock groundwater at the site flows toward the north. Further, there is also a downward vertical gradient present in the groundwater at the site. Groundwater occurs under unconfined or water table conditions within both the overburden and bedrock formations and the levels are generally within 1 to 2 feet of ground surface. Groundwater is transmitted through the overburden material and through the bedding plane partings and

fractures of the Grimsby formation. The hydraulic conductivity of the Grimsby formation is generally low, approximately 7 x 10^{-5} cm/sec 5 feet into the rock and 2 x 10^{-6} cm/sec 35 feet into the rock.

Water level data indicates that the adjacent section of the Erie Canal changes from a potential recharge condition when flooded to a discharge condition when drained, relative to the adjacent overburden and top of rock flow zones. The canal was constructed with low permeability bottom and sides and does have an effect on overburden groundwater flow by presenting a physical barrier to flow. However, the canal does not appear to have a major effect on groundwater flow within the bedrock.

Groundwater

Analyses of samples from three wells installed at the overburden/bedrock interface, immediately adjacent to the site determined the presence of several organic compounds above NYSDEC groundwater standards, including chlorobenzene, ethylbenzene, total xylenes and 1,2,4 trichlorobenzene (Table 1). Detection of inorganic elements above groundwater standards included arsenic, iron, barium, lead and manganese.

Three well nests (i.e. wells in the overburden and bedrock formations) were installed north of the canal. Analyses of samples from the bedrock wells did not detect any organic compounds above the groundwater standards (Table 2), except for 4 methylphenol (18 ug/l in RI-2TR and RI-3TR). Also, delta BHC and Endosulfan I were detected in wells RI-1TR and RI-3TR at concentrations less than 1 ug/l (part per billion) . Concentrations of most inorganic compounds from these wells were consistent with background levels; however, the levels of aluminum, barium and iron do appear to be elevated above expected background levels. Analysis of overburden wells at these nests by WMI found no contaminants above background levels north of the canal. The canal acts as a barrier to overburden groundwater migration from this site. In addition, samples obtained from domestic wells north and east of the canal did not detect any compounds above NYSDOH Drinking Water Standards. Based on these results it appears that migration of compounds from the site beyond the canal, through the bedrock formation, has not yet occurred to a degree that threatens any nearby water supplies.

Surface Water

Two surface water samples were taken in the canal, when it was drained, near the eastern and western ends of the site. Concentrations of inorganic compounds, including aluminum, iron and lead exceeded NYSDEC Surface Water Quality Standards for Class C waters (Table 3). Tetrachloroethylene was detected in each sample at a concentration slightly above the water quality standard.

Leachate

Leachate continues to seep from the landfill and has been observed on numerous occasions seeping from the north side of the site. Trace concentrations of organic compounds, including 1,4 dichlorobenzene and 2,4 dimethylphenol, were detected in leachate samples taken. Several inorganic elements, including aluminum, iron, lead, cobalt and zinc, were also detected in the samples (Table 3).

Leachate staining (i.e., an orange color in the sediments) has been observed on the bottom of the Erie Barge Canal when it is drained. Samples taken by the NYSDEC in April 1993 from stained areas on the canal bottom found elevated levels of aluminum (up to 10,000 parts per million (ppm)), iron (up to 40,600 ppm), lead (up to 111 ppm) and zinc (up to 415 ppm). (See Table 4 for results) These results are indicative of leachate migration towards the canal when it is drained.

Sediments

Sediment samples were taken from four locations at the site: three from a ditch between the site and the canal and one from a pond adjacent to the northeast corner of the site (Table 4 and Figure 2). The samples from the ditch are in an area where leachate seeps are found and that could have affected the sediments. Volatile organic compounds (such as benzene, ethylbenzene, total xylenes and acetone) were found at low levels in these sediments. Semi-volatile compounds (such as butylbenzylphthalate, heptachlor epoxide and di-n-butylphthalate) were detected at higher concentrations in these samples. Concentrations of inorganic elements did not exceed those found in typical non-contaminated soils. Results from the pond sediment sample contained acetone (13 ppb), methylene chloride (6 ppb) and di-n-butylphthalate (4,400 ppb). Concentrations of inorganic elements did not exceed those found in typical non-contaminated soils.

Gas Vent Analysis

Samples were obtained from the steel and PVC gas vents installed at the site. Analysis of these samples detected the presence of acetone, benzene, toluene, total xylenes, n-butylacetate and ethyl alcohol. Further investigation and monitoring will be needed once the landfill has been properly closed to determine if an air pathway problem exists at this site.

3.2 Summary of Human Exposure Pathways:

The site is upgradient from several domestic groundwater consumers. As such, consumption of bedrock groundwater presents a potential human exposure pathway. This potential human exposure pathway is a principal concern for this site and efforts have been made to determine if any actual exposures have been or are occurring. Over the past 5 years, NYSDOH has collected and analyzed samples from 10 private homes within one mile of the site. To date, no compounds attributable to the site have been detected in this sampling and the NYSDOH has determined that the water from these private wells ~~are~~ is suitable for all purposes. Currently, only the installation and use of a residential well very near the landfill would likely create unacceptable exposures to groundwater contamination. However, given the direction of groundwater flow (i.e. to the north), the site is considered to present a potential long term threat to the quality of bedrock groundwater further from the landfill.

Leachate has been observed many times seeping from the north side of the site and flowing into a ditch between the site and the canal. This leachate also presents a potential human exposure pathway for anyone present in this area.

3.3 Summary of Environmental Exposure Pathways:

Leachate has been observed flowing from the site into a ditch between the site and the canal. This ditch flows west and then north, beneath the canal, to a small quarry northwest of the site. As such, the contaminants that may be present in the water and sediments in this ditch present a potential exposure pathway for any wildlife in the area of the site.

SECTION 4: ENFORCEMENT STATUS

The NYSDEC is negotiating a Consent Order with Waste Management of New York, Inc. (WMNY) to implement the final closure for the landfill. WMNY is a potentially responsible party for the remediation of this site as the result of their purchase of a transporter of hazardous waste to the site.

The following is the chronological enforcement history of this site.

Date	Index No.	Subject of Order
8/24/83	8-0349	Site Closure
11/7/91	18480	Site Closure

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all Standards, Criteria, and Guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to 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:

- *Reduce, control, or eliminate the (generation of leachate within the fill mass).*
- *Eliminate the threat to surface waters by eliminating any future contaminated surface run-off of the contaminated leachate on site.*
- *Eliminate the potential for direct human or animal contact with the contaminated leachate on site.*
- *Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.*

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Two potential alternatives for final closure of the McKenna Landfill have been identified: the No Action Alternative, and the presumptive remedy of site capping and leachate collection and treatment. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address leachate migration and ongoing groundwater contamination at the site.

1. No Action

Present Worth	*$1,008,851*
Capital Cost	*$ 0*
Annual O&M	*$ 81,300*
Time to Implement	*0 to 6 months*

The No Action alternative is included for purposes of comparison with the other alternative. This alternative would have no further construction activities, but would include periodic repair of the existing cap, removal of leachate from the existing collection system, leachate disposal and semi-annual sampling and analysis of on-site wells, wells north of the canal and nearby domestic wells.

2. Part 360 Cap and Leachate/Groundwater Collection System with Off-Site Treatment/Disposal

Present Worth:	*$ 5,745,548*
Capital Cost:	*$ 4,286,250*
Annual O&M:	*$ 117,600*
Time to Implement	*2 years*

This alternative includes construction of a Part 360 low permeability landfill cap, an improved passive landfill gas venting system, surface water drainage improvements to promote positive conveyance of runoff, construction of an effective perimeter leachate/groundwater collection system, connections to the existing system, wet well collection manholes and off-site leachate/groundwater treatment and disposal.

6.2 Evaluation of Remedial Alternatives

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 (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion.

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. (an explanation of SCGs is included as Appendix C)*

Alternative 1 would not satisfy any of the SCGs because no action would be taken at the site. Specifically, the chemical-specific SCGs for groundwater quality (Part 703 Groundwater Standards) and the cleanup standards for soils and sediments (NYSDEC TAGM 4046) would not be met in the groundwater and soil/sediment around the site. Also, the action-specific SCGs for closure and post-closure maintenance of the site (Part 360 Solid Waste Management Facilities Standards) would not be met, due to the inadequate cap over the site and the continued seepage of leachate at the site. Alternative 2 would satisfy location- and action specific (i.e., the Part 360 closure requirements) SCGs. This alternative would satisfy chemical-specific SCGs to the extent that contaminated groundwater would be removed and treated; however, this alternative would not remove all of the contaminated groundwater at the site. It is expected that, overall, Part 703 Groundwater Standards would be met outside the landfill area, but not necessarily within the waste fill.

2. Protection of Human Health and the Environment. *This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.*

The alternatives that provide the best protection to human health and the environment would be those that eliminate the exposure pathways from the site and also seek to extract contaminants from the site. Of the two alternatives evaluated, the one that would best achieve both is Alternative 2, which has both a capping and an effective leachate collection component.

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 implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.*

Due to the lack of any major construction at the site itself under Alternative 1 (No Action), this alternative would present the fewest short term impacts. Because of the construction required for the leachate collection system and cap, Alternative 2 would present some potential short term impacts, the most prominent being a short term period of high truck traffic and other construction related concerns, such as fugitive dusts. If WMNY agrees to construct the cap using a geomembrane layer, the number of truck trips will be substantially reduced. Other construction related concerns could be readily minimized if reliable mitigation measures are diligently implemented.

4. Long-term Effectiveness and Permanence. *This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. 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.*

Alternative 2, which has a separation/treatment component, is expected to be effective. However, its ranking under this criterion is weakened by the need for long term operation and maintenance, as well as environmental controls and a moderate level of monitoring. The capping component of this alternative would be very reliable, but would require periodic cap inspections and repair. These maintenance activities can be very effective, but rely on continued diligence for long term effectiveness. Alternative 1 would have similar long term requirements, but because of the ineffectiveness of the existing systems would have the least long term effectiveness and permanence. The likelihood of a need for future remediation is highest for Alternative 1.

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.*

Alternative 2 would be the most effective reducer of contaminant mobility since it has both a low permeability cap and effective leachate collection and treatment components. These components would combine to reduce the volume of water that infiltrates into the landfill and to increase the percentage removal of leachate that is generated by such infiltration. Under Alternative 1, contaminant mobility would be unaffected and leachate migration would continue unabated. Neither alternative would significantly reduce toxicity or volume of hazardous waste present at the site.

6. Implementability. *The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personal and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..*

Alternative 1 would be easy to implement because it does not include any major construction. Alternative 2 would be more difficult to construct because it involves a cap and collection system. However, the materials needed to implement this option are readily available, as are qualified contractors to perform the work. Placement of wells would be relatively easy in order to monitor the effectiveness of the alternative.

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 5*

The No Action Alternative has the lowest cost, because it involves a minimal amount of work. Alternative 2 has a higher cost due primarily to the construction of the cap and leachate collection systems. Landfill capping and leachate control measures are cost effective technologies. Long term operation and maintenance are similar under both Alternatives, with Alternative 2 being slightly higher.

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

8. Community Acceptance - Concerns of the community regarding the site investigation reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" that describes public comments received and the Department responses is included as Appendix B. A wide spectrum of comments were made at the public meeting held on March 2, 1995. These comments included questions on why this work is necessary, whether additional work at the site would be needed and who would be performing the work. One commonly voiced concern was whether an agreement with WMNY for the McKenna Landfill closure would be accompanied by preferential treatment of WMNY in its efforts to obtain a permit for a new landfill next to the OSL facility. There has been no agreement of any kind between the State and WMNY linking the McKenna Landfill closure with WMNY's permit efforts. The McKenna Landfill closure is programmatically separate from the OSL permit issue and will remain so.

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the investigations performed at the site, and the evaluation presented in Section 7, the NYSDEC is proposing **Alternative 2** as the remedy for final closure of the landfill at this site.

This alternative is recommended because it is cost effective, meets SCGs and provides protection of human health and the environment by removing the pathways of migration from the site.

Alternative 1 (No Action) does not meet SCGs, is not adequately protective of human health and the environment and is therefore rejected.

The estimated present worth cost to implement the remedy is $5,745,548 The cost to construct the remedy is estimated to be $4,286,250 and the estimated average annual operation and maintenance cost for 30 years is $1,459,298

The elements of the selected remedy are as follows:

- a low permeability landfill cap in conformance with 6 NYCRR Part 360 requirements for landfill closure.

- a passive landfill gas venting system

- surface drainage improvements to promote positive conveyance of runoff

- perimeter leachate/groundwater collection system piping, connections to existing system and wet-well collection manholes and tankage as needed

- leachate/groundwater collection, transportation and treatment/disposal

- a long term monitoring program would be instituted. This program would allow the effectiveness of the selected remedy to be monitored. This long term monitoring program would be a component of the operations and maintenance for the site. This program would include sampling of off-site monitoring wells and nearby residential wells.

SECTION 8 - HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the citizen participation process, a notice was sent to residents living near the site to inform them of the proposed plan and advise them of the public meeting to be held to discuss this plan. The public meeting was conducted on March 2, 1995 at the Swan Library in the Town of Albion. The purpose of this meeting was to present the Proposed Remedial Action Plan (PRAP) for the site and obtain public comment on the plan. All comments provided by the public have been evaluated and are addressed in the Responsiveness Summary (Appendix B). There have been no substantive changes made to the remedy proposed in the PRAP as a result of the public comments received.

Document Repositories were established at the following locations for public review of project related material:

Swan Public Library
4 N. Main Street
Albion, New York 14411
(716) 589-4246

Holley Public Library
86 Public Square
Holley, New York 14470
(716) 638-6987

NYSDEC - Region 8
Ms. Linda Vera
6274 East Avon-Lima Road
Avon, New York 14414
(716) 226-2466

NYSDEC
Thomas R. Christoffel, P.E., Project Engineer
50 Wolf Road
Albany, New York 12233-7010
(518) 457-5636

The following citizen participation activities were conducted:

- Fact Sheet - February 15, 1995: Announced availability of the PRAP and public comment period.
- Public Meeting - March 2, 1995: Presented results of investigations and presented the PRAP for public comment.
- Public Comment Period from February 17, 1995 to March 20, 1995 to solicit public comment on the PRAP.

TABLE 1

McKENNA LANDFILL **GROUNDWATER SAMPLE RESULTS**
(PHASE II INVESTIGATION)
WELL LOCATION

COMPOUND	*OSL-6*	*GW-2*	*GW-3*	*GW-4*	*CLASS GA STANDARD*
ORGANICS	*(ug/l)*	*(ug/l)*	*(ug/l)*	*(ug/l)*	*(ug/l)*
BENZENE	0.3 BJ	3 BJ	8 B	5 B	*0.7*
CHLOROBENZENE	ND	ND	6	0.9 J	*5*
CHLOROETHANE	ND	ND	4 J	ND	*5*
1,2 DICHLOROETHENE	ND	ND	ND	1 J	*5*
ETHYLBENZENE	0.1 J	ND	50	ND	*5*
TETRACHLOROETHYLENE	2 BJ	2 BJ	3 BJ	2 BJ	*5*
TOLUENE	0.9 BJ	1 BJ	8 B	ND	*5*
TRICHLOROETHYLENE	1 BJ	ND	ND	0.5 BJ	*50*
TOTAL XYLENES	0.8 J	ND	120	ND	*5*
Bis(2-ethylhexyl)PHTHALATE	ND	ND	9 J	ND	*50*
DIETHYLPHTHALATE	ND	ND	8 J	ND	*50 **
1,2,4 TRICHLOROBENZENE	ND	ND	13	ND	*5*
2,4 DIMETHYLPHENOL	ND	ND	8 J	ND	*1*
METALS	*(ug/l)*	*(ug/l)*	*(ug/l)*	*(ug/l)*	*(ug/l)*
ALUMINUM	820	86	440	2,400	*100*
ANTIMONY	78	ND	ND	ND	*3*
ARSENIC	ND	40	29	43	*25*
BARIUM	ND	570	1400	400	*1,000*
CADMIUM	ND	4	ND	ND	*10*
CALCIUM	91,000	13,000	140,000	320,000	*NA*
CHROMIUM	ND	ND	8	ND	*50*
COBALT	9	ND	ND	32	*NA*
COPPER	9	ND	ND	32	*200*
IRON	ND	980	21,000	2,600	*300*
LEAD	ND	29	44	21	*25*
MAGNESIUM	ND	17,000	190,000	88,000	*35,000 **
MANGANESE	33	210	1600	2000	*300*
MERCURY	ND	0.2	ND	ND	*2*
NICKEL	7	48	100	37	*NA*
POTASSIUM	1,800	260,000	300,000	59,000	*NA*
SODIUM	8,200	110,000	2,100,000	680,000	*NA*
ZINC	17	8	21	5	*300*

B - Analyte was found in the associated blank as well as in the samples
J - Indicates an estimated value
ND - Not Detected
NA - Not Applicable
* Guidance Value

TABLE 2

McKENNA LANDFILL **GROUNDWATER SAMPLE RESULTS**

VOLATILES ANALYSIS **BEDROCK WELLS**

COMPOUND	RI-1TR		RI-2TR		RI-3TR		CLASS GA
	DEC	WMI	DEC	WMI	DEC	WMI	STANDARDS
CHLOROMETHANE	<10	<10	<10	<10	<10	<10	5
BROMOMETHANE	<10	<10	<10	<10	<10	<10	5
VINYL CHLORIDE	<10	<10	<10	<10	<10	<10	2
CHLOROETHANE	<10	<10	<10	<10	<10	<10	5
METHYLENE CHLORIDE	<10	2 JB	<10	1 JB	<10	1 J	5
ACETONE	<10	25	<10	8	<10	<5	50*
CARBON DISULFIDE	<10	<5	<10	<5	<10	<5	N/A
1,1-DICHLOROETHENE	<10	<5	<10	<5	<10	<5	5
1,1-DICHLOROETHANE	<10	<5	<10	<5	<10	<5	5
1,2-DICHLOROETHENE	<10	<5	<10	<5	<10	<5	5
CHLOROFORM	<10	6	<10	<5	<10	2 J	7
1,2-DICHLOROETHANE	<10	<10	<10	<5	<10	<5	5
2-BUTANONE	<10	<5	<10	<10	<10	<10	50*
1,1,1-TRICHLOROETHANE	<10	<5	<10	<5	<10	<5	5
CARBON TETRACHLORIDE	<10	1J	<10	<5	<10	<5	5
BROMODICHLOROMETHANE	<10	<5	<10	<5	<10	<5	50*
1,2-DICHLOROPROPANE	<10	<5	<10	<5	<10	<5	5
cis-1,3-DICHLOROPROPENE	<10	<5	<10	<5	<10	<5	5
TRICHLOROETHENE	<10	<5	<10	<5	<10	<5	5
DIBROMOCHLROMETHANE	<10	<5	<10	<5	<10	<5	50*
1,1,2-TRICHLOROETHANE	<10	<5	<10	<5	<10	<5	5
BENZENE	<10	<5	<10	<5	<10	<5	0.7
trans-1,3-DICHLOROPROPENE	<10	<5	<10	<5	<10	<5	5
BROMOFORM	<10	<5	<10	<5	<10	<5	50*
4-METHYL-2-PENTANONE	<10	<10	<10	<10	<10	<10	N/A
2-HEXANONE	<10	<10	<10	<10	<10	<10	50*
TETRACHLOROETHENE	<10	<5	<10	<5	<10	<5	5
1,1,2,2-TETRACHLOROETHANE	<10	<5	<10	<5	<10	<5	5
TOLUENE	<10	<5	<10	2 J	<10	<5	5
CHLOROBENZENE	<10	<5	<10	<5	<10	<5	5
ETHYLEBEZENE	<10	<5	<10	<5	<10	<5	5
STYRENE	<10	<5	<10	<5	<10	<5	5
XYLENE (total)	<10	<5	<10	<5	<10	<5	5

All results in ug/l (parts per billion) < = less than

A "J" indicates the result is an estimate

A "B" indicates the compound was found in the blank

DEC = Department of Environmental Conservation Results (July 1994)

WMI = Waste Management Inc. Results (May 1994)

* Guidance Value

N/A = Not Applicable

TABLE 2 (CONTINUED)

McKENNA LANDFILL

BEDROCK WELLS

SEMI-VOLATILE ANALYSIS

COMPOUND	RI-1TR		RI-2TR		RI-3TR		CLASS GA
	DEC	WMI	DEC	WMI	DEC	WMI	STANDARDS
PHENOL	<10	<10	<10	<10	<10	<10	1
bis(2-CHLOROETHYL)ETHER	<10	<10	<10	<10	<10	<10	1
2-CHLOROPHENOL	<10	<10	<10	<10	<10	<10	1
1,3-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10	5
1,4-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10	5
1,2-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10	5
2-METHYLPHENOL	<10	<10	<10	<10	<10	<10	1
2,2-oxybis(1-CHLOROPROPANE)	<10	<10	<10	<10	<10	<10	5
4-METHYLPHENOL	<10	<10	<10	[illegible]	<10	[illegible]	1
N-NITROSO-di-n-PROPYLAMINE	<10	<10	<10	<10	<10	<10	50*
HEXACHLOROETHANE	<10	<10	<10	<10	<10	<10	5
NITROBENZENE	<10	<10	<10	<10	<10	<10	5
ISOPHORONE	<10	<10	<10	<10	<10	<10	50*
2-NITROPHENOL	<10	<10	<10	<10	<10	<10	1
2,4-DIMETHYLPHENOL	<10	<10	<10	<10	<10	<10	1
bis(2-CHLOROETHOXY)METHANE	<10	<10	<10	<10	<10	<10	N/A
2,4-DICHLOROPHENOL	<10	<10	<10	<10	<10	<10	1
1,2,4-TRICHLOROBENZENE	<10	<10	<10	<10	<10	<10	5
NAPHTHALENE	<10	<10	<10	<10	<10	<10	10*
4-CHLOROANILINE	<10	<10	<10	<10	<10	<10	5
HEXACHLOROBUTADIENE	<10	<10	<10	<10	<10	<10	5
4-CHLORO-3-METHYLPHENOL	<10	<10	<10	<10	<10	<10	1
2-METHYLNAPHTHALENE	<10	<10	<10	<10	<10	<10	N/A
HEXACHLOROCYCLOPENTADIENE	<10	<10	<10	<10	<10	<10	5
2,4,6-TRICHLOROPHENOL	<10	<10	<10	<10	<10	<10	5
2,4,5-TRICHLOROPHENOL	<25	<25	<25	<25	<25	<25	5
2-CHLORONAPHTHALENE	<10	<10	<10	<10	<10	<10	10*
2-NITROANILINE	<25	<25	<25	<25	<25	6 J	5
DIMETHYLPHTHALATE	<10	<10	<10	<10	<10	<10	50*
ACENAPHTHYLENE	<10	<10	<10	<10	<10	<10	20*
2,6-DINITROTOLUENE	<10	<10	<10	<10	<10	<10	5
3-NITROANILINE	<25	<25	<25	<25	<25	<25	5
ACENAPHTHALENE	<10	<10	<10	<10	<10	<10	20*

All results in ug/l (parts per billion)

A "J" indicates the result is an estimate

> = less than

DEC = Department of Environmental Conservation Results (July 1994)

WMI = Waste Management Inc. Results (May 1994)

* = Guidance Value

N/A = Not Applicable

TABLE 2 (CONTINUED)

BEDROCK WELLS

SEMI-VOLATILE ANALYSIS (con't)

COMPOUND	RI-1TR		RI-2TR		RI-3TR		CLASS GA
	DEC	WMI	DEC	WMI	DEC	WMI	STANDARDS
2,4-DINITRORPHENOL	<25	<25	<25	<25	<25	<25	1
4-NITROPHENOL	<25	<25	<25	<25	<25	<25	1
DIBENZOFURAN	<10	<10	<10	<10	<10	<10	N/A
2,4-DINITROTOLUENE	<10	<10	<10	<10	<10	<10	5
DIETHYLPHTHALATE	<10	<10	<10	<10	<10	<10	50*
4-CHLOROPHENYL-PHENYLETHER	<10	<10	<10	<10	<10	<10	N/A
FLUORENE	<10	<10	<10	<10	<10	<10	50*
4-NITROANILINE	<25	<25	<25	<25	<25	<25	5
4,6-DINITRO-2-METHYLPHENOL	<25	<25	<25	<25	<25	<25	1
N-NITROSODIPHENYLAMINE	<10	<10	<10	<10	<10	<10	50*
4-BROMOPHENYL-PHENYLETHER	<10	<10	<10	<10	<10	<10	N/A
HEXACHLOROBENZENE	<10	<10	<10	<10	<10	<10	0.35
PENTACHLOROPHENOL	<25	<25	<25	<25	<25	<25	1
ANTHRACENE	<10	<10	<10	<10	<10	<10	50*
PHENANTHRENE	<10	3J	<10	3J	<10	3J	50*
CARBAZOLE	<10	<10	<10	<10	<10	<10	N/A
Di-n-BUTYLPHTHALTE	<10	2 BJ	<10	2 BJ	<10	2 BJ	50
FLUORANTHENE	<10	<10	<10	<10	<10	<10	50*
PYRENE	<10	<10	<10	<10	<10	<10	50*
BUTYLBENZYLPHTHALATE	<10	<10	<10	<10	<10	<10	50
3,3-DICHLOROBENZIDINE	<10	<10	<10	<10	<10	<10	5
BENZO(a)ANTHRACENE	<10	<10	<10	<10	<10	<10	.002*
CHRYSENE	<10	<10	<10	<10	<10	<10	.002*
bis(2-ETHYLHEXYL)PHTHALATE	<10	<10	<10	<10	<10	<10	50
Di-n-OCTYLPHTHALATE	<10	<10	<10	<10	<10	<10	50
BENZO(b)FLUORANTHENE	<10	<10	<10	<10	<10	<10	.002*
BENZO(k)FHLUORANTHENE	<10	<10	<10	<10	<10	<10	.002*
BENZO(a)PYRENE	<10	<10	<10	<10	<10	<10	ND
INDENO(1,2,3-cd)PYRENE	<10	<10	<10	<10	<10	<10	.002*
DIBENZO(a,h)ANTHRACENE	<10	<10	<10	<10	<10	<10	50*
BENZO(g,h,i)PYRENE	<10	<10	<10	<10	<10	<10	ND

All results in ug/l (parts per billion)

A "J" indicates the result is an estimate

> = less than

DEC = Department of Environmental Conservation Results (July 1994)

WMI = Waste Management Inc. Results (May 1994)

ND = Non Detectable

* = Guidance Value

N/A = Not Applicable

TABLE 2 (CONTINUED)

McKENNA LANDFILL

PESTICIDE/PCB ANALYSIS **WELLS**

COMPOUND	RI-1TR		RI-2TR		RI-3TR		CLASS GA
	DEC	WMI	DEC	WMI	DEC	WMI	STANDARD
lpha-BHC	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
eta-BHC	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
elta-BHC	<0.05	0.33	<0.05	<0.05	<0.05	0.1	ND
amma-BHC (Lindane)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
leptachlor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
ldrin	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
leptachlor epoxide	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
ndosulfan I	<0.05	0.17	<0.05	<0.05	<0.05	0.06	5
ieldrin	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ND
,4-DDE	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ND
ndosulfan Sulfate	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5
,4 DDD	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ND
lethoxychlor	<0.50	<0.48	<0.50	<0.48	<0.50	<0.50	35
ndrin Ketone	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ND
ndrin Aldehyde	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	ND
lpha-Chlordane	<0.05	<0.05	<0.05	<0.05	<0.05	0.04 J	0.1
amma-Chlordane	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
oxaphene	<5	<4.8	<5	<4.8	<5	<4.8	ND
rochlor-1016	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1221	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1232	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1242	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1248	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1254	<1	<0.96	<1	<0.96	<1	<0.99	0.1
rochlor-1260	<1	<0.96	<1	<0.96	<1	<0.99	0.1

ll results in ug/l (parts per billion)

"J" indicates the result is an estimate

= less than

EC = Department of Environmental Conservation Results (July 1994)

'MI = Waste Management Inc. Results (May 1994)

D = Non Detectable

TABLE 2 (CONTINUED)

McKENNA LANDFILL **WELLS**

METALS	RI-1TR		RI-2TR		RI-3TR		CLASS GA STANDARDS
	DEC	WMI	DEC	WMI	DEC	WMI	
ALUMINUM	5,330	508	1,200	1,450	1,010	289	100
ANTIMONY	<39.1	<3	<39.1	<3	<39.1	<3	3
ARSENIC	3.9 B	3.4 B	<2	<2	<2	<2	25
BARIUM	284	119 B	913	991	337	121	1,000
BERYLLIUM	0.24 B	<1	<0.2	<1	<0.2	<1	3*
CADMIUM	<1.8	<3	<1.8	<3	<1.8	<3	10
CALCIUM	209,000	105,000	168,000	169,000	220,000	147,000	N/A
CHROMIUM	13	<4	<3.7	7 B	z,3.7	5 B	50
COBALT	90	16 B	<3.9	<6	5.4 B	<6	5
COPPER	28.8	5 B	9.4 B	4 B	8.2 B	<4	200
IRON	15,500	875	2,240	2,340	3,960	7.4	300
LEAD	4.2	1.3 B	1.9	1.7 B	1.5	<1.3	25
MAGNESIUM	29,000	11,400	37,800	33,700	37,200	19,000	35,000*
MANGANESE	1,770	634	619	750	1,310	255	300
MERCURY	<0.07	<0.1	<0.07	<0.1	<0.07	<0.1	2
NICKEL	26.2 B	9 B	12 B	11 B	22.9 B	18 B	N/A
POTASSIUM	5,980	17,900	18,500	15,900	<207	5,500	N/A
SELENIUM	<2	<1	<2	<1	0.2	<1	10
SILVER	<2.5	<3	<2.5	<3	<2.5	<3	50
SODIUM	122,000	72,300	167,000	150,000	182,000	39,200	N/A
THALLIUM	<2	0.1	<2	<1	<2	<1	4*
VANADIUM	8.3 B	18 B	<4.4	16 B	<4.4	10 B	N/A
ZINC	126	11 B	123	9 B	444	26	300

All results in ug/l (parts per billion)

A "B" indicates the compound was found in the blank

DEC = Department of Environmental Conservation Results (July 1994)

WMI = Waste Management Inc. Results (May 1994)

* Guidance Value

NA = Not Applicable

TABLE 3

McKENNA LANDFILL **SURFACE WATER AND LEACHATE SAMPLE RESULTS (PHASE II INVESTIGATION)**

SAMPLE LOCATION

	LEACHATE SAMPLES		*SURFACE WATER SAMPLES*		
COMPOUND	*L-1*	*L-3*	*SW-1*	*SW-2*	*CLASS C STANDARD*
ORGANICS	*ug/l*	*ug/l*	*ug/l*	*ug/l*	
BENZENE	8 B	0.5 BJ	ND	ND	6*
CHLOROBENZENE	5	5	ND	ND	5
CHLOROETHANE	4 J	ND	ND	ND	5*
ETHYLBENZENE	55	4 J	ND	ND	5
TETRACHLOROETHYLENE	5 B	2 BJ	3 BJ	3 BJ	1*
TOLUENE	13 B	0.4 BJ	ND	ND	5*
TRICHLOROETHYLENE	1 BJ	0.6 BJ	0.6 BJ	0.6 BJ	11*
TOTAL XYLENES	79	57	ND	ND	5*
Alpha BHC	ND	0.045 BJ	ND	ND	0.01
ACENAPHTHENE	0.4 J	ND	ND	ND	20
Bis(2-ethylhexyl)PHTHALATE	6 BJ	7 J	ND	ND	0.6
BUTYLBENZYLPHTHALATE	0.2 J	ND	ND	ND	50*
1,4 DICHLOROBENZENE	ND	32	ND	ND	5
DIETHYLPHTHALATE	4 J	ND	ND	ND	50*
Di-b-BUTYLPHTHALATE	1 J	ND	ND	ND	50
Di-n-OCTYLPHTHALATE	1 J	ND	ND	ND	50
FLOURENE	0.4 J	ND	ND	ND	50*
NAPHTHALENE	6 J	6J	ND	ND	10
N-NITROSODIPHENYLAMIN	2 J	ND	ND	ND	50*
PHENATHRENE	0.8 J	ND	ND	ND	50*
2,4 DIMETHYLPHENOL	9 J	ND	ND	ND	1

B- Analyte was found in the associated blank as well as in the sample
J - Indicates and estimated value
ND - Not Detected
NA - Not Applicable
* Guidance Value

TABLE 3 (continued)

McKENNA LANDFILL **SURFACE WATER AND LEACHATE SAMPLE RESULTS (PHASE II INVESTIGATION)**

SAMPLE LOCATION

	LEACHATE SAMPLES		*SURFACE WATER SAMPLES*		
COMPOUND	*L-1*	*L-3*	*SW-1*	*SW-2*	*CLASS C STANDARD*
METALS	*(ug/l)*	*(ug/l)*	*(ug/l)*	*(ug/l)*	
ALUMINUM	960	1,900	1,300	950	100
ANTIMONY	89	85	ND	ND	3*
ARSENIC	23	22	ND	ND	190
CALCIUM	160,000	160,000	86,000	71,000	NA
CHROMIUM	100	ND	22	ND	200
COBALT	100	ND	23	ND	5
COPPER	20	9	ND	ND	200
IRON	23,000	6,300	1,500	620	300
LEAD	96	ND	35	24	3
MAGNESIUM	120,000	20,000	19,000	16,000	35,000
MANGANESE	200	450	94	94	300
MERCURY	ND	0.25	ND	ND	0.2*
NICKEL	110	ND	ND	ND	NA
POTASSIUM	570,000	610,000	2,400	2,600	NA
SODIUM	1,400,000	86,000	64,000	55,000	NA
ZINC	88	23	14	13	30

B- Analyte was found in the associated blank as well as in the sample
J - Indicates and estimated value
ND - Not Detected
NA - Not Applicable
* Guidance Value

TABLE 4

McKENNA LANDFILL SEDIMENT SAMPLE RESULTS

SAMPLE LOCATION

COMPOUND	*SED-1 (1)*	*SED-2 (1)*	*SED-3 (1)*	*SED-4 (1)*	*1S (2)*	*2S (2)*	*3S (2)*
ORGANICS	*(ug/kg)*	*(ug/kg)*	*(ug/kg)*	*(ug/kg)*	*(ug/kg)*	*(ug/kg)*	*(ug/kg)*
ACETONE	15 BJ	45 B	7 BJ	13 B			
BENZENE	0.2 J	4 J	0.6 J	ND			
ETHYLBENZENE	ND	21	ND	ND			
METHYLENE CHLORIDE	6 BJ	29 B	18 B	6 B			
TOLUENE	ND	28 B	0.2 J	ND			
TOTAL XYLENES	ND	54	ND	ND			
HEPTACHLOR EPOXIDE	0.032	ND	ND	ND			
Bis(2-ethylhexyl)PHTHALATE	ND	280 BJ	ND	ND	12,000	3,500	530
BUTYLBENZYLPHTHALAT	440 J	3,300	ND	ND			
Di-n-BUTYLPHTHALATE	5,400 B	26,000 BE	4,400 B	4,400 B			
AROCLOR 1254	ND	ND	ND	ND	120	100	72
METALS	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*
ALUMINUM	2,600	2,300	2,900	2,100	10,500	10,600	5,140
ANTIMONY	ND	2.6	3.8	ND	ND	ND	ND
ARSENIC	1.2	1	1.2	0.87	11.40	5.50	17.90
BARIUM	23	59	17	19	233	134	309
BERYLLIUM	0.28	0.24	0.34	0.27	ND	ND	ND
CADMIUM	ND	0.11	0.19	ND	0.85 B	0.69 B	1.4 B
CALCIUM	2,700	8,300	14,000	1,700	40,600	26,800	17,500
CHROMIUM	3.5	3.1	4.3	2.8	38.00	35.50	22.30
COBALT	17	15	20	16	ND	9.8 B	ND
COPPER	6.2	4.4	5.5	3.6	32.90	14.50	19.60
IRON	4,500	3,800	4,700	3,600	48,100	25,600	27,500
LEAD	9.9	7.7	9.6	6.3	111	109	47.3
MAGNESIUM	1,100	2,400	3,200	840	7,580	8,280	5,670
MANGANESE	95	120	190	110	4,060	616	212
MERCURY	ND	ND	0.084	ND	0.31	0.32	0.18
NICKEL	3.5	4	6	1.3	48.70	26.60	8.1 B
POTASSIUM	340	480	740	230	1,670	1,410	747
SODIUM	400	830	61	35	349	1,460	212
VANADIUM	4.1	3.4	4.3	4	17.4 B	19.60	9.4 B
ZINC	20	12	15	11	362	415	219

B- Analyte was found in the associated blank as well as in the sample

J-Indicates an estimated value

ND-Not Detected

E-Value estimated due to the presence of interference

(1) These samples were taken during the Phase II Investigation

(2) These samples were taken from the Erie Barge Canal by the NYSDEC in April 1993

TABLE 5 **McKENNA LANDFILL**

REMEDIAL COSTS

ALTERNATIVE 1: NO ACTION

	Quantity	Unit Cost	Units	Cost
CAPITAL COSTS	0	$0	0	$0
OPERATION AND MAINTENANCE				
Leachate Collection System O&M Costs				
Annual Cost (Leachate Collection)	104,000	$0.12	$/gal	$12,500
Analytical Cost (bi-monthly sampling)	6	$1,000	sample	$6,000
Leachate System Mainentance and Repair	1	$11,000	ls	$11,000
Subtotal: Collection System Annual Costs				$29,500
Landfill Cover O&M Costs				
Cap Maintenance	1	$15,000	ls	$15,000
Other site maintenance	1	$8,000	ls	$8,000
Subtotal: Landfill Cover Annual Cost				$23,000
SAMPLING- Long Term Monitoring				
3 wells north of canal	6	$1,200	sample	$7,200
5 nearby residential wells	10	$1,200	sample	$12,000
4 on-site wells	8	$1,200	sample	$9,600
Subtotal: Long Term Monitoring				$28,800
Total				$81,300
30 years @7%:Present Worth				**$1,008,851**

TABLE 5 (continued) **McKENNA LANDFILL**

REMEDIAL COSTS

ALTERNATIVE 2: CAPPING/LEACHATE COLLECTION

CAPITAL COSTS	Quantity	Unit Cost	Units	Cost
Site Preparation	1	$275,000	ls	$275,000
Install Cap	15	$140,000	acre	$2,100,000
Install Leachate Collection System	1	$750,000	ls	$750,000
Haul & Treat Leachate	1	$50,000	ls	$50,000
Design & Contingency (35% of subtotal)				$1,111,250
Total Capital Costs				**$4,286,250**
LONG TERM OPERATION & MAINTENANCE				
Leachate Collection System O&M Costs				
Leachate Collection (1.25 MG/Yr x 0.20=685GPD)				
Annual Cost (Leachate Collection)	250,000	$0.12	$/gal	$30,000
Analytical Cost (monthly sampling)	12	$1,000	sample	$12,000
Leachate system Maintenance and Repair	1	$21,300	ls	$21,300
Subtotal: Collection System Annual Costs				$63,300
Landfill Cover O&M Costs				
Cap Maintenance	1	$10,000	ls	$7,000
Other site Maintenance	1	$18,500	ls	$18,500
Subtotal: Landfill Cover Annual Cost				$25,500
Sampling				
3 wells north of canal	6	$1,200	sample	$7,200
5 nearby residential wells	10	$1,200	sample	$12,000
4 on-site wells	8	$1,200	sample	$9,600
Subtotal: Sampling Annual Cost				$28,800
Subtotal: Annual O&M Cost				$117,600
30 years @7%:Present Worth				**$1,459,298**
Total Project Cost				**$5,745,548**

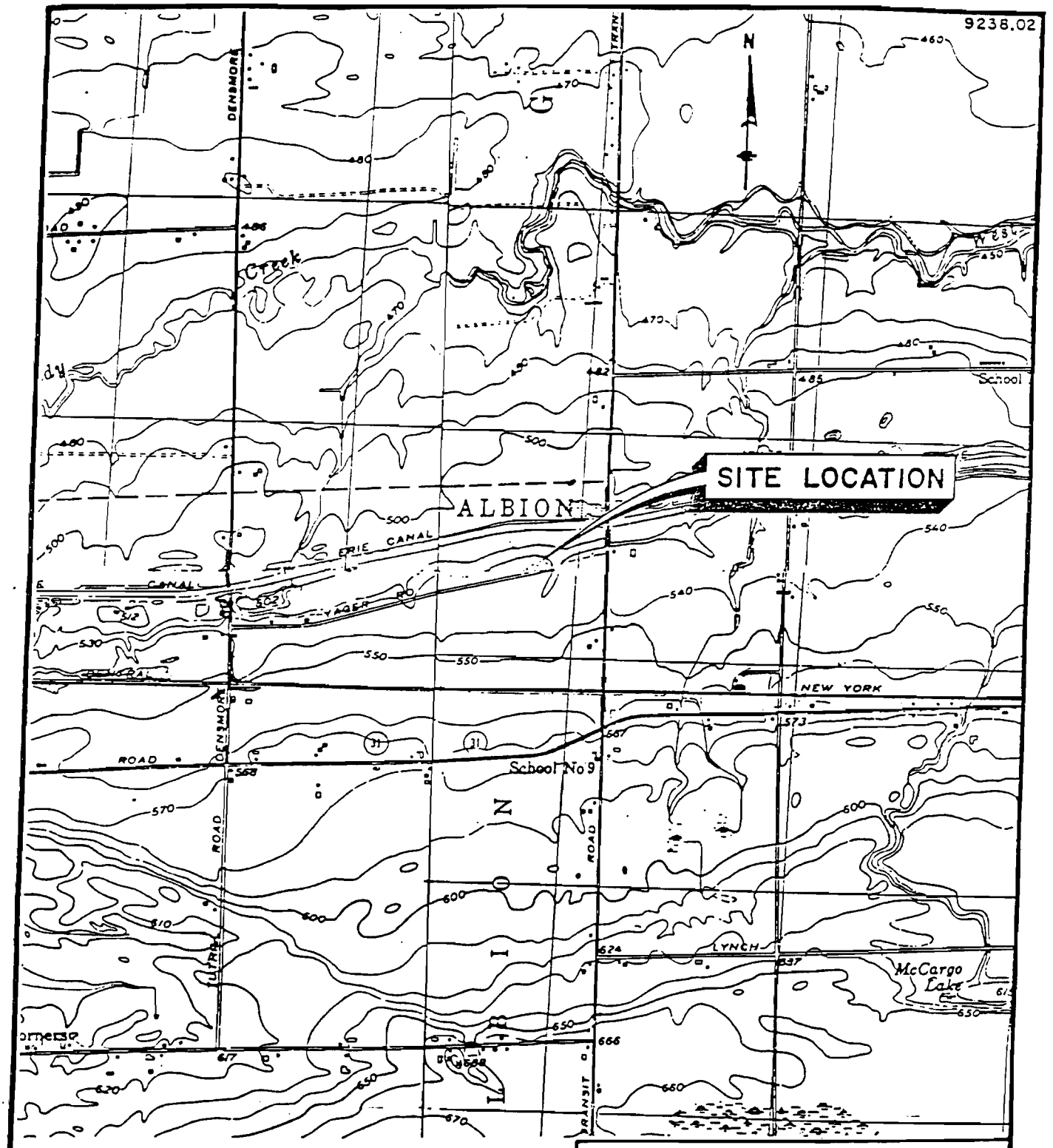
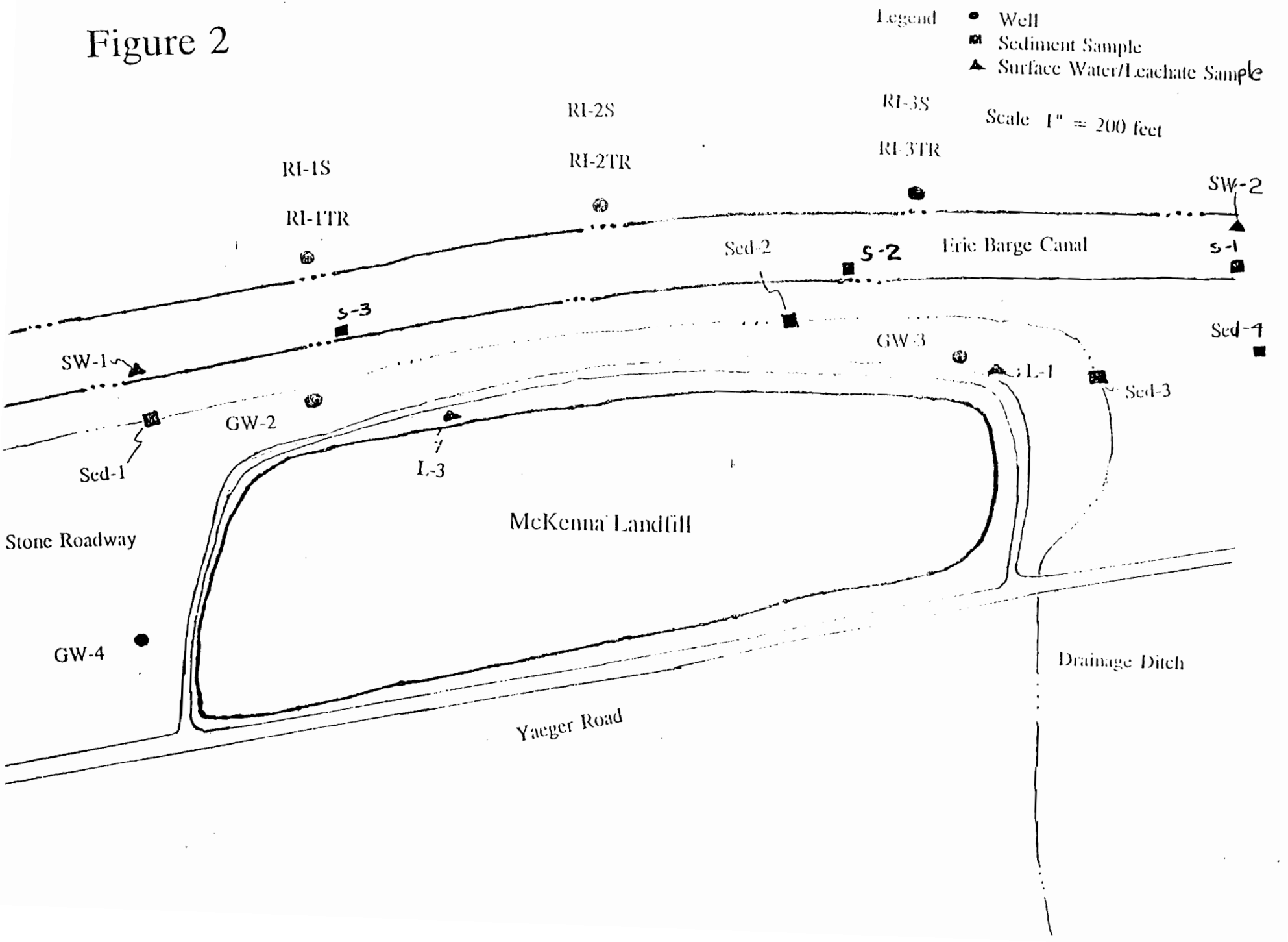


Figure 1

Project Area

McKenna Landfill

Figure 2


Legend
Well
Sediment Sample
Surface Water/Leachate Sample
Scale 1" = 200 feet
RI-1S
RI-1TR
RI-2S
RI-2TR
RI-3S
RI-3TR
SW-2
SW-1
S-3
Sed-2
S-2
Erie Barge Canal
S-1
Sed-4
GW-3
L-1
Sed-3
GW-2
Sed-1
L-3
McKenna Landfill
Stone Roadway
GW-4
Drainage Ditch
Yaeger Road

APPENDIX A

ADMINISTRATIVE RECORD

- Phase II Investigation Report, Recra Environmental Inc., July 1990
- EPA Guidance Document, "Presumptive Remedy for CERCLA Municipal Landfill Sites", EPA 540-F-93-035, September 1993
- NYSDEC Technical and Administrative Guidance Memorandum, "Accelerated Remedial Actions at Class 2, Non-RCRA Regulated Landfills", January 1992
- McKenna Landfill Sampling Field Report and Summary Data Package, Waste Management of New York, Inc., June 1994
- Boring Logs for wells installed north of the Erie Barge Canal, Waste Management of New York, Inc., June 1995
- Proposed Remedial Action Plan for the McKenna Landfill Site, NYSDEC, February 1995

APPENDIX B

McKENNA LANDFILL
RESPONSIVENESS SUMMARY

A public meeting was held on March 2, 1995 to present the Proposed Remedial Action Plan to the local residents and solicit their input and comments on the plan. What follows is a listing of the questions and concerns raised at this meeting. Some of the questions listed below are summarized and paraphrased from the meeting record, since many of the questions were closely related and sometimes duplicated.

Q. Why was containment selected for this site?

A. For sites such as this (i.e., landfills that accepted mainly municipal waste, with small volumes of industrial/hazardous waste), containment is the most efficient and cost effective remedy. Experience has shown that other types of remedies (such as excavation or in-situ treatment) are prohibitively expensive and not necessarily effective for this type of landfill. Therefore, presumptive closure of the landfill was selected as the remedy for this site.

Q. What will be the short term impacts from the remedy?

A. The short term impacts during implementation of this remedy are expected to be minimal. Some of these impacts would occur during the installation of the leachate/groundwater collection system. These would include generation of fugitive dust and odors associated with the site. Fugitive dust could also be expected during clearing and grading for the cap at the site. Mitigative measures to address these potential problems are readily available and reliable if diligently applied. Also, it is expected that there will be an increase in the volume of truck traffic going to and from the site. These trucks would be delivering soil for the cap and other construction items needed for the remedy.

Q. Will the cover eliminate seepage of leachate from the site?

A. Experience has shown that a Part 360 type cap, if properly installed and maintained, will dramatically reduce infiltration of precipitation into the waste mass and, thus, the generation of leachate. The Part 360 cap, in conjunction with the leachate/groundwater collection system, will prevent leachate from seeping from the landfill.

Q. Who will do the work at the site?

A. The NYSDEC is currently negotiating a Consent Order with Waste Management of New York (WMNY) to implement the remedy specified in the ROD. WMNY has expressed a willingness to do the construction at the site (i.e., the cap, leachate/groundwater collection system, passive gas vents, improve drainage). NYSDEC will approach the other Potentially Responsible Parties (PRPs) to perform the long term operation and maintenance at the site and any additional off-site investigative work that may be needed.

Q. Where will the barrier protection soil be obtained?

A. A specification for the barrier protection layer soil will be determined during the design of the remedy. The soil used for barrier protection must be free of rocks that could puncture the cap and be free of contaminants. The source for this material is not yet identified, but will be selected by WMNY and its contractor after the construction contract is finalized.

Q. Will there be road damage as a result of implementing this remedy? Will the county have to float bonds to repair any road damage during this construction?

A. It is possible that roads near the site could be damaged due to the increase in volume of trucks bringing material to the site. NYSDEC has recommended to WMNY that a road survey be performed to determine the condition of the road prior to the start of construction. This would alert the contractors to the concern about possible road damage and help to identify any damage to the road caused by the increase in truck traffic. WMNY has indicated that they will consider this recommendation as well as contact the local jurisdiction to discuss the concern over road conditions. Any damage to the roads that occurs as a result of this work will be the responsibility of WMNY and their contractor. It is expected that WMNY will work with the local jurisdiction for these roads to arrange for any repairs that may be necessary. At this time there is no anticipated need for any bonds for road repair. The decision to float any future County bonds to repair any damage will be up to the County.

Q. Is this site having any effect on water in the Erie Barge Canal?

A. When the canal is filled with water, the hydrostatic pressure exerted by this water would prevent contaminants in the groundwater associated with the site from seeping into the canal. When the canal is drained during the winter, leachate seeps consistent with contaminants associated with the site have been observed and sampled. The levels of hazardous waste contaminants in the seeps is very low. Additionally, the flow rate for these seeps is low and would be diluted by water remaining in the drained canal, as well

as water used to refill the canal in the spring. Therefore, this site has a minimal effect on the quality of water in the canal.

Q. If the existing leachate collection system is ineffective, why will it be connected to the new system to be installed? How do you determine when the dump is dried up (when can they stop)?

A. The existing system currently collects leachate from the site; however, it was not installed deep enough to prevent migration of leachate from the site. Use of this system, together with the new system to be installed will allow more leachate to be collected and help to prevent the migration of contaminants from the site. This is an inexpensive way to collect leachate and help provide earlier dewatering of the waste mass. Although flow into the collection system will drop as the landfill is dewatered, the waste mass will probably never be 100% dewatered. Low flows will still need to be collected for the indeterminate future.

Q. Is there an imminent or long term health concern from this site (i.e. why do this work)?

A. To date no contaminants associated with the site have been detected in the groundwater currently used for domestic purposes near the site. However, if no remedial work is performed, the site presents a potential long term threat to this water. Further, should any residential development occur on land near the landfill, the risk of human exposure through new wells would significantly increase. In addition, the site was never properly closed. State law, in this case 6 NYCRR Part 360, requires that the site be properly closed. For these reasons, the remedy presented in the Proposed Remedial Action Plan (PRAP) must to be implemented.

Q. Is this a permanent solution or will this work have to be done again in the future?

A. This remedy is not a fully permanent solution in terms of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or the Superfund Law) in that contaminants will remain at the site and continued maintenance will be required. However, with proper installation and diligent maintenance of the cap and leachate/groundwater collection system, the site will no longer present the potential long term threat it now poses. The materials and designs for the cap components and the leachate/groundwater collection system will be selected to ensure long term effectiveness.

Q. Who will do the long term operation and maintenance and how long will it be done?

A. The Department will negotiate with the other PRPs to handle the long term operation and maintenance (O&M) needed for this site. This long term O&M will be performed as long as it is needed.

Q. Will the State try to get some money out of John Smith, who filled half to three quarters of Mckenna's Landfill?

A. John Smith operated part of the McKenna site before he began operation of the OSL site. As such, he will likely be pursued as a PRP for the McKenna site.

Q. What method will be used to ensure that the work is done properly?

A. A Construction Quality Control Plan will be included in the remedial design for this site. This plan will outline the methods taken to ensure that the remedy is installed right. WMNY will be required to provide engineering oversight as well as to formally certify that the construction is in conformance with the approved plans and specifications. Additionally, the NYSDEC will provide oversight during construction of this remedy to ensure that the work is done correctly. This multiple quality control structure has worked very well at hazardous waste sites across the state.

Q. Who will decide which liner; which contractor is used on the project?

A. The material used for the site cap (either low permeability clay or geomembrane liner) will be determined during the remedial design phase of the project. WMNY will select the material and the NYSDEC will review and approve of the selection if it is appropriate. For the contractor, WMNY will select the contractor and request the approval of the NYSDEC. NYSDEC will review the qualifications of the contractor selected and approve or disapprove based on those qualifications.

Q. Who makes the decision on the remedy?

A. A Record of Decision (ROD) is developed based on the Proposed Remedial Action Plan and any public comments on this plan. This ROD is the NYSDEC's formal agency decision on the appropriate remedy for the site. This ROD is expected to be signed by the Director of the Division of Hazardous Waste Remediation on behalf of the Commissioner.

Q. Regarding the disposal of leachate/groundwater from the site: can the Albion Wastewater Treatment Plant (WWTP) handle this water; how often is the discharge from the plant monitored; will this discharge contaminate Sandy Creek; will the sludge from this plant be hazardous because of the treatment of the site water?

A. The concentration of hazardous contaminants in the leachate/groundwater is relatively low (in the tens of parts per billion). Because this water has such low levels the treatment process at the Albion WWTP has no difficulty treating this water to remove the hazardous contaminants. However, the leachate is also high in other forms of contaminants such as

dissolved solids, common metals, high Ph, etc. These are more likely to be a limitation for the Albion WWTP than the low levels of hazardous constituents. So far, the Albion WWTP has not reported any problems treating this water. However, if increased leachate rates create problems, other treatment options will be explored.

The discharge from the treatment plant is monitored monthly by plant personnel, for compounds listed in the State Pollution Discharge Elimination System (SPDES) permit for this plant. The discharge from the plant is treated to levels set in the SPDES permit for protecting Sandy Creek. To date there have been no problems meeting the discharge limits from the plant due to treatment of leachate from the McKenna site, according to the NYSDEC Division of Water in Region 8. Given the low concentration of contaminants from the McKenna site, the sludge from this plant is not expected to become hazardous as a result of treating McKenna Landfill leachate. To date, the sludge from this plant has not been reported as being hazardous due to treatment of leachate from the McKenna site.

Q. The site is near a seismic impact zone. There could be damage to the cap if an earthquake were to occur in this zone.

A. The cap is not a rigid structure (such as a building) and can withstand a significant amount of deformation. Further, the landfill is located on or near competent bedrock which should minimize physical displacement should a quake occur. For this reason an earthquake would be expected to have a minimal impact on the integrity of the cap.

Q. How much will the remedy cost?

A. The estimated cost of this remedy is $5,745,548. This cost includes the capital cost to construct the remedy ($4,286,250) and the long term operation and maintenance of the site ($1,459,298) over 30 years.

Q. Doesn't Superfund pay for these types of cleanups?

A. Superfund is used to pay for site cleanups if the PRPs are unwilling or unable to perform the work themselves. The law requires that the NYSDEC approach the responsible parties to perform the work. Only if they are unwilling or unable to do so can Superfund be used to pay for the work.

Q. How does the cost of this project compare to the risk posed by the site and the benefit of performing the work?

A. The remedy will address the potential long term threat posed by the site to the local aquifer used for domestic drinking water purposes. Even without defining or using a dollar value

for intangible human factors, expedited control for groundwater problems can be a very prudent cost effective action. The plume of contaminated groundwater associated with this site is localized and does not appear to have yet migrated far from the site. If no action were taken at the site, there is a real chance that the plume will expand as leachate generation continues unabated. Should site contaminants migrate closer to the domestic wells, additional remedial action (such as pumping and treating the groundwater, or extension of the municipal drinking water system) may be required. These actions could be very expensive and could greatly exceed the cost of the proposed remedy.

The cost of the proposed remedy is $5.8 million (including capital and long term costs). The risk currently posed by the site is considered low; however, this risk would rise if the contaminants associated with the site migrate close to or contaminate the nearby domestic wells. The benefit of performing this work is that this potential long term risk of contaminating the local domestic wells is greatly reduced.

Q. If the PRPs refuse to do the work and the State performs it (under Superfund) are the costs incurred recoverable?

A. Yes. Under the Superfund law, any money expended by the State to implement this remedy is recoverable from the PRPs.

Q. Is Waste Management still in operation?

A. Yes, Waste Management of New York, Inc. is still in operation as a corporation.

Q. Will the $5.8 million spent by WMNY cover their responsibility for this site?

A. Yes. WMNY has offered to do this work to cover their liability for the site. Note that if the work is not done right, WMNY will be responsible to correct any problems associated with implementation of this remedy.

Q. Will money be available for the long term operation and maintenance at the site?

A. The NYSDEC will approach the other PRPs to cover the cost of the long term operation and maintenance for this site. If they are unwilling or unable to do this work, the cost would be covered by the State.

Q. Who will be ultimately responsible for the long term operation and maintenance at the site? If the PRP's do not do the long term monitoring, will these costs fall back to the community?

A. The PRPs (i.e. those who disposed, transported waste or operated the site) will be pursued to take long term responsibility for this site. In this case, the County is one of the PRPs, and could ultimately end up with some responsibility for the long term costs. The NYSDEC will be responsible for ensuring that any work performed at the site is done correctly and the site no longer poses a potential long term threat to human health or the environment. If the PRPs do not do this monitoring, the costs would be covered by the State.

Q. Why isn't the original owner (Mr. McKenna) responsible?

A. The original owner will be pursued as a PRP for this site.

Q. Who does the responsiveness summary respond to?

A. The responsiveness summary responds to the people who raised questions at the public meeting on the PRAP or sent written comments on the PRAP. Most of the questions raised at the public meeting were addressed by the NYSDEC personnel in interactive dialogue. The responsiveness summary includes a listing of these questions and their answers.

Q. Will there be a public meeting or notice on the ROD?

A. There will be a public notice sent to everyone on the mailing list once the ROD is executed. However, there will not be another public meeting on the ROD itself. Additional public meetings will be held as the project progresses (i.e. during the remedial design phase to present the design).

Q. When will the off-site problems be addressed?

A. We anticipate that investigations to identify any off-site problems would occur after the remedial work at the site is completed. This timing would allow the additional investigations to also help determine the effectiveness of the closure. The NYSDEC will approach the other PRPs about conducting an investigation of these problems. If off-site problems are found, a decision on what to do will then be made.

Q. Will WMNY do the work at the McKenna site in order to obtain a permit for the expansion of the former Orleans Sanitary Landfill (OSL).

A. The closure of the McKenna Landfill site is programmatically separate from the OSL permit issue (i.e., the McKenna Landfill closure is handled by the Division of Hazardous Waste Remediation, while the OSL permit would be handled by the Division of Solid Waste). The State recognizes that there is a public concern with any linkage of action to be taken at these sites. There has been no agreement of any kind between the NYSDEC and WMNY linking the McKenna Landfill closure with WMNY's permit efforts for the OSL facility. WMNY, as well as the other PRPs, have a legal liability for cleanup of the McKenna site that exists regardless of any permit aspirations.

Q. Has WMNY submitted a formal application to re-open the OSL site? Is this application complete? What is the status of the application?

A. WMNY has submitted an application to re-open the OSL site. This application consisted only of the application form, not any of the information needed to back up the application. This application is being reviewed for NYSDEC by the Division of Solid Waste.

Written comments were received from two interested parties: The New York State Thruway and Ms. Pat Wood. The following is a listing of their comments and the responses:

Letter from Leo Campagna, NYS Thruway Authority

1. Does the site include any canal property? Section 2 (of the PRAP) describes the site as "bounded by the Erie Barge Canal to the north". Does this refer to the canal property line or the canal water line?

A. The site does not include any property owned by the New York State Thruway Authority, New York State Canal Corporation. The phrase cited above was intended to provide a general location for the site. The landfill itself is approximately 100 feet south of the edge of the canal. The actual McKenna property is adjacent to the property owned by the New York State Canal Corporation. A survey of the site, to develop the site map, is usually performed on this type of project. This survey would include delineation of property boundaries.

2. We feel the project should include cleanup of any contaminated canal owned soils affected by the site.

A. The PRAP calls for the presumptive closure of the landfill and does not call for removal of any soils from the canal property or elsewhere. Although future investigations are

anticipated and would likely involve sampling of soils or sediments from near or on canal property, future soil removal is not considered likely. The contaminants associated with the landfill are generally not persistent and would reasonably be expected to naturally attenuate once the leachate problem has been corrected.

3. Any work being performed on canal property as a result of this project will require a canal work permit.

A. It is possible that some of the work will be performed on canal owned property during implementation of this remedy. However, none of this work would be expected to involve the canal structure. This work may include drainage improvements on canal property. Also, it is possible that the cap run out may be very near or on canal property. Details of any canal property effects will not be known until the design has been completed. If any work on canal owned property is required, the WMNY and/or its contractor will be responsible for obtaining the canal work permit.

Statement from Ms. Pat Wood

Ms. Wood attended the public meeting on March 2, 1995. A number of questions in her written statements have already been addressed above in the responsiveness summary. Listed below are those questions or comments that have not already been addressed.

Q. Why did you examine only two potential alternatives? What about a slurry wall for the site.

A. If a full feasibility study had been performed for this site, a number of different technologies would have been evaluated for the remedy. Our experience has shown that, for this type of site, most of these technologies would have been eliminated as being too expensive, unreliable, impractical or as having significant adverse short term impacts. For this reason, only two alternatives were evaluated in the PRAP: the "No Action" alternative (which is required to be evaluated by the regulations and used as a baseline for comparison among the other alternatives) and "Presumptive Closure of the Landfill (the selected remedy).

This approach is fully consistent with both State and Federal guidelines for presumptive landfill closures. These guidelines were developed from Statewide and nationwide experience that both strongly support presumptive closure. For the McKenna site, this approach should allow actual construction to begin at least 2 years sooner by avoiding unnecessary paper studies.

With regard to a slurry wall, this site is located atop an overburden layer that is 1 to 10 feet thick. Leachate that is migrating from the site is flowing through this overburden layer to the bedrock. A slurry wall is effective as an overburden barrier to leachate migration in the groundwater. However, at this site, a slurry wall would not be effective because the contaminants are likely migrating through the bedrock. Slurry walls are difficult to install in a bedrock layer and are not particularly effective in stopping the migration of contaminants.

Q. Does the PRAP meet the location specific Standards, Criteria and Guidelines (SCGs) that would be appropriate for this site?

A. Implementation of this remedy will be required to meet any location specific SCGs that are applicable. These would include any requirements for work performed on property owned by the New York State Thruway Authority, New York State Canal Corporation (such as work permits). Since the area impacted by the remedy is primarily limited to the landfill, no other locations specific SCGs (such as those dealing with wetlands, endangered species and other waterways) would be applicable.

Q. Will the seams (of the liner) be heat welded and how will that be applied?

A. The construction details of the cap will be specified in the remedial design for this project. If a geomembrane liner is selected for the cap, usual practice recommended by the manufactures is to heat weld the seams. Seaming is a critical construction activity that will be subject to strict Quality Control and verification testing.

Q. What exactly is a passive gas venting system?

A. Organic waste is commonly disposed of in landfills of this type. As this organic material decomposes, methane gas is generated. If this gas is not removed from beneath the cap, it can migrate through soils away from the waste mass, stress nearby vegetation and possibly create explosive conditions in nearby confined spaces such as basements. A passive venting system would include the installation of pipes (vents) through the cap into the waste mass to allow this gas to vent to the atmosphere under its own pressure. A passive system includes no pumps, blowers, collection or active management of the landfill gas.

Appendix C

Standards, Criteria and Guidelines

Compliance with SCGs: SCGs are the New York State Standards, Criteria and Guidelines that are appropriate for the site. There are three general categories for SCGs (modeled after the Federal ARARs - Applicable or Relevant and Appropriate Requirements): Chemical specific, location specific and action specific. **Chemical specific SCGs** would include surface and groundwater standards for the chemicals of concern at the site. They would also include cleanup guidelines for sediments and surface soils. **Location specific SCGs** would deal with any special requirements that may be necessary due to the location of the site, such as a site on a navigable waterway or, on or adjacent to a listed wetland area. **Action specific SCGs** would be any requirements that would have to be met during implementation of the remedy. These would include closure requirements (such as 6 NYCRR Part 360) for landfill closures.