RECORD OF DECISION

Sidney Landfill

Town of Sidney, Delaware County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 1995

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Sidney Landfill, Town of Sidney, Delaware County, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of a remedial action for the Sidney Landfill site, which is chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601 *et seq.* and to the extent practicable the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the remedy for the site. The attached index (see Appendix III) identifies the items that comprise the Administrative Record upon which the selection of the remedial action is based.

The New York State Department of Environmental Conservation (NYSDEC) has been consulted on the planned remedial action in accordance with CERCLA §121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy (Alternative 2A) includes:

- excavating and relocating the waste from the Can and Bottle Dump Area to the adjacent North Disposal Area;
- constructing four independent closure caps which are consistent with the requirements of New York State 6 NYCRR Part 360 over the North Disposal Area, the White Goods Disposal and Alleged Liquid Disposal Areas (capped together), the Southeast Disposal Area, and the Southwest Disposal Area, and the construction of four individual chain-link fences;
- extracting contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S (located just east of the North Disposal Area, where floating product was

detected), followed by air-stripping or other appropriate treatment, and discharge to surface water;

- taking steps to secure institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the caps); and
- long-term monitoring of groundwater, surface water, and sediments.

After the construction of the four caps, and the extraction and treatment of the contaminated groundwater in the vicinity of monitoring well MW-2S for five years, the results of semi-annual bedrock groundwater monitoring will be evaluated using trend analysis and possibly modeling of the bedrock aquifer to determine whether it appears that the groundwater quality in the bedrock aquifer would be restored to acceptable levels through natural attenuation cost-effectively and within a reasonable time frame. Should the trend analysis and/or modeling show that groundwater quality in the bedrock aquifer would likely not be restored within a reasonable time frame by natural attenuation alone, then site-wide bedrock groundwater extraction and treatment (Alternative 3A) may be implemented.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy (Alternative 2A) and the contingent remedy (Alternative 3A) meet the requirements for remedial actions set forth in CERCLA §121, 42 U.S.C. §9621 in that they: 1) are protective of human health and the environment; 2) attain a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements (ARARs) under federal and state laws; 3) are cost-effective; and 4) utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. In keeping with the statutory preference for treatment as a principal element of the remedy, under the selected remedy and the contingency remedy, contaminated groundwater will be collected and treated. The landfill material, however, cannot be excavated and treated effectively, because of the size of the landfill and because no on-site "hot spots" were found that represent the major sources of contamination.

A review of the remedial action pursuant to CERCLA §121(c), 42 U.S.C. §9621(c), will be conducted five years after the commencement of the remedial action, and every five years thereafter, to ensure that the remedy continues to provide adequate protection to human health and the environment, because this remedy will result in hazardous substances remaining on-site above health-based levels.

Jeanne M. Fox
Regional Administrator

9/28/95
Date

RECORD OF DECISION FACT SHEET
EPA REGION II

Site:

Site name: Sidney Landfill

Site location: Town of Sidney, Delaware County, New York

HRS score: 29.36

Listed on the NPL: March 30, 1989

Record of Decision:

Date signed: September 28, 1995

Selected remedy: Installation of Landfill Caps consistent with 6 NYCRR Part 360 in Four Areas

Capital cost: $4,624,041

Construction Completion - 10-12 months

Annual O & M cost - $370,728

Present-worth cost - (5% discount rate for 30 years): $10,260,000

Lead:

Site is enforcement lead - EPA is the lead agency

Primary Contact: Richard Ramon (212) 637-4253

Secondary Contact: Joel Singerman, Chief, Western New York Superfund Section I

Main PRPs: Amphenol Corporation and AlliedSignal, Inc.

Waste:

Waste type: metals, volatile organics, semi-volatile organics and PCBs

Waste origin: Hazardous waste

Contaminated medium: soil, groundwater

RECORD OF DECISION

DECISION SUMMARY

Sidney Landfill

Town of Sidney, Delaware County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 1995

TABLE OF CONTENTS

page

SITE NAME, LOCATION AND DESCRIPTION 1

SITE HISTORY AND ENFORCEMENT ACTIVITIES 1

HIGHLIGHTS OF COMMUNITY PARTICIPATION 2

SCOPE AND ROLE OF OPERABLE UNIT 2

SUMMARY OF SITE CHARACTERISTICS 2

SUMMARY OF SITE RISKS 5

REMEDIAL ACTION OBJECTIVES 9

DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES 10

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES 14

SELECTED REMEDY 19

STATUTORY DETERMINATIONS 20

DOCUMENTATION OF SIGNIFICANT CHANGES 24

ATTACHMENTS

APPENDIX I. FIGURES
APPENDIX II. TABLES
APPENDIX III. ADMINISTRATIVE RECORD INDEX
APPENDIX IV. STATE LETTER OF CONCURRENCE
APPENDIX V. RESPONSIVENESS SUMMARY

SITE NAME, LOCATION AND DESCRIPTION

The 74-acre Sidney Landfill site is situated in hilly terrain within the Susquehanna River basin, in the Town of Sidney, Delaware County, New York (see Figure 1-1), approximately 2.5 miles southeast of Sidney Center and 3.5 miles northeast of Trout Creek. The landfill is situated on the western slope of Richardson Hill, which is on the east side of Richardson Hill Road (see Figure 1-2). West of the landfill, adjacent to Richardson Hill Road, is North Pond; to the southwest is South Pond. The site is situated on a drainage divide. To the north, wetlands which receive runoff from the vicinity of the site drain into an unnamed tributary to Carrs Creek, which flows through Sidney Center on its way to the Susquehanna River. To the south, wetlands, which receive runoff from the vicinity of the site, drain into an unnamed tributary to Trout Creek, which flows into the Cannonsville Reservoir on the west branch of the Delaware River. The Cannonsville Reservoir is part of the Delaware watershed system, supplying drinking water to the New York City metropolitan area. There are numerous springs around the site, some of which eventually discharge into the wetlands.

The elevation in the area ranges from 1,800 at the base of the landfill to 2,120 at the top of the hill; the distance between the two being approximately 1,700 feet.

Although the area in which waste was deposited is not well documented, it appears that several discrete areas in different parts of the site were filled. The following disposal areas show the presence of hazardous constituents: the North Disposal Area (10.8 acres) ; the Southeast Disposal Area (6.4 acres) ; the Southwest Disposal Area (1.9 acres) ; the Alleged Liquid Waste Disposal Area (3,125 ft^2); the White Goods Disposal Area (8,516 ft^2); and the Can and Bottle Dump Area (19,032 ft^2) (see Figure 1-3).

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The land on which the Sidney Landfill is located was purchased by Devere Rosa in 1967 for the purpose of operating a refuse disposal area. While operating the Sidney Landfill, Mr. Rosa also operated a disposal area on the west side of Richardson Hill Road referred to as the Richardson Hill Road Landfill.[1] The Sidney and Richardson Hill Road Landfills were allegedly used for the disposal of municipal waste from the Town of Sidney and commercial wastes from Bendix Corporation. NYSDEC and New York State Department of Health (NYSDOH) files indicate that the Sidney Landfill was poorly operated, with improper compaction of waste, poor daily covering, no supervision, and uncontrolled access to the site.

The Sidney Landfill was operated by Mr. James Bartlett from 1971 until 1972, when the Town of Sidney began sending its waste to a landfill in Chenango County. In 1978, ownership of the site changed to James Bartlett. The current owner is Lou Mangione.

---

1 The Richardson Hill Road Landfill, also a National Priorities List site, is currently being investigated separately.

Based upon the results of a New York State-performed Phase II investigation of the site, which was performed from 1985 to 1987, the site was proposed for listing on the Superfund National Priorities List on June 24, 1988. The site was listed on the National Priorities List on March 30, 1989.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The remedial investigation (RI) report, feasibility study (FS) report, and the Proposed Plan for the site were released to the public for comment on July 27, 1995. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, New York and the information repository at the Sidney Memorial Public Library ,Main Street, Sidney. The notice of availability for the above-referenced documents was published in the *Press and Sun Bulletin* on July 29, 1995. The public comment period related to these documents was held from July 27, 1995 to August 26, 1995.

On August 2, 1995, EPA conducted a public meeting at the Sidney Civic Center to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the site, to discuss the Proposed Plan and to respond to questions from area residents and other interested parties.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

SCOPE AND ROLE OF OPERABLE UNIT

This response action applies a comprehensive approach, therefore only one operable unit is required to remediate the site.

SUMMARY OF SITE CHARACTERISTICS

The purpose of the RI, conducted from 1991 to 1995, was to determine the nature and extent and contamination at and emanating from the site. The results of the RI are summarized below.

Groundwater Quality and Residential Wells/Springs

Bedrock aquifer samples (there is no overburden aquifer present) were collected from site monitoring wells in 1991 (Round 1) and in 1994 (Round 2) (see Table 1). Round 1 groundwater sampling detected, predominantly, trichloroethene (TCE), 1,1,1-trichloroethane (TCA), and their breakdown products, along with the occasional presence of other volatile organic compounds (VOCs), such as toluene, xylene, and carbon disulfide. Bis(2-Ethylhexyl)phthalate (BEHP) was the only semi-volatile organic compound (SVOC) detected with any regularity in the groundwater samples from Round 1.

The pesticides aldrin, DDT, and heptachlor epoxide were detected in the parts per trillion range.

During Round 1, floating product was detected in a monitoring well located just east of the North Disposal Area (monitoring well MW-2S). Screening results of the sampling showed the presence of the PCB Aroclor 1242 (61,000,000 micrograms per liter (μg/l)), ethylbenzene (12,312 μg/l), 1,1,2,2-tetrachloroethane (TCA) (16,871 μg/l), tetrachloroethene (PCE) (23,874 μg/l), TCE (101,557 μg/l), xylenes (44,264 μg/l), and 1,2,4-trimethylbenzene (197,830 μg/l).

The results from Round 2 indicated that, on a site-wide basis, concentrations of TCE, TCA, 1,2-dichloroethene (DCE), dichloroethane, and vinyl chloride were generally the same or less than Round 1, with the exception of a well located downgradient of the North Disposal Area (monitoring well MW-6D) and a well located downgradient of monitoring well MW-2S (monitoring well MW-15S), which showed elevated levels. Subsequent sampling of the groundwater "hot spot" (monitoring well MW-2S) indicated that, while the floating product and PCBs were not detected (they may have migrated downgradient or dispersed), high concentrations of BETX (benzene, ethylbenzene, toluene, and xylene) and VOCs were present.

TCE and its breakdown products, 1,2-DCE and vinyl chloride, are the primary groundwater contaminants that were detected over most of the site. Concentrations of TCE ranged from 6 μg/l to 160 μg/l, exceeding EPA and New York State standards of 5 μg/l. TCA and its breakdown products were detected throughout the site at quantities roughly an order-of-magnitude less than TCE, DCE, and vinyl chloride. The concentrations of TCA did not exceed the EPA or the New York State standards in any sample. The compounds that were detected in the groundwater appear to be distributed both horizontally and vertically in the groundwater, having been detected to depths of 130 feet, including wells which are to the east of the site and on the other side of a surface-water and groundwater divide. There is, however, no discernible site-wide pattern of groundwater contamination. The highest concentrations are generally near the waste disposal areas, with the exception of two locations southeast of the landfill site. Notable among the Round 2 results when compared to Round 1 is the presence of PCBs (other than at the hot spot) and the virtual disappearance of pesticides. Samples from a well located downgradient of the North Disposal Area (monitoring well MW-6S) exceeded the EPA and New York State standards of .5 μg/l and .1 μg/l respectively for Aroclor 1248 at 9.3 μg/l. Only one groundwater sample collected during Round 2 contained elevated pesticide concentrations. A sample collected downgradient of the Southeast Disposal Area (monitoring well MW-3D) during Round 2 contained 0.022 μg/l DDE, which exceeded the New York State standard of nondetectable.

Three private water supplies (springs) located adjacent to the site show chemical contamination. Two are currently above drinking water standards. Both springs have whole-house treatment systems, which are currently being maintained by potentially responsible parties associated with the Richardson Hill Road Landfill site, pursuant to an Administrative Order on Consent. As a result of the treatment systems, the water supplies show no contamination at the point of use.

Surface and Subsurface Soils

Organic contaminants detected in the surface soils (see Table 1) were predominantly pesticides and polychlorinated biphenyls (PCBs), with the highest concentration of PCBs being found on the east side of the Southeast Disposal Area. The maximum PCB concentration detected in the surface soil in this area was 158,000 micrograms per kilogram (μg/kg); the maximum PCB concentration detected in the subsurface soil was 180,000 μg/kg. Other areas where PCBs were detected include the Southwest Disposal Area; the North Disposal Area; and east of and along the road immediately downhill from the North Disposal Area. Pesticides were distributed over the site in approximately the same areas as PCBs. DDT and its breakdown products, DDD and DDE, were most commonly detected. The highest concentration of DDT was 640 μg/kg.

Elevated inorganic contaminants were detected, primarily, in surface soil samples in the eastern portion of the Southeast Disposal Area and northwest of the North Disposal Area. Cadmium and thallium, neither of which were detected in background samples, were detected at 14.8 milligrams per kilogram (mg/kg) and 0.4 mg/kg, respectively. Concentrations of copper (12,300 mg/kg) and lead (53,800 mg/kg) at the Southeast Disposal Area were extremely high relative to all other on-site surface soil samples. At the other locations, concentrations of these contaminants ranged from non-detect to 554 mg/kg for copper and 6.3 to 119 mg/kg for lead. Many of the subsurface soil samples contained inorganic analyte concentrations which exceeded surface soil background levels. Except for one extremely high iron concentration (295,000 mg/kg), the concentration ranges for most analytes were generally within the range of 2 to 10 times site background levels.

The Southeast Disposal Area samples generally contained concentrations of inorganics well above background levels. It should be noted that the highest concentrations of aluminum, cadmium, chromium, copper, lead, nickel, and zinc were found in the part of the Southeast Disposal Area called the Eastern Stained Soil Area.

The highest concentrations of the inorganics arsenic, barium, manganese, and silver, were detected to the north of the landfill. The concentrations of these inorganics were within site and New York State background levels in all on-site samples (with the exception of one on-site sample having a slightly elevated concentration of arsenic). Soil samples collected from the north of the landfill contained the highest detected concentrations of iron.

Surface Water, Sediment, and Leachate Investigations

The objectives of the surface water, sediment, and leachate investigations were to determine if site-generated contaminants have migrated to adjacent wetlands or open areas downslope of the site, and to determine site-specific background contaminant concentrations. A total of 23 sediment, 19 surface water, and 5 leachate samples were collected and analyzed for Target Compound List and Target Analyte List analytes.

Surface water samples (see Table 2)collected from South Pond, North Pond, the tributary to Trout

Creek, and Carrs Creek indicate the presence of low levels of acetone (11 μ/l), DCE (4 μg/l), TCE (2 μg/l), chloromethane (12 μg/l), BEHP (2 μg/l), and PCBs (Aroclor 1248 (0.84 μg/l)).

Sediment samples (see Table 5) collected from South Pond contained PCBs and a variety of pesticides, including aldrin, heptaclor epoxide, DDT, DDE, DDD, endosulfan, endrin, and chlordane. The maximum concentrations were 1,100 μg/kg alpha-chlordane (pesticides) and 44,000 μg/kg PCBs. (It should be noted that, based upon the documented release of PCBs and solvent-containing waste oils to South Pond from a waste oil pit located on the Richardson Hill Road Landfill site, it is believed that the contamination in South Pond is attributable to the Richardson Hill Road Landfill site, rather than the Sidney Landfill site.)

The maximum PCB sediment concentration in North Pond was 80 μg/kg. Only one sample in North Pond contained pesticides (4.4 μg/kg DDE). Sediment samples collected from Carrs Creek contained only VOCs and SVOCs, with a maximum concentration of 420 μg/kg of benzo[a]pyrene. Sediment samples from a tributary to Trout Creek contained several pesticides and PCBs, with lesser amounts of volatile and semi-volatile organics. The number of compounds detected in the samples and the total concentrations generally decreased in a southerly direction from South Pond. These samples were the only samples to contain PCBs in the sampling location outside the boundaries of the landfill, as was the case for surface water samples. PCBs ranged in concentration from 120 to 3,200 μg/kg for Aroclor 1248. The EPA sediment quality criteria for Aroclor 1248 is 0.5 μg/kg, the NYSDEC standard is 0.1 μg/kg. Pesticides present in these samples include DDE, DDD, DDT, dieldrin, methoxychlor, aldrin, and endosulfan II, ranging in concentrations from 4.5 μg/kg for DDD to 180 μg/kg for aldrin. The only VOC detected in off-site sediment samples was acetone at a concentration of 140 μg/kg. The only SVOC detected during the sample analyses of the off-site sediment samples was di-n-octylphthalate at a concentration of 810 μg/kg.

A leachate seep located near the road southwest of the North Disposal Area contained VOCs, with a total concentration of 91 μg/l (see Table 3). A leachate seep located on the west edge of the North Disposal Area contained VOCs, SVOCs, and PCBs. Total BETX compounds were present at 490 μg/l and PCBs at 3.6 μg/l. Of the remaining compounds, only 1,4-DCB (24 μg/l) and 4-methylphenol (29 μg/l) were present at levels above 20 μg/l.

SUMMARY OF SITE RISKS

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification*--identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration (see Appendix II-c). *Exposure Assessment*--estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. *Toxicity Assessment*--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization*--summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The baseline risk assessment began with selecting contaminants of concern that would be representative of site risks. The contaminants included 18 volatile organic compounds, 21 SVOCs, 9 pesticides, PCBs, 17 metals, and cyanide. Several of the contaminants, including vinyl chloride, benzene, and arsenic, are known to cause cancer in laboratory animals and are suspected to be human carcinogens.

The baseline risk assessment evaluated the health effects which could result in various potentially exposed populations from hypothetical current- and future-use exposure to the chemicals of potential concern in the absence of remedial action. In the current-use scenario, exposure to the chemicals of potential concern in spring water during potable use by resident adults and children; exposure to the chemicals of potential concern in on-site surface soil, on-site leachate, surface soil from the Alleged Liquid Disposal Area, and off-site surface soil by adolescent trespassers; and exposure to the chemicals of potential concern in surface water and sediment from North Pond and the small ponds and wetlands in the vicinity of the site by adolescent recreationalists were evaluated. In the future-use scenario, exposure to the chemicals of potential concern in subsurface soils on site, at the Alleged Liquid Disposal Area, at the Eastern Stained Area (part of the Southeast Disposal Area), and off-site by utility/maintenance workers was evaluated.

Current federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10^{-4} to 10^{-6} (e.g.,a one-in-ten-thousand to a one-in-a-million excess cancer risk) and a maximum health Hazard Index (which reflects noncarcinogenic effects for a human receptor) equal to 1.0. (A Hazard Index greater than 1.0 indicates a potential of noncarcinogenic health effects.)

In the current-use scenario, exposure of resident adults and children to spring water (Hazard Indices of 20 for adults and 40 for children and an estimated cancer risk of $3x10^{-4}$ for children) and exposure of adolescent trespassers to on-site surface soil and on-site leachate (a Hazard Index of 7) result in risks in excess of EPA's acceptable risk range. The primary contributors to the risk estimates are tricholorethene and manganese in spring water and PCBs in on-site surface soil and on-site leachate.

In the future-use scenario, exposure of resident adults and children to groundwater (Hazard Indices of 90 for adults and 200 for children and an estimated cancer risks of $4x10^{-3}$ for adults and $2x10^{-3}$ for children) and exposure of utility/maintenance workers to sub-surface soil at the Eastern Stained Area (a Hazard Index of 4) result in risks in excess of the EPA Superfund acceptable risk range. The primary contributors to the risk estimates are manganese, arsenic, antimony, barium, beryllium, vinyl chloride, and PCBs in groundwater and PCBs in the Eastern Stained Area.

Ecological Risk Assessment

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation*--a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment*--a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment*--literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. *Risk Characterization*--measurement or estimation of both current and future adverse effects.

Habitats which presently exist in the vicinity of the Sidney Landfill include palustrine emergent marsh wetlands, open water, shrubland and forested upland. Surface soils on the site may provide a source of exposure to wildlife through direct contact, ingestion, and ingestion of vegetation growing in contaminated soil. Surface runoff may transport contaminated soil particles into the various streams and wetland areas, potentially contaminating surface water and sediments in these areas.

If contaminants are discharged into the wetland areas, fish and wildlife ingesting aquatic vegetation can be exposed to contaminants which have become bioaccumulated into plant tissues. Also, direct contact with water and sediments can occur during feeding and nesting activities of waterfowl and on a constant basis for fish and other aquatic organisms inhabiting open water areas of the wetlands. Terrestrial wildlife may also be exposed to contaminants via ingestion of water, aquatic vegetation, and organisms such as fish.

The risk assessment evaluated the potential risks of exposure to the contaminants of concern to several indicator species. Largemouth bass was the only species of fish caught from North Pond and the control location. Therefore, this species is used as an indicator of conditions in the ponded areas in the vicinity of the site. For assessment of risks from exposure to surface soils, the cottontail rabbit, a common mammal known to occur on the site, was used as an indicator. Mink and osprey were chosen as indicators for analysis of risk through exposure to contaminants in fish tissue, since these species may inhabit the vicinity of the landfill, and are known to consume fish as the bulk of their diet. A summary of the Environmental Assessment of the Site is presented in Table 5.

The ratio of the estimate of chronic daily intake to the health-protective criterion (CDI/RfD) is called a Hazard Quotient (HQ). The HQ assumes that there is a level of exposure (i.e., the RfD) below which it is unlikely for even sensitive subpopulations to experience adverse health effects. If the HQ exceeds 1.0, there may be concern for potential non-cancer effects. The greater the hazard quotient above 1.0, the greater the level of concern.

Surface Water and Leachate Seeps

In calculating the HQs for the 17 chemicals of concern, the lowest available criterion (either EPA or NYSDEC Ambient Water Quality Criteria) was used to provide a conservative view of potential health risks. Based on the HQs, it appears that aluminum, bis[2-ethylhexyl]phthalate, cadmium, chlorobenzene, 4-chloro-3-methylphenol, cobalt, copper, 1,4-dichlorobenzene, 1,1-dichloroethane, iron, lead, manganese, PCBs, silver, and 1,1,1-trichloroethane present a risk to aquatic biota in the site vicinity. Due to iron and manganese exceeding site background and applicable criteria or toxicity data, they were included in this analysis. It should be noted that elevated background concentrations of iron present a potential risk to aquatic biota based on a calculated HQ of 9.5 (average detected concentration in background samples was 2,853 μg/l).

Sediment

Based on the HQs calculated for the 15 chemicals of concern, it appears that aldrin, arsenic, cadmium, chlordane, copper, DDT, DDE, DDD, endosulfan, endrin aldehyde, heptachlor epoxide, iron, manganese, nickel, PCBs, and zinc present a potential risk to benthic organisms inhabiting the areas sampled. PCBs, DDT, DDE, and DDD were detected in both North and South Ponds, but concentrations were significantly higher in South Pond. Based on the average PCB concentrations for each of these areas (0.074 mg/kg for North Pond and 8.1 mg/kg for South Pond), there appears to be no potential ecological risk to benthic organisms in North Pond (HQ = 0.96) and a potential risk in the South Pond (HQ = 105). Based on the average DDT, DDE, and DDD concentrations (0.0044 mg/kg for North Pond and 0.136 mg/kg for the South Pond), there appears to be no potential risk to benthic organisms in North Pond (HQ = 0.08) and a potential risk in the South Pond (HQ = 2.5).

Surface Soil

Aluminum, arsenic, barium, copper, lead, manganese, nickel, and PCBs present a potential risk to wildlife ingesting surface soil. The presence of DDT, DDD, and DDE in surface soil poses no potential risk to wildlife in the site vicinity. Cadmium, chromium, copper, manganese, nickel, PCBs, silver, and zinc present a possible risk.

Fish Tissue

In determining the effects of contaminants present in fish in the vicinity of the Sidney Landfill, concentrations in fish tissue which are considered to be protective of fish-consuming wildlife were developed for the chemicals of potential concern. The indicator species which were chosen for this assessment are mink and osprey, with mink representing a fish-consuming mammal and osprey representing a bird species whose diet consists entirely of fish.

Based on the HQs for these compounds, the presence of DDT, endrin, and nickel in fish tissue presents no potential risk to wildlife consumers of fish from North Pond. For manganese, the concentration in fish tissue from North Pond was only slightly higher than the acceptable level for mink (15.6 mg/kg in North Pond fish versus acceptable concentration of 12.0 mg/kg). The background fish tissue concentration of manganese was 4.6 mg/kg, within the same order of magnitude as North Pond fish tissue concentrations. This indicates that the actual risk is likely to be lower than suggested by the HQ, especially since manganese is considered to be a vital nutrient for both plants and animals.

Due to the site's location in a rural area and the presence of both upland and wetland habitats, the potential for utilization by wildlife is high. The presence of pesticides, PCBs, and inorganic compounds in environmental media, at concentrations which present a potential risk based on HQs, are likely to have some adverse effect on wildlife utilizing the site vicinity, even if those effects are not apparent on an ecosystem level. If the site is unremediated, contaminants may continue to be released (e.g., via leachate, surface runoff, groundwater discharge) into the environment. Effects of contaminants could be more pronounced over time as a result of increasing concentrations in the media of concern and bioaccumulation through the food chain. Remediation of the site would limit future contaminant releases, and may allow the affected media to recover over time through such natural processes as dilution and sedimentation and, for some organics, biodegradation.

In summary, actual or threatened releases of hazardous substances from this site, if not addressed by the preferred remedy or one of the other active measures considered, may present a current or potential threat to public health, welfare and the environment.

REMEDIAL ACTION OBJECTIVES

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

The following remedial action objectives have been established for the site:

- minimize infiltration and the resulting contaminant leaching to groundwater;
- control surface water runoff and erosion;
- mitigate the off-site migration of contaminated groundwater;
- restore groundwater quality to levels which do not exceed state or federal drinking-water standards;
- control generation and prevent migration of subsurface landfill gas; and

- prevent contact with contaminants in the groundwater.

DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

This ROD evaluates in detail, five remedial alternatives for addressing the contamination associated with the Sidney Landfill site. Various processes are considered and are assembled into remedial alternatives which can accomplish the remedial action objectives. Cost and construction time, among other criteria, were evaluated for each remedial alternative. The time to implement a remedial alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate with the responsible parties, procure contracts for design and construction, or conduct operation and maintenance activities at the site.

The remedial alternatives are:

Alternative 1 - No Further Action

Capital Cost:	$155,016
Annual Operation and Maintenance Cost:	$134,400
Present Worth Cost:	$2,190,000
Construction Time:	3 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the problem of contamination at the site. However, this response action does include the installation of a chain-link fence and gates, recommends the implementation of institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and limitations on the future use of the site), and implements a long-term groundwater monitoring program. Water quality samples would be collected on a semi-annual basis from upgradient, on-site, and downgradient groundwater monitoring wells.

The no-action response also includes the development and implementation of a public awareness and education program for the residents in the area surrounding the site. This program would include the preparation and distribution of informational press releases and circulars and convening public meetings. These activities would serve to enhance the public's knowledge of the conditions existing at the site. This alternative would also require the involvement of local government, various health departments, and environmental agencies.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 2A: Installation of Four Landfill Caps and "Hot-Spot" Groundwater Remediation in the Vicinity of Monitoring Well MW-2S

Capital Cost:	$4,624,041
Annual Operation and Maintenance Cost:	$370,728
Present Worth Cost:	$10,260,000
Construction Time:	10 - 12 months

The main features of this alternative include excavating and relocating the waste from the Can and Bottle Dump Area to the adjacent North Disposal Area, constructing four independent closure caps, which are consistent with the requirements of New York State 6 NYCRR Part 360, over the White Goods Disposal and Alleged Liquid Disposal Areas (capped together), the North Disposal Area, the Southeast Disposal Area, and the Southwest Disposal Area, and the construction of four individual chain-link fences. In addition, this alternative would include the extraction of the contaminated groundwater (high concentrations of BETX and VOCs) from the bedrock aquifer in the vicinity of monitoring well MW-2S to remove a continuing source of contaminants to the groundwater, and air-stripping (or other appropriate treatment) of the extracted groundwater, followed by discharge to surface water.

Prior to the construction of the caps, the landfill disposal areas would have to be regraded and compacted to provide a stable foundation for the placement of the various layers of the cap and to promote runoff. Landfill gases would be vented to the atmosphere or controlled as needed.

This alternative would also include long-term monitoring of groundwater, surface water, and sediments, taking steps to secure institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the caps), and implement a public awareness program to ensure that the nearby residents are familiar with all aspects of this response action.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, further remedial actions may be implemented to remove or treat the wastes.

Alternative 2B: Installation of Four Resource Conservation and Recovery Act (RCRA) Landfill Caps and "Hot-Spot" Groundwater Remediation in the Vicinity of Monitoring Well MW-2S

Capital Cost:	$6,103,191
Annual Operation and Maintenance Cost:	$370,728
Present Worth Cost:	$11,720,000
Construction Time:	12-14 months

This alternative is the same as Alternative 2A, with the only difference being the construction of RCRA landfill caps in place of of caps which are consistent with the requirements of New York State 6 NYCRR Part 360. The RCRA cap system differs from the 6 NYCRR Part 360 cap by requiring a 24-inch thick soil barrier layer and a 40-mil geomembrane, a 12-inch thick drainage layer and a 24-inch thick topsoil layer. A RCRA cap is marginally more effective in reducing infiltration compared to a 6 NYCRR Part 360 cap. Prior to the construction of the caps, the disposal areas would have to be regraded and compacted to provide a stable foundation for the placement of the various layers of the caps and to promote runoff. Landfill gases would be vented to the atmosphere.
Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 3A: Installation of Four Landfill Caps, "Hot-Spot" Groundwater Remediation in the Vicinity of Monitoring Well MW-2S, and Groundwater Extraction and Treatment

Capital Cost:	$8,288,883
Annual Operation and Maintenance Cost:	$419,016
Present Worth Cost:	$14,630,000
Construction Time:	12 -16 months

This alternative is identical to Alternative 2A, except that it also includes extraction of the contaminated groundwater on a site-wide basis from the bedrock aquifer. This would be accomplished by the installation of vertical extraction wells in blasted trenches or using hydro-fracing. In a blasted trench, a linear fracture zone is created by controlled subsurface blasting with explosives in closely spaced boreholes. The principal of this technology is to interconnect existing fractures and create new fractures to substantially increase the hydraulic conductivity within the area of blasting (fracture zone). The increased hydraulic conductivity in the fracture zone increases the area of influence created by pumping of the fracture zone. This results in the formation of a hydraulic line sink (similar to a trench). In hydro-fracing, water and other fluid mixtures are injected under sufficient pressure to open existing fractures and induce new fractures along areas of bedrock weakness to increase the specific yield of the well. Hydro-fracing will not shatter the bedrock, since significantly higher pressures than those attainable during hydro-fracing are required. The hydro-fracing pressures are sufficient to part the rock matrix at bedding planes, existing fractures or other weak points in the bedrock. The extracted groundwater would be treated by air-stripping (or other appropriate treatment) and discharged to a nearby surface water.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, further remedial actions may be implemented to remove or treat the wastes.

Alternative 3B: Installation of Four RCRA Landfill Caps, "Hot-Spot" Groundwater Remediation in the Vicinity of Monitoring Well MW-2S, and Groundwater Extraction and Treatment

Capital Cost:	$9,355,833
Annual Operation and Maintenance Cost:	$419,016
Present Worth Cost:	$15,700,000
Construction Time:	12 - 16 months

This alternative is identical to Alternative 2B, except that it would also include the extraction of contaminated groundwater from the bedrock aquifer using vertical extraction wells followed by air-stripping (or other appropriate treatment) and discharge to surface water. This would be accomplished by the installation of vertical extraction wells in blasted trenches or using hydro-fracing.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, further remedial actions may be implemented to remove or treat the wastes.

Alternatives involving the excavation and consolidation of the Southwest Disposal Area, the Alleged Liquid Waste Disposal Area, the White Goods Disposal Area, and the Can and Bottle Dump Area into the North Disposal Area and the Southeast Disposal Area, followed by the fencing of these two areas, were considered. These alternatives were not, however, presented in the Proposed Plan, since the consolidation of the waste disposal areas into two areas would cost approximately $1 million more than constructing four independent closure caps and chain-link fences as presented in Alternatives 2A, 2B, 3A, and 3B, yet would not provide a significant savings in operation and maintenance costs.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria are the most important and must be satisfied by any alternative in order to be eligible for selection:

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

2. *Compliance with ARARs* addresses whether or not a remedy would meet all of the applicable (legally enforceable), or relevant and appropriate (pertaining to situations sufficiently similar to those encountered at a Superfund site such that their use is well suited to the site) requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

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

4. *Reduction of toxicity, mobility, or volume via treatment* refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants or contaminants at the site.

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

6. *Implementability* refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. *Cost* includes estimated capital and operation and maintenance costs, and the present-worth costs.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. *State acceptance* indicates whether, based on its review of the RI/FS reports and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the selected alternative.

9. *Community acceptance* refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Factors of community acceptance to be discussed include support, reservation, and opposition by the community.

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

- Overall Protection of Human Health and the Environment

Alternative 1, which would include installing fences around the waste disposal areas, would prevent or reduce the likelihood of trespassers from entering the waste disposal areas. Institutional controls would limit the intrusiveness of future activity that could occur on the site. This alternative would not, however, prevent or reduce exposure to leachate seeps which are not all in the waste disposal areas and do not fall within the fence line.

Alternatives 2A, 2B, 3A, and 3B would be significantly more protective than Alternative 1, in that the risk of incidental contact with waste by humans and other ecological receptors would be reduced by the caps. Collecting and treating the contaminated groundwater from the vicinity of monitoring well MW-2S under Alternatives 2A, 2B, 3A, and 3B would reduce the possibility of additional groundwater contamination originating from this area. Also, Alternatives 2A, 2B, 3A, and 3B would provide for overall protection of human health and the environment in that the capping of the landfilled materials would reduce infiltration, thereby reducing the migration of contaminants of concern from the landfill to the groundwater. However, it is estimated that, while Alternatives 2A and 3A (caps consistent with the requirements of New York State 6 NYCRR Part 360) would provide a substantial reduction in leachate production, Alternatives 2B and 3B (RCRA impermeable caps) would provide a slightly greater reduction in leachate production. Alternatives 2B and 3B would, therefore, be marginally more protective than Alternatives 2A and 3A, respectively.

Alternatives 3A and 3B are identical to Alternatives 2A and 2B, respectively, except that they also include bedrock groundwater extraction which would control off-site migration of contaminants. The effluent from the treatment system would meet surface water discharge requirements. In terms of addressing the bedrock groundwater contamination in the vicinity of monitoring well MW-2S, Alternatives 2A, 2B, 3A, and 3B, would be equally protective. However, since Alternatives 3A and 3B would extract contaminated groundwater from the bedrock aquifer at other locations in addition to the vicinity of monitoring well MW-2S, they would provide marginally more protection to human health and the environment than Alternatives 2A and 2B, which would primarily rely on natural attenuation to address the contamination in the bedrock aquifer at these other locations.

- Compliance with ARARs

A cap consistent with the requirements of 6 NYCRR Part 360 is an action-specific ARAR for landfill closure. Therefore, Alternatives 2A, 2B, 3A, and 3B each would satisfy this action-specific ARARs. Alternative 1 would not meet this ARAR, since it does not include any provisions for landfill caps.

Alternative 1 does not provide for any direct remediation of groundwater and would, therefore, never meet the chemical-specific ARARs. Alternatives 3A and 3B would be the most effective in reducing groundwater contaminant concentrations below the maximum contaminant levels (MCLs) (chemical-specific ARARs) because the lower precipitation infiltration rate associated with placing impermeable caps over the landfilled areas would significantly reduce the generation of additional groundwater contamination, and because these alternatives include the collection and treatment of contaminated groundwater in the vicinity of monitoring well MW-2S and elsewhere from the bedrock aquifer. Alternatives 2A and 2B would provide for the remediation of groundwater only in the vicinity of monitoring well MW-2S. However, the extraction of the contaminated groundwater at this location, combined with the capping of the waste disposal areas, should significantly reduce or possibly eliminate the source of on-going bedrock groundwater contamination, particularly in that the hydrogeological investigation performed at the site indicates that the groundwater elevation in all of the waste disposal areas is below the wastes. Given the expected reduction or elimination of the source of the bedrock groundwater contamination, and that the levels of contamination in the bedrock aquifer (other than in the vicinity of monitoring well MW-2S) are less than 200 µg/l for any contaminant, it is anticipated that collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S, in conjunction with natural attenuation of the other contamination already present in the bedrock aquifer, will reduce bedrock aquifer contaminant levels toward a goal of MCLs.

- Long-Term Effectiveness and Permanence

Alternatives 2A, 2B, 3A, and 3B would be equally effective over the long-term. Both the RCRA caps and the 6 NYCRR Part 360 caps (or caps consistent with those requirements) would substantially reduce the residual risk of untreated waste on the site by essentially isolating it from contact with human and environmental receptors and the mobility caused by infiltrating rainwater. The adequacy and reliability of these caps to provide long-term protection from waste remaining at the site should be excellent.

Both the RCRA caps and the 6 NYCRR Part 360 caps (or caps consistent with those requirements) would require routine inspection and maintenance to ensure long-term effectiveness and permanence. Routine maintenance of the caps, as a reliable management control, would include mowing, fertilizing, reseeding and repairing any potential erosion or burrowing rodent damage.

While a large volume of contaminated groundwater would be treated during remediation, Alternatives

3A and 3B may not be completely effective in removing all the contamination, because some of the contamination may remain in the fractured bedrock at the completion of remediation. The long-term effectiveness would also be affected by any on-going migration of contaminants from the source areas. While groundwater extraction and treatment in the vicinity of monitoring well MW-2S is expected to reduce the level of contamination in the bedrock aquifer in this area, not all of the groundwater contamination will be removed.

- Reduction in Toxicity, Mobility, or Volume via Treatment

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

The caps that would be installed under Alternatives 2A, 2B, 3A, and 3B would nearly eliminate the infiltration of rainwater into the waste disposal areas and the associated leaching of contaminants from these areas. The results of soil borings suggest that all of the waste disposal areas are located above the groundwater table. Therefore, the reduction in mobility (without treatment) of contaminants by the caps would be significant. Collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S under Alternatives 2A, 2B, 3A, and 3B would reduce the toxicity, mobility, and volume of contaminants, and it would also reduce the possibility of additional groundwater contamination originating from this area. Alternatives 2A and 2B would also rely on natural attenuation to reduce the levels of contamination in areas not in the vicinity of monitoring well MW-2S. Alternatives 3A and 3B would provide for additional groundwater extraction and treatment and would further reduce the toxicity, mobility, and volume of contaminants.

- Short-Term Effectiveness

Alternative 1 does not include any physical construction measures in any areas of contamination and, therefore, does not present a risk to the community as a result of its implementation. Alternatives 2A, 2B, 3A, and 3B involve excavating, moving, placing, and regrading of waste prior to cap construction, and the installation of extraction wells. All of the action alternatives present some risk to on-site workers through dermal contact and inhalation from cap construction and groundwater sampling activities, which can be minimized by utilizing proper protective equipment. The vehicle traffic associated with landfill cap construction could impact the local roadway system and nearby residents through increased noise level. Disturbance of the land during construction could affect the surface water hydrology of the site. There is a potential for increased stormwater runoff and erosion during construction that would be properly managed to prevent excessive water and sediment loading.

- Implementability

Fencing the site and performing routine groundwater monitoring are actions that can be readily implemented. These actions are technically and administratively feasible and require readily available materials and services. Constructing caps over the waste disposal areas on the site (Alternatives 2A, 2B, 3A, and 3B), although more difficult to implement than the no-action alternative, can be accomplished using technologies proven to be reliable and readily implementable. Equipment, services and materials for this work are readily available. Each of the capping alternatives would also involve remediation of the groundwater in the vicinity of the monitoring well MW-2S groundwater hot spot.

Air stripping is a process through which volatile contaminants are transferred from the aqueous phase to an air stream. Air stripping has been effectively used to remove over 99 percent of volatile organic compounds from groundwater at numerous hazardous waste and spill sites.

The use of blasted trenches (Alternatives 3A and 3B) are technically feasible. Additionally, the use of an experienced blasting firm would be required during the design and the implementation of the trenches. Hydro-fracing (Alternatives 3A and 3B) is one method of opening existing fractures and increasing hydraulic conductivity. The equipment used for hydro-fracing is readily available throughout the drilling industry. All of the components for the treatment system are readily available.

- Cost

The present-worth costs are calculated using a discount rate of 5 percent and a 30-year time interval. The estimated capital, annual operation and maintenance (O&M), and present-worth costs for each of the alternatives are presented below.

Alternative	*Capital Costs*	*O&M Costs*	*Present Worth*
1	$155,106	$134,400	$2,190,000
2A	$4,624,041	$370,728	$10,260,000
2B	$6,103,191	$370,728	$11,720,000
3A	$9,302,747	$411,726	$15,540,000
3B	$10,369,697	$411,726	$16,610,000

As indicated from the cost estimates, there is a significant cost increase between Alternative 1 and the other alternatives. There is also an approximately $1 million cost increase between Alternatives 2A and 2B due to the incremental cost of the installation of RCRA landfill caps versus the caps consistent with the requirements of 6 NYCRR Part 360. The capital cost associated with collecting and treating contaminated groundwater in the vicinity of monitoring MW-2S would be approximately $600,000; the annual O&M cost would be approximately $180,000. The capital cost associated with collecting and treating contaminated groundwater from the bedrock aquifer would be approximately $3 million; the annual O&M cost would be approximately $40,000.

Furthermore, there is an approximately $5 million cost increase between Alternatives 2A and 3A and Alternatives 2B and 3B. This cost increase is due to the addition of the bedrock groundwater extraction system. The annual costs are for O&M and are similar, except for Alternative 1.

State Acceptance

NYSDEC concurs with the selected alternative. NYSDEC also concurs with the contingent remedy, should the implementation of the bedrock groundwater extraction and treatment component of Alternative 3A be determined to be necessary.

Community Acceptance

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

SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, EPA and NYSDEC have determined that Alternative 2A is the appropriate remedy, because it best satisfies the requirements of CERCLA §121, 42 U.S.C. §9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9). Alternative 3A is selected as a contingent remedy for the site.

The selected remedy includes excavating and relocating the waste from the Can and Bottle Dump Area to the adjacent North Disposal Area, installing landfill caps consistent with the requirements of 6 NYCRR Part 360 in four areas, extracting the contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S, air-stripping (or other appropriate treatment), and discharge to surface water, long-term monitoring of groundwater, surface water, and sediments, and taking steps to secure institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the caps). In addition, the bedrock groundwater extraction and treatment component of Alternative 3A has been selected as a contingent remedy.

EPA intends to continue to address the two private water supplies with high levels of chemical contamination as part of the remedial activities associated with the Richardson Hill Road Landfill site. The treatment systems installed on these water supplies are currently being maintained by the potentially responsible parties for the Richardson Hill Landfill site.

Under the selected remedy, the source of the bedrock groundwater contamination is expected to be significantly reduced or possibly eliminated due to the reduction of infiltrating precipitation by the capping of the waste disposal areas and the extraction of the contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S. Because of this and the fact that the levels of contamination in the bedrock aquifer are less than 200 µg/l for any contaminant (other than in the vicinity of monitoring well MW-2S), EPA anticipates that collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S, in conjunction with natural attenuation of the other contamination present in the bedrock aquifer, will result in the compliance with groundwater ARARs in a reasonable time frame and at a significantly lower cost than Alternative 3A.

After the construction of the four caps, and the extraction and treatment of the contaminated groundwater in the vicinity of monitoring well MW-2S for five years, the results of semi-annual bedrock groundwater monitoring will be evaluated using trend analysis and possibly modeling of the bedrock aquifer to determine whether it appears that the groundwater quality in the bedrock aquifer would be restored to acceptable levels through natural attenuation cost-effectively and within a reasonable time frame. Should the trend analysis and/or modeling show that groundwater quality in the bedrock aquifer would likely not be restored within a reasonable time frame by natural attenuation alone, then the groundwater remediation component of Alternative 3A may be implemented.

The selected remedy and the contingent remedy are believed to be able to achieve the ARARs more quickly, or as quickly, and at less cost than the other alternatives. Therefore, the selected remedy and the contingent remedy will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. EPA and the NYSDEC believe that the selected remedy and the contingent remedy will be protective of human health and the environment, comply with ARARs, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The selected remedy and the contingent remedy also will meet the statutory preference for the use of treatment as a principal element (for the groundwater), and are generally consistent with landfill closure requirements applied to municipal landfills in the State of New York. However, since the landfill's contaminant source areas cannot be effectively excavated and treated due to their size and the absence of identified hot spots representing major sources of contamination (other than the groundwater hot-spot in the vicinity of monitoring well MW-2S), none of the alternatives considered satisfied the statutory preference for treatment as a principal element of the remedy with respect to the sources of contamination.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

For the reasons discussed below, EPA has determined that the selected remedy meets the requirements of CERCLA §121, 42 U.S.C. §9621.

Protection of Human Health and the Environment

The selected remedy would be significantly more protective than no-action, in that the risk of incidental contact with waste by humans and other ecological receptors would be reduced by the caps. Collecting and treating the contaminated groundwater from the vicinity of monitoring well MW-2S would reduce the possibility of additional groundwater contamination originating from this area. Also, the selected remedy would provide for overall protection of human health and the environment in that the capping of the landfilled materials would reduce infiltration, thereby reducing the migration of contaminants of concern from the landfill to the groundwater. Alternative 3A, the contingent remedy, is identical to the selected remedy, except that it also includes bedrock groundwater extraction and treatment which would control off-site migration of contaminants. The effluent from the treatment system would meet surface water discharge requirements.

Compliance with ARARs

The selected remedy would be effective in reducing groundwater contaminant concentrations below MCLs (chemical-specific ARARs) because the lower precipitation infiltration rate associated with placing low-permeability caps over the landfilled areas would significantly reduce the generation of additional groundwater contamination. Additionally, the selected remedy would provide for the remediation of groundwater in the vicinity of monitoring well MW-2S. However, the extraction of the contaminated groundwater at this location, combined with the capping of the waste disposal areas, should significantly reduce the source of the bedrock groundwater contamination, particularly in that the hydrogeological investigation performed at the site indicates that the groundwater elevation in all of the waste disposal areas is below the wastes. Given the expected reduction of the source of the bedrock groundwater contamination, and that the levels of contamination in the bedrock aquifer (other than in the vicinity of monitoring well MW-2S) are less than 200 µg/l for any contaminant, it is anticipated that collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S, in conjunction with natural attenuation of the other contamination already present in the bedrock aquifer, will reduce bedrock aquifer contamination toward a goal of MCLs. A summary of action-specific, chemical-specific and location-specific ARARs which will be complied with during implementation is presented below. A listing of the of the individual chemical-specific ARARs is presented in Table 6.

Action-specific ARARs:

- National Emissions Standards for Hazardous Air Pollutants
- 6 NYCRR Part 257, Air Quality Standards
- 6 NYCRR Part 212, Air Emission Standards

- 6 NYCRR Part 373, Fugitive Dusts
- 40 CFR 50, Air Quality Standards
- State Permit Discharge Elimination System
- Resource Conservation and Recovery Act

Chemical-specific ARARs:

- Safe Drinking Water Act Maximum Contaminant Levels and Maximum Contaminant Level Goals (MCLs and MCLGs, respectively, 40 CFR Part 141)
- 6 NYCRR Parts 700-705 Groundwater and Surface Water Quality Regulations
- 10 NYCRR Part 5 State Sanitary Code

Location-specific ARARs:

- Clean Water Act Section 404, 33 U.S.C. 1344
- Fish and Wildlife Coordination Act, 16 U.S.C. 661
- National Historic Preservation Act, 16 U.S.C. 470
- New York State Freshwater Wetlands Law ECL, Article 24, 71 in Title 23
- New York State Freshwater Wetlands Permit Requirements and Classification, 6 NYCRR 663 and 664
- New York State Endangered and Threatened Species of Fish and Wildlife Requirements, 6 NYCRR 182

Other Criteria, Advisories, or Guidance To Be Considered:

- Executive Order 11990 (Protection of Wetlands)
- Executive Order 11988 (Floodplain Management)
- EPA Statement of Policy on Floodplains and Wetlands Assessments for CERCLA Actions
- New York Guidelines for Soil Erosion and Sediment Control

- New York State Sediment Criteria, December 1989
- New York State Air Cleanup Criteria, January 1990
- SDWA Proposed MCLs and MCL Goals
- NYSDEC Technical and Operational Guidance Series 1.1.1, November 1991
- EPA Ambient Water Quality Criteria (Federal Register, Volume 57, No. 246, December 22, 1992)
- *Technical Guidance for Screening Contaminated Sediments* (November 1993, NYSDEC, Division of Fish and Wildlife, Division of Marine Resources).

Cost-Effectiveness

The selected remedy and the contingent remedy provide effectiveness proportional to their cost. The total capital and present-worth costs for the selected remedy are estimated to be $4,624,041 and $10,260,000, respectively. For the contingent remedy, which includes remediation of the bedrock aquifer, the total capital and present-worth costs are $9,302,747 and $15,540,000, respectively.

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

Given the size of the landfill and the absence of isolated hot spots, containment of the waste mass is the only practical means to remediate the site. By constructing four caps over the discrete landfills which are consistent with New York State's 6 NYCRR Part 360 for landfill closure, hazardous wastes will be isolated from the environment and their mobility will be minimized. The closure cap is a permanent technology that must be maintained at regular intervals to ensure its structural integrity and impermeability. Extracting contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S is a means of addressing the groundwater hot spot at this location. If determined to be necessary, groundwater will be collected via bedrock extraction wells, and will be treated using a treatment system located permanently at the site. Thus, the selected remedy and contingent remedy, which require the construction of caps consistent with the requirements of 6 NYCRR Part 360, extraction of contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S, and if needed, bedrock groundwater extraction and treatment, utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected remedy and the contingent remedy represent the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

Groundwater monitoring will be performed to demonstrate that the selected remedy meets all remedial action objectives. If the monitoring results and modeling indicate that the selected remedy is not effective in meeting remedial action objectives, then the contingent remedy may be implemented. The extraction and subsequent treatment of groundwater from the bedrock aquifer, if implemented, will permanently and significantly reduce the toxicity, mobility, and volume of contaminants in the ground water.

The selected remedy will require construction of landfill caps. No technological problems should arise since the technologies and materials needed for capping the landfill areas are readily available. With the construction of the landfill caps, the direct contact risk to the landfill surface will be eliminated.

Preference for Treatment as a Principal Element

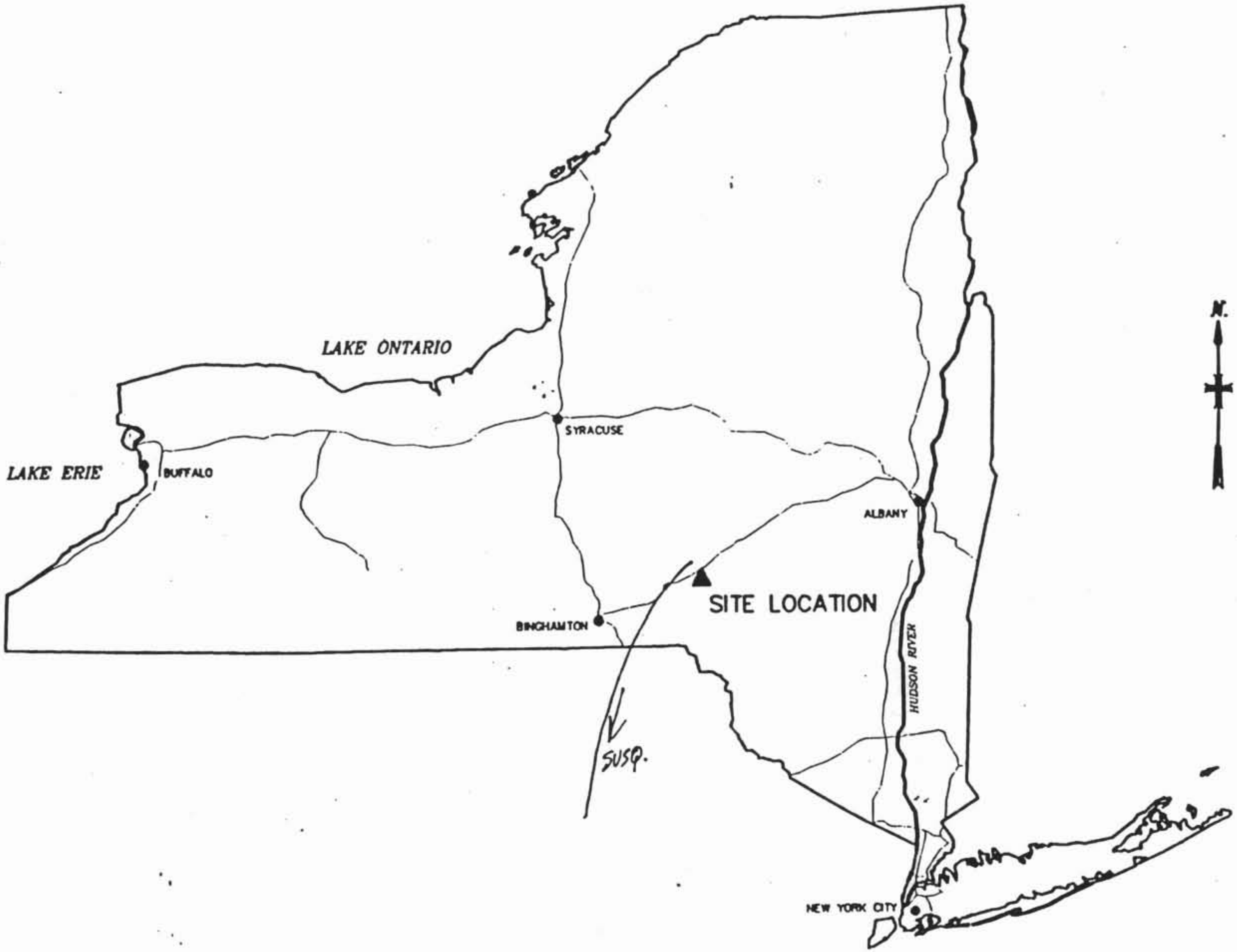
The statutory preference for remedies that employ treatment as a principal element cannot be satisfied for the landfill itself, since treatment of the landfill material is not practicable. The size of the landfill and the fact that there are no identified on-site hot spots that represent the major sources of contamination (other than in the vicinity of monitoring well MW-2S), preclude a remedy in which contaminants could be excavated and treated effectively. The statutory preference for remedies that employ treatment as a principal element is, however, satisfied by treating the contaminated groundwater in the vicinity of monitoring well MW-2S.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the selected alternative presented in the Proposed Plan.

APPENDIX I

FIGURES
Regional Site Location Map
Site Location Map
Site Plan

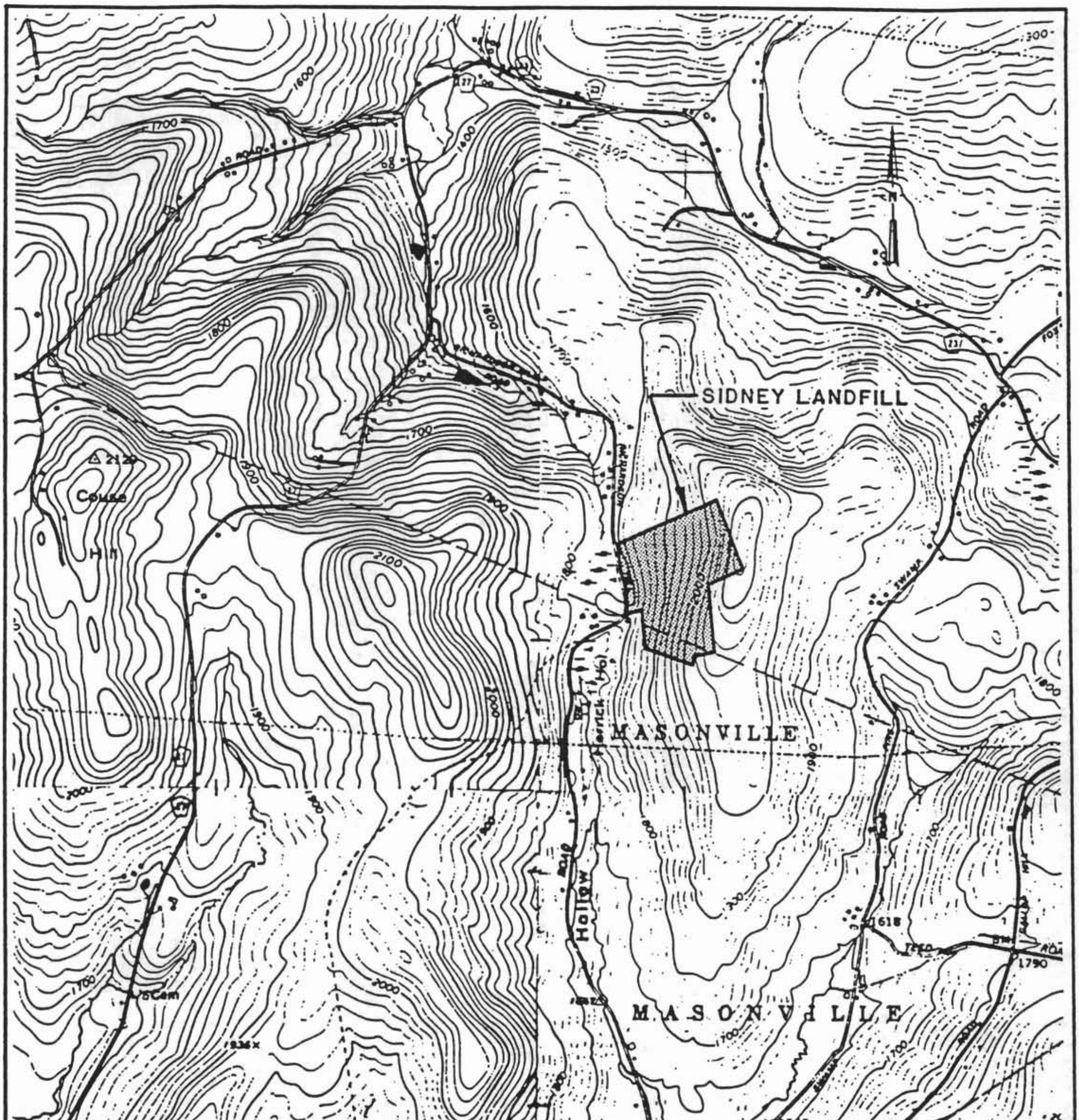


MALCOLM PIRNIE

SIDNEY LANDFILL RI/FS
SIDNEY, NEW YORK

REGIONAL SITE LOCATION MAP

FIGURE 1-1



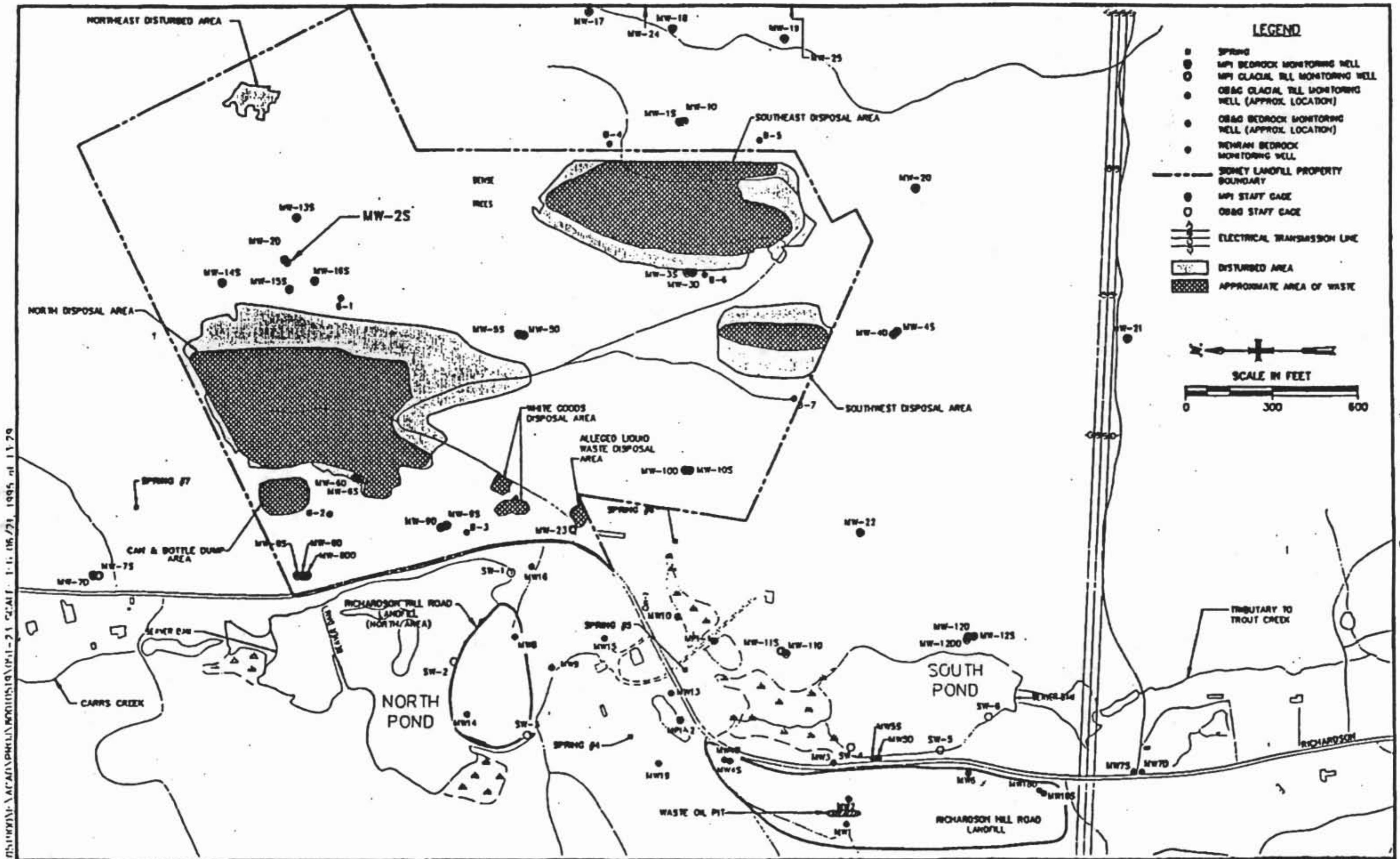
MALCOLM PIRNIE

SIDNEY LANDFILL RI/FS
SIDNEY, NEW YORK

SITE LOCATION MAP

MALCOLM PIRNIE, INC.

FIGURE 1–2



SIDNEY LANDFILL
SIDNEY, NEW YORK
SITE PLAN

MALCOLM PIRNIE

FIGURE 1-3

APPENDIX II

TABLES

Summary of Surface Soil Data
Summary of Surface Water Data
Summary of Leachate Data
Summary of Sediment Data
Summary of Hazard Indices and Cancer Risks
Summary of Environmental Assessment
Summary of Potential Chemical-Specific ARARs and TBCs

TABLE 1

SUMMARY OF SURFACE SOILS DATA
SIDNEY LANDFILL

CHEMICAL	ON-SITE Frequency	ON-SITE Range of Concentrations mg/kg	ALW AREA Frequency	ALW AREA Range of Concentrations mg/kg	OFF-SITE Frequency	OFF-SITE Range of Concentrations mg/kg	TOTAL SAMPLES Frequency	TOTAL SAMPLES Percent Occurrence	BACKGROUND* Frequency	BACKGROUND* Range of Concentrations mg/kg	Elemental Composition of Soils ** mg/kg
VOLATILE ORGANICS											
Acetone	3 / 9	0.018 - 0.028	NA	NA	0 / 3	ND	3 / 12	25%	NA	NA	NA
1,1-Dichloroethene	1 / 9	0.009	NA	NA	2 / 3	0.01 - 0.021	3 / 12	25%	NA	NA	NA
1,2-Dichloroethene(total)	1 / 9	0.038	NA	NA	3 / 3	0.02 - 0.098	4 / 12	33%	NA	NA	NA
Methylene chloride	4 / 9	0.002 - 0.004	NA	NA	0 / 3	ND	4 / 12	33%	NA	NA	NA
1,1,1-Trichloroethane	0 / 9	ND	NA	NA	1 / 3	0.01	1 / 12	8%	NA	NA	NA
Trichloroethene	0 / 9	ND	NA	NA	3 / 3	0.01 - 0.023	3 / 12	25%	NA	NA	NA
Toluene	1 / 9	0.002	NA	NA	0 / 3	ND	1 / 12	8%	NA	NA	NA
Vinyl chloride	1 / 9	0.021	NA	NA	0 / 3	ND	1 / 12	8%	NA	NA	NA
SEMI-VOLATILE ORGANICS											
bis(2-Ethylhexyl)phthalate	5 / 13	0.350 - 3.700	0 / 5	ND	3 / 3	1.2 - 5.1	8 / 21	38%	5 / 5	0.15 - 4.7	NA
Butylbenzylphthalate	1 / 13	0.011	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
1,4-Dichlorobenzene	1 / 13	0.068	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
4-Methylphenol	1 / 13	0.390	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
cPAHs	2 / 13	0.036 - 0.069	0 / 5	ND	1 / 3	0.04	3 / 21	14%	1 / 5	0.036	NA
tPAHs	2 / 13	0.036 - 0.157	0 / 5	ND	1 / 3	0.04	3 / 21	14%	1 / 5	0.036	NA
PESTICIDES/PCBs											
Aldrin	1 / 13	0.051	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
4,4'-DDD	2 / 13	0.015 - 0.099	1 / 5	0.0012	0 / 3	ND	3 / 21	14%	0 / 5	ND	NA
4,4'-DDE	7 / 13	0.012 - 2.2	2 / 4	0.0050 - 0.0053	1 / 3	0.00	10 / 20	50%	0 / 5	ND	NA
4,4'-DDT	4 / 12	0.007 - 0.64	3 / 4	0.0008 - 0.0075	1 / 3	0.00	8 / 19	42%	0 / 5	ND	NA
Endosulfan II	1 / 13	0.043	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
Endrin aldehyde	2 / 13	0.009 - 0.081	0 / 5	ND	0 / 3	ND	2 / 21	10%	0 / 5	ND	NA
Endrin ketone	1 / 13	0.019	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
Heptachlor epoxide	1 / 13	0.017	0 / 5	ND	0 / 3	ND	1 / 21	5%	0 / 5	ND	NA
PCBs	13 / 14	0.038 - 158	4 / 5	0.0082 - 0.2690	0 / 3	ND	17 / 22	77%	0 / 5	ND	NA
INORGANICS											
Aluminum	14 / 14	13300 - 36200	5 / 5	11100 - 16800	3 / 3	8570 - 15700	22 / 22	100%	5 / 5	15700 - 25300	7000 - >100000 (1)
Antimony	7 / 14	66.9 - 779.8	0 / 5	ND	0 / 3	ND	7 / 22	32%	0 / 5	ND	<1.0 - 1.0 (2)
Arsenic	13 / 14	3.1 - 51.4	5 / 5	8.4 - 9.1	3 / 3	111 - 376	21 / 22	95%	5 / 5	8.3 - 26.7	1.5 - 16 (2)
Barium	14 / 14	66.9 - 358	5 / 5	48.6 - 85.2	3 / 3	867 - 1850	22 / 22	100%	5 / 5	68.9 - 165	200 - 500 (2)
Beryllium	9 / 14	0.33 - 1.1	5 / 5	0.34 - 0.44	1 / 3	1.7	15 / 22	68%	0 / 5	ND	ND - 2.0 (2)
Cadmium	5 / 14	0.9 - 14.8	0 / 5	ND	0 / 3	ND	5 / 22	23%	0 / 5	ND	ND - 4.0 (1)
Calcium	14 / 14	397 - 3130	5 / 5	288 - 1490	3 / 3	6420 - 11300	22 / 22	100%	5 / 5	315 - 747	100 - 280000 (1)
Chromium	14 / 14	18 - 131	5 / 5	13.6 - 17.5	3 / 3	33.6 - 95	22 / 22	100%	5 / 5	15.9 - 24.1	7.0 - 100 (2)
Cobalt	14 / 14	12.7 - 21.9	5 / 5	12.1 - 15.3	3 / 3	40.2 - 72.7	22 / 22	100%	5 / 5	10.8 - 15.9	<3.0 - 70 (1)
Copper	7 / 7	20 - 12300	5 / 5	13.1 - 20.4	1 / 3	23.1	13 / 15	87%	0 / 0		3.0 - 70 (2)
Iron	14 / 14	22400 - 74700	5 / 5	21900 - 26800	3 / 3	******* - 2E+05	22 / 22	100%	5 / 5	28400 - 36300	100 - >100000 (1)
Lead	14 / 14	6.3 - 53800	5 / 5	16.5 - 39.4	3 / 3	46 - 53.6	22 / 22	100%	5 / 5	28.5 - 63.7	ND - 50 (2)
Magnesium	14 / 14	3770 - 6470	5 / 5	2770 - 4430	3 / 3	4530 - 6170	22 / 22	100%	5 / 5	3170 - 4630	50 - 5000 (1)
Manganese	14 / 14	434 - 1610	5 / 5	555 - 823	3 / 3	******* - 93000	22 / 22	100%	5 / 5	756 - 2800	<2.0 - 7000 (1)
Mercury	1 / 12	0.14	0 / 5	ND	0 / 1	ND	1 / 18	6%	1 / 5	0.14	0.05 - 0.60 (2)
Nickel	14 / 14	24.1 - 95.1	5 / 5	15.7 - 25.7	3 / 3	43.4 - 75.7	22 / 22	100%	5 / 5	16.3 - 24.6	ND - 30 (2)
Potassium	14 / 14	829 - 2540	5 / 5	621 - 882	3 / 3	968 - 1300	22 / 22	100%	5 / 5	939 - 1890	50 - 37000 (1)
Selenium	11 / 14	9.5 - 390	2 / 5	0.35 - 0.59	0 / 3	ND	13 / 22	59%	0 / 5	ND	<0.1 - 0.6 (2)
Silver	1 / 14	19.4	0 / 5	ND	3 / 3	11.2 - 27.7	4 / 22	18%	0 / 5	ND	ND - 5.0 (3)
Sodium	11 / 14	9.5 - 390	5 / 5	35.4 - 43.2	3 / 3	848 - 1160	19 / 22	86%	4 / 5	199 - 319	<500 - 100000 (1)
Thallium	1 / 14	0.4	0 / 5	ND	0 / 3	ND	1 / 22	5%	0 / 5	ND	NA
Vanadium	14 / 14	18.2 - 4516	5 / 5	11.8 - 21.8	1 / 3	23.5	20 / 22	91%	5 / 5	24.7 - 49.8	20 - 150 (2)
Zinc	13 / 13	76.7 - 783	5 / 5	63.1 - 84.9	1 / 1	207	19 / 19	100%	5 / 5	72.5 - 128	20 - 120 (2)
OTHER											
Cyanide	4 / 14	0.69 - 1.3	0 / 5	ND	0 / 3	ND	4 / 22	18%	0 / 5	ND	NA

ND = Not Detected
NA = Not Available

* Background samples include SS3-06, SS3-07, SS3-08, SS3-09, and SS3-11.
** Dragun and Chiasson, 1991.
(1) = Eastern United States
(2) = New York State
(3) = Coterminus United States

TABLE 2
SUMMARY OF SUBSURFACE SOIL DAT
SIDNEY LANDFILL

CHEMICAL	ON-SITE Frequenc	ON-SITE Range of Concentrations mg/kg	ALW DISPOSAL AREA Frequenc	ALW DISPOSAL AREA Range of Concentrations mg/kg	ESA AREA Frequenc	ESA AREA Range of Concentrations mg/kg	OFF-SITE Frequenc	OFF-SITE Range of Concentrations mg/kg	TOTAL SAMPLES Frequency	TOTAL SAMPLES Percent Occurrence	BACKGROUND * Frequenc	BACKGROUND * Range of Concentrations mg/kg	Elemental Composition of Soils ** mg/kg
VOLATILE ORGANICS													
Benzene	0 / 6	ND	0 / 6	ND	1 / 19	0.01	0 / 2	ND	1 / 33	3%	N/A		NA
Carbon Disulfide	0 / 6	ND	0 / 6	ND	1 / 19	0.01	0 / 2	ND	1 / 33	3%	N/A		NA
Chlorobenzene	0 / 6	ND	0 / 6	ND	3 / 19	0.02 - 0.07	0 / 2	ND	3 / 33	9%	N/A		NA
1,2-Dichloroethane	0 / 6	ND	0 / 6	ND	1 / 19	0.06	0 / 2	ND	1 / 33	3%	N/A		NA
1,2-Dichloroethene (total)	0 / 6	ND	0 / 6	ND	2 / 19	0.01 - 0.12	0 / 2	ND	2 / 33	6%	N/A		NA
Ethylbenzene	0 / 6	ND	1 / 6	0.00	8 / 19	0.00 - 9.9	0 / 2	ND	9 / 33	27%	N/A		NA
2-Hexanone	0 / 6	ND	0 / 6	ND	3 / 19	0.01 - 0.17	0 / 2	ND	3 / 33	9%	N/A		NA
Methylene Chloride	0 / 6	ND	0 / 6	ND	2 / 19	0.00 - 0.02	0 / 2	ND	2 / 33	6%	N/A		NA
Tetrachloroethene	0 / 6	ND	0 / 6	ND	3 / 19	0.01 - 5.1	0 / 2	ND	3 / 33	9%	N/A		NA
1,1,1-Trichloroethane	0 / 6	ND	0 / 6	ND	1 / 19	0.00	0 / 2	ND	1 / 33	3%	N/A		NA
Trichloroethene	1 / 6	0.01	1 / 6	0.00	3 / 19	0.00 - 0.01	0 / 2	ND	5 / 33	15%	N/A		NA
Toluene	3 / 6	0.00 - 0.00	1 / 6	0.00	6 / 19	0.01 - 51	0 / 2	ND	10 / 33	30%	N/A		NA
Xylenes (total)	1 / 6	0.00	1 / 6	0.01	8 / 19	0.01 - 28	0 / 2	ND	10 / 33	30%	N/A		NA
SEMI-VOLATILE ORGANICS													
bis(2-Ethylhexyl)phthalate	0 / 6	ND	0 / 6	ND	8 / 19	0.06 - 6.5	0 / 2	ND	8 / 33	24%	5 / 5	0.15 - 4.7	NA
Butylbenzylphthalate	0 / 5	ND	0 / 6	ND	3 / 19	0.05 - 0.23	0 / 2	ND	3 / 32	9%	0 / 5	ND	NA
Carbazole	0 / 5	ND	0 / 6	ND	1 / 19	0.03	0 / 2	ND	1 / 32	3%	0 / 5	ND	NA
di-n-Butyl phthalate	1 / 6	0.05	0 / 6	ND	0 / 19	ND	0 / 2	ND	1 / 33	3%	1 / 5	ND	NA
Di-n-octylphthalate	0 / 5	ND	0 / 6	ND	2 / 19	0.06 - 0.13	0 / 2	ND	2 / 32	6%	0 / 5	ND	NA
1,4-Dichlorobenzene	0 / 5	ND	0 / 6	ND	6 / 19	0.09 - 0.43	0 / 2	ND	6 / 32	19%	0 / 5	ND	NA
4-Methylphenol	0 / 5	ND	0 / 6	ND	1 / 19	0.04	0 / 2	ND	1 / 32	3%	0 / 5	ND	NA
cPAHs	0 / 5	ND	0 / 6	ND	5 / 19	0.02 - 0.26	0 / 2	ND	5 / 32	16%	1 / 5	0.04	NA
tPAHs	0 / 5	ND	1 / 6	0.01	13 / 19	0.01 - 5.84	0 / 2	ND	14 / 32	44%	1 / 5	0.04	NA
PESTICIDES/PCBs													
gamma-Chlordane	0 / 6	ND	0 / 6	ND	3 / 19	0.00 - 0.01	0 / 2	ND	3 / 33	9%	0 / 5	ND	NA
4,4'-DDD	0 / 6	ND	0 / 6	ND	11 / 17	0.00 - 0.12	0 / 2	ND	11 / 31	35%	0 / 5	ND	NA
4,4'-DDE	0 / 6	ND	1 / 6	0.00	1 / 19	0.00	0 / 2	ND	2 / 33	6%	0 / 5	ND	NA
4,4'-DDT	0 / 6	ND	1 / 6	0.00	2 / 18	0.00 - 0.00	0 / 2	ND	3 / 32	9%	0 / 4	ND	NA
Endosulfan sulfate	0 / 6	ND	1 / 6	0.00	0 / 19	ND	0 / 2	ND	1 / 33	3%	0 / 5	ND	NA
Methoxychlor	0 / 6	ND	0 / 6	ND	1 / 18	0.00	0 / 2	ND	1 / 32	3%	0 / 3	ND	NA
PCBs	1 / 6	0.05	2 / 6	0.02 - 0.05	19 / 19	0.02 - 180	0 / 2	ND	22 / 33	67%	0 / 5	ND	NA
INORGANICS													
Aluminum	6 / 6	******** - ********	5 / 6	******** - ********	19 / 19	******** - ********	2 / 2	******** - ********	32 / 33	97%	5 / 5	******** - ********	7000 - >10000 (1)
Arsenic	3 / 4	8.5 - 17	4 / 6	8.4 - 14.5	19 / 19	1.1 - 38.9	2 / 2	2.9 - 9.7	28 / 31	90%	5 / 5	8.3 - 26.7	1.5 - 16 (2)
Barium	6 / 6	65.6 - 172	4 / 6	62.6 - 141	19 / 19	51.6 - 156	2 / 2	85.9 - 90	31 / 33	94%	5 / 5	68.9 - 165	200 - 500 (2)
Beryllium	6 / 6	0.24 - 0.37	4 / 6	0.35 - 0.69	19 / 19	0.45 - 5.1	2 / 2	0.48 - 0.6	31 / 33	94%	0 / 5	ND	ND - 2.0 (2)
Cadmium	0 / 6	ND	0 / 6	ND	3 / 19	0.84 - 3.5	0 / 2	ND	3 / 33	9%	0 / 5	ND	ND - 4.0 (1)
Calcium	6 / 6	188 - 1090	5 / 6	291 - 922	19 / 19	239 - 1870	2 / 2	333 - 8470	32 / 33	97%	5 / 5	315 - 747	100 - 280000 (1)
Chromium	6 / 6	17.9 - 21.5	4 / 6	13.6 - 20.7	19 / 19	16.1 - 92	2 / 2	21.9 - 22.9	31 / 33	94%	5 / 5	15.9 - 24.1	7.0 - 100 (2)
Cobalt	6 / 6	11.3 - 18.7	4 / 6	15.8 - 18.2	19 / 19	14.2 - 102	2 / 2	12 - 15.6	31 / 33	94%	5 / 5	10.8 - 15.9	<3.0 - 70 (1)
Copper	5 / 5	18.3 - 36.1	5 / 6	14.8 - 26.6	19 / 19	8.6 - 5290	2 / 2	9.6 - 23.2	31 / 32	97%	0 / 0	ND	3.0 - 70 (2)
Iron	6 / 6	******** - ********	5 / 6	******** - ********	19 / 19	******** - ********	2 / 2	******** - ********	32 / 33	97%	5 / 5	******** - ********	100 - >100000 (1)
Lead	5 / 5	10.9 - 21.4	4 / 5	9 - 17.4	2 / 2	32.2 - 46	2 / 2	5.9 - 13	13 / 14	93%	5 / 5	28.5 - 63.7	ND - 50 (2)
Magnesium	6 / 6	4240 - 5990	4 / 6	3630 - 5800	19 / 19	3370 - 6870	2 / 2	5800 - 6290	31 / 33	94%	5 / 5	3170 - 4630	50 - 5000 (1)
Manganese	6 / 6	443 - 925	4 / 6	604 - 1600	19 / 19	254 - 2700	2 / 2	376 - 740	31 / 33	94%	5 / 5	756 - 2800	<2.0 - 7000 (1)
Mercury	1 / 6	0.12	0 / 6	ND	2 / 19	0.69 - 2.4	0 / 2	ND	3 / 33	9%	1 / 5	0.14	0.05 - 0.6 (2)
Nickel	6 / 6	23.6 - 41.3	4 / 6	24.1 - 34.9	19 / 19	21.4 - 843	2 / 2	33.2 - 34.7	31 / 33	94%	5 / 5	16.3 - 24.6	ND - 30 (2)
Potassium	6 / 6	901 - 1710	5 / 6	862 - 1190	19 / 19	585 - 1240	2 / 2	1450 - 1720	32 / 33	97%	5 / 5	939 - 1890	50 - 37000 (1)
Selenium	1 / 6	0.45	0 / 6	ND	6 / 19	0.26 - 0.7	0 / 2	ND	7 / 33	21%	0 / 5	ND	<0.1 - 0.6 (2)
Silver	0 / 6	ND	0 / 6	ND	3 / 19	0.86 - 3.1	0 / 2	ND	3 / 33	9%	0 / 5	ND	ND - 5.0 (3)
Sodium	6 / 6	13.1 - 71.3	5 / 6	44.5 - 61.7	19 / 19	48.2 - 66.4	2 / 2	50.3 - 76.7	32 / 33	97%	4 / 5	199 - 319	<500 - 100000 (1)
Thallium	0 / 6	ND	0 / 6	ND	3 / 19	0.13 - 0.2	0 / 2	ND	3 / 33	9%	0 / 5	ND	NA
Vanadium	6 / 6	14.4 - 21.4	4 / 5	12.6 - 23.3	2 / 2	15.2 - 16.8	2 / 2	19.4 - 19.4	14 / 15	93%	5 / 5	24.7 - 49.8	20 - 150 (2)
Zinc	4 / 4	67.6 - 90.7	5 / 6	57.6 - 94.8	19 / 19	68.7 - 1440	2 / 2	76.6 - 79.2	30 / 31	97%	5 / 5	72.5 - 128	20 - 120 (2)

ND = Not Detected
N/A = Not Analyzed
NA = Not Available

* Background samples include SS3-06, SS3-07, SS3-08, SS3-09, and SS3-11
** Dragun and Chiasson, 1991.
(1) = Eastern United States
(2) = New York State
(3) = Coterminus United States

Table 3
SUMMARY OF SURFACE WATER DATA
SIDNEY LANDFILL

CHEMICAL	NORTH BEAVER POND Frequency	NORTH BEAVER POND Range of Concentration µg/L	SOUTH BEAVER POND Frequency	SOUTH BEAVER POND Range of Concentrations µg/L	MISC. SAMPLES Frequency	MISC. SAMPLES Range of Concentration µg/L	SURFACE WATER SUMMARY Frequency	SURFACE WATER SUMMARY Percent Occurrence	CONTROL POND* Frequency	CONTROL POND* Range of Concentrations µg/L
VOLATILE ORGANICS										
Acetone	1 / 8	9	2 / 9	9 - 11	0 / 2	ND	3 / 19	16%	2 / 3	6 - 8
Carbon Disulfide	0 / 8	ND	0 / 9	ND	0 / 2	ND	0 / 19	0%	2 / 3	4 - 170
Chloromethane	1 / 8	4	0 / 9	ND	0 / 2	ND	1 / 19	5%	0 / 3	ND
1,2-Dichloroethene (total)	1 / 8	1	3 / 9	2 - 3	0 / 2	ND	4 / 19	21%	0 / 3	ND
Trichloroethene	0 / 8	ND	0 / 9	ND	1 / 2	2	1 / 19	5%	0 / 3	ND
SEMI-VOLATILE ORGANICS										
bis(2-Ethylhexyl)phthalate	1 / 8	2	3 / 9	1 - 29	0 / 2	ND	4 / 19	21%	0 / 3	ND
PESTICIDES/PCBs										
PCBs	0 / 8	ND	5 / 9	0.340 - 1.190	0 / 2	ND	5 / 19	26%	0 / 3	ND
INORGANICS										
Aluminum	6 / 8	76.6 - 805	9 / 9	63.3 - 1290	2 / 2	175 - 285	17 / 19	89%	3 / 3	194 - 1650
Antimony	0 / 8	ND	0 / 9	ND	0 / 2	ND	0 / 19	0%	1 / 3	15.4
Arsenic	3 / 8	1.3 - 18.3	6 / 9	2.2 - 5.2	0 / 2	ND	9 / 19	47%	1 / 3	4.7
Barium	8 / 8	19.2 - 123	9 / 9	10.9 - 63.6	2 / 2	16.1 - 20.7	19 / 19	100%	3 / 3	16.9 - 32.8
Beryllium	2 / 8	1.2 - 1.4	0 / 9	ND	0 / 2	ND	2 / 19	11%	0 / 3	ND
Cadmium	1 / 8	6.7	0 / 9	ND	0 / 2	ND	1 / 19	5%	0 / 3	ND
Calcium	8 / 8	6680 - *******	9 / 9	6450 - 14600	2 / 2	3430 - *******	19 / 19	100%	3 / 3	5230 - 7340
Chromium	0 / 8	ND	0 / 9	ND	0 / 2	ND	0 / 19	0%	1 / 3	7
Copper	2 / 8	6.6 - 6.8	6 / 8	2.9 - 9.2	0 / 2	ND	8 / 18	44%	3 / 3	3.3 - 6.4
Iron	8 / 8	467 - *******	9 / 9	381 - 3100	2 / 2	216 - 976	19 / 19	100%	3 / 3	1930 - 3710
Lead	0 / 4	ND	1 / 3	2.1	0 / 2	ND	1 / 9	11%	3 / 3	2.4 - 6
Magnesium	8 / 8	2520 - 3850	9 / 9	2200 - 4250	2 / 2	1360 - 3900	19 / 19	100%	3 / 3	1720 - 1860
Manganese	8 / 8	70.2 - 3230	9 / 9	161 - 1240	2 / 2	216 - 643	19 / 19	100%	3 / 3	248 - 974
Nickel	0 / 8	ND	0 / 9	ND	0 / 2	ND	0 / 19	0%	1 / 3	16.4
Potassium	6 / 8	531 - 984	8 / 9	520 - 3060	2 / 2	813 - 1440	16 / 19	84%	3 / 3	799 - 926
Silver	0 / 8	ND	1 / 8	2.2	0 / 2	ND	1 / 18	6%	0 / 3	ND
Sodium	8 / 8	1720 - 3660	9 / 9	1670 - 3880	2 / 2	1230 - 3080	19 / 19	100%	3 / 3	2530 - 4120
Vanadium	0 / 8	ND	0 / 9	ND	0 / 2	ND	0 / 19	0%	1 / 3	4.4
Zinc	4 / 8	13.7 - 18.4	6 / 9	11.1 - 38.2	0 / 2	ND	10 / 19	53%	3 / 3	15.8 - 36.1

NOTES:

* Background samples from the Control Pond include SW-22, SW-23, and SW-24.
ND = Not Detected

TABLE 4

SUMMARY OF LEACHATE DATA
SIDNEY LANDFILL

CHEMICAL	ON-SITE Frequency	ON-SITE Range of Concentrations µg/L	OFF-SITE Frequency	OFF-SITE Range of Concentrations µg/L	LEACHATE SUMMARY Frequency	Percent Occurrence	CONTROL POND * Frequency	CONTROL POND * Range of Concentrations µg/L
VOLATILE ORGANICS								
Benzene	1 / 3	1	0 / 2	ND	1 / 5	20%	0 / 3	ND
Chlorobenzene	1 / 3	13	0 / 2	ND	1 / 5	20%	0 / 3	ND
Chloroethane	1 / 3	12	0 / 2	ND	1 / 5	20%	0 / 3	ND
Chloromethane	1 / 3	1	0 / 2	ND	1 / 5	20%	0 / 3	ND
1,1-Dichloroethane	2 / 3	2 - 4	1 / 2	13	3 / 5	60%	0 / 3	ND
1,2-Dichloroethene (total)	2 / 3	25 - 73	1 / 2	64	3 / 5	60%	0 / 3	ND
Ethylbenzene	1 / 3	49	0 / 2	ND	1 / 5	20%	0 / 3	ND
Toluene	1 / 3	320	0 / 2	ND	1 / 5	20%	0 / 3	ND
1,1,1-Trichloroethane	0 / 3	ND	1 / 2	4	1 / 5	20%	0 / 3	ND
Trichloroethene	1 / 3	4	1 / 2	4	2 / 5	40%	0 / 3	ND
Vinyl Chloride	2 / 3	4 - 16	1 / 2	6	3 / 5	60%	0 / 3	ND
Xylenes (Total)	1 / 3	120	0 / 2	ND	1 / 5	20%	0 / 3	ND
SEMI-VOLATILE ORGANICS								
Butylbenzylphthalate	1 / 3	0.3	0 / 2	ND	1 / 5	20%	0 / 3	ND
Carbazole	1 / 3	0.1	0 / 2	ND	1 / 5	20%	0 / 3	ND
4-Chloro-3-Methylphenol	1 / 3	6	0 / 2	ND	1 / 5	20%	0 / 3	ND
Di-n-butylphthalate	1 / 3	1	0 / 2	ND	1 / 5	20%	0 / 3	ND
1,4-Dichlorobenzene	1 / 3	24	0 / 2	ND	1 / 5	20%	0 / 3	ND
Diethylphthalate	1 / 3	12	0 / 2	ND	1 / 5	20%	0 / 3	ND
2-Methylphenol	1 / 3	3	0 / 2	ND	1 / 5	20%	0 / 3	ND
4-Methylphenol	1 / 3	29	0 / 2	ND	1 / 5	20%	0 / 3	ND
N-nitrosodiphenylamine	1 / 3	0.5	0 / 2	ND	1 / 5	20%	0 / 3	ND
cPAHs	0 / 3	ND	0 / 2	ND	0 / 5	0%	0 / 3	ND
tPAHs	1 / 3	8	0 / 2	ND	1 / 5	20%	0 / 3	ND
PESTICIDES/PCBs								
PCBs	1 / 3	3.6	0 / 2	ND	1 / 5	20%	0 / 3	ND
INORGANICS								
Aluminum	2 / 3	549 - 1060	0 / 2	ND	2 / 5	40%	3 / 3	194 - 1650
Arsenic	1 / 3	5.3	1 / 2	4.8	2 / 5	40%	1 / 3	4.7
Barium	3 / 3	35.4 - 268	1 / 2	86	4 / 5	80%	3 / 3	16.9 - 32.8
Calcium	3 / 3	4020 - 17600	2 / 2	********-********	5 / 5	100%	3 / 3	5230 - 7340
Chromium	1 / 3	22.1	0 / 2	ND	1 / 5	20%	1 / 3	7
Cobalt	1 / 3	22.6	0 / 2	ND	1 / 5	20%	0 / 3	ND
Copper	3 / 3	7.3 - 45.8	2 / 2	19.9 - 54.8	5 / 5	100%	3 / 3	3.3 - 6.4
Iron	3 / 3	1590 - 1E+05	2 / 2	483 - 1720	5 / 5	100%	3 / 3	1930 - 3710
Magnesium	3 / 3	2100 - 6590	2 / 2	4660 - ********	5 / 5	100%	3 / 3	1720 - 1860
Manganese	3 / 3	76.2 - 3440	2 / 2	103 - 1360	5 / 5	100%	3 / 3	248 - 974
Nickel	2 / 3	22.2 - 86.3	0 / 2	ND	2 / 5	40%	1 / 3	16.4
Potassium	3 / 3	1100 - 1900	2 / 2	600 - 1000	5 / 5	100%	3 / 3	799 - 926
Silver	2 / 3	11.8 - 19.9	1 / 2	9.3	3 / 5	60%	0 / 3	ND
Sodium	3 / 3	1050 - 3660	2 / 2	4840 - 9590	5 / 5	100%	3 / 3	2530 - 4120
Thallium	0 / 3	ND	1 / 2	2.1	1 / 5	20%	1 / 3	4.4

NOTES:

* Background samples from the Control Pond include SW-22, SW-23, and SW-24.
ND = Not Detected

Table 5

SUMMARY OF SEDIMENT DATA
SIDNEY LANDFILL

CHEMICAL	NORTH BEAVER POND Frequency	NORTH BEAVER POND Range of Concentration mg/kg	SOUTH BEAVER POND Frequency	SOUTH BEAVER POND Range of Concentration mg/kg	MISC. SAMPLES Frequency	MISC. SAMPLES Range of Concentration mg/kg	TOTAL SAMPLES Frequency	TOTAL SAMPLES Percent Occurrence	CONTROL POND * Frequency	CONTROL POND * Range of Concentrations mg/kg	Elemental Composition of Soils ** mg/kg
VOLATILE ORGANICS											
Acetone	3 / 8	0.03 - 0.1	2 / 9	0.029 - 0.140	3 / 4	0.01 - 0.03	8 / 21	38%	0 / 3	ND	NA
Chlorobenzene	0 / 8	ND	0 / 9	ND	1 / 4	0.01	1 / 21	5%	0 / 3	ND	NA
Chloroethane	0 / 8	ND	0 / 9	ND	1 / 4	0.01	1 / 21	5%	0 / 3	ND	NA
1,1-Dichloroethane	1 / 8	0.00	0 / 9	ND	1 / 4	0.04	2 / 21	10%	0 / 3	ND	NA
1,2-Dichloroethene (total)	1 / 8	0.00	1 / 9	0.007	1 / 4	0.01	3 / 21	14%	0 / 3	ND	NA
Ethylbenzene	0 / 8	ND	0 / 9	ND	0 / 4	ND	0 / 21	0%	1 / 3	0.00	NA
Methylene Chloride	2 / 8	0.01 - 0.01	0 / 9	ND	0 / 4	ND	2 / 21	10%	0 / 3	ND	NA
Toluene	1 / 8	0.01	0 / 9	ND	1 / 4	0.01	2 / 21	10%	0 / 3	ND	NA
Xylenes (Total)	1 / 8	0.14	0 / 9	ND	1 / 4	0.00	2 / 21	10%	2 / 3	0.019 - 0.070	NA
SEMI-VOLATILE ORGANICS											
Carbazole	0 / 8	ND	0 / 9	ND	0 / 4	ND	0 / 21	0%	1 / 3	0.16	NA
Di-n-octylphthalate	0 / 8	ND	2 / 9	0.068 - 0.810	0 / 4	ND	2 / 21	10%	0 / 3	ND	NA
2-Methynaphthalene	0 / 8	ND	0 / 9	ND	0 / 4	ND	0 / 21	0%	1 / 3	0.14	NA
cPAHs	3 / 8	0.240 - 0.560	0 / 9	ND	0 / 4	ND	3 / 21	14%	1 / 3	9.530	NA
tPAHs	3 / 8	0.39 - 0.560	0 / 9	ND	0 / 4	ND	3 / 21	14%	1 / 3	21.28	NA
PESTICIDES/PCBs											
Aldrin	0 / 8	ND	2 / 9	0.006 - 0.180	1 / 4	0.1	3 / 21	14%	0 / 3	ND	NA
delta-BHC	0 / 8	ND	1 / 9	0.014	1 / 4	0.00	2 / 21	10%	0 / 3	ND	NA
alpha-Chlordane	0 / 8	ND	3 / 9	0.082 - 1.100	2 / 4	0.01 - 0.07	5 / 21	24%	0 / 3	ND	NA
gamma-Chlordane	0 / 8	ND	1 / 9	0.190	0 / 4	ND	1 / 21	5%	0 / 3	ND	NA
4,4'-DDD	0 / 8	ND	4 / 9	0.005 - 0.097	2 / 4	0.00 - 0.01	6 / 21	29%	0 / 3	ND	NA
4,4'-DDE	1 / 8	0.00	7 / 9	0.006 - 0.950	2 / 4	0.01 - 0.06	10 / 21	48%	0 / 3	ND	NA
4,4'-DDT	0 / 8	ND	5 / 9	0.009 - 0.460	2 / 4	0.00 - 0.02	7 / 21	33%	0 / 3	ND	NA
Dieldrin	0 / 8	ND	2 / 9	0.011 - 0.035	0 / 4	ND	2 / 21	10%	0 / 3	ND	NA
Endosulfan I	0 / 8	ND	0 / 9	ND	1 / 4	0.00	1 / 21	5%	0 / 3	ND	NA
Endosulfan II	0 / 8	ND	3 / 9	0.023 - 0.230	1 / 4	0.02	4 / 21	19%	0 / 3	ND	NA
Endosulfan sulfate	0 / 8	ND	2 / 9	0.003 - 0.031	0 / 4	ND	2 / 21	10%	0 / 3	ND	NA
Endrin aldehyde	0 / 8	ND	3 / 9	0.006 - 0.160	2 / 4	0.01 - 0.02	5 / 21	24%	1 / 3	0.004	NA
Endrin ketone	0 / 8	ND	3 / 9	0.003 - 0.046	0 / 4	ND	3 / 21	14%	0 / 3	ND	NA
Heptachlor epoxide	0 / 8	ND	1 / 9	0.310	1 / 4	0.03	2 / 21	10%	0 / 3	ND	NA
Methoxychlor	0 / 8	ND	2 / 9	0.043 - 0.100	0 / 4	ND	2 / 21	10%	0 / 3	ND	NA
PCBs	4 / 8	0.06 - 0.080	8 / 9	0.120 - 44.00	3 / 4	0.110 - 2.500	15 / 21	71%	0 / 3	ND	NA

INORGANICS

* Background samples from the Control Pond include SD-22, SD-23, and SD-24.
** Dragun and Chiasson, 1991.
(1) Eastern United States
(2) New York State

ND = Not Detected
NA = Not Available

Table 6

SUMMARY OF HAZARD INDICES AND CANCER RISKS
SIDNEY LANDFILL

EXPOSURE POPULATION AND PATHWAY	HAZARD INDEX	CANCER RISK
CURRENT SCENARIO		
RESIDENT ADULT		
Ingestion of Spring Water	2E+01	1E-04 *
Dermal Contact with Spring Water	2E+00	5E-06 *
Inhalation of Chemicals Volatilized from Spring Water	1E-01	5E-05 *
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	2E+01	2E-04
RESIDENT CHILD		
Ingestion of Spring Water	4E+01	4E-05
Dermal Contact with Spring Water	3E+00	1E-06
Inhalation of Chemicals Volatilized from Spring Water	6E-01	3E-05
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	4E+01	7E-05
ADOLESCENT TRESPASSER		
Ingestion of On-site Surface Soil	2E+00	3E-05
Dermal Contact with On-site Surface Soil	2E+00	3E-05
Inhalation of Respirable Particulates from On-site Surface Soil	6E-01	1E-06
Dermal Contact with On-site Leachate	2E+00	3E-05
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	7E+00	9E-05
ADOLESCENT TRESPASSER		
Ingestion of ALW Disposal Area Surface Soil	7E-02	4E-07
Dermal Contact with ALW Disposal Area Surface Soil	4E-03	5E-08
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	8E-02	5E-07
ADOLESCENT TRESPASSER		
Ingestion of Off-site Surface Soil	5E-01	1E-05
Dermal Contact with Off-site Leachate	9E-02	7E-08
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	6E-01	1E-05
ADOLESCENT RECREATIONALIST		
Dermal Contact with Surface Water from the North Pond	2E-01	5E-07
Ingestion of Sediment from the North Pond	3E-02	9E-07
Dermal Contact with Sediment from the North Pond	6E-03	2E-08
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	2E-01	1E-06
ADOLESCENT RECREATIONALIST		
Dermal Contact with Surface Water from the Misc. Samples	2E-02	3E-10
Ingestion of Sediment from the Misc. Samples	6E-03	2E-07
Dermal Contact with Sediment from the Misc. Samples	4E-03	2E-08
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	3E-02	2E-07
FUTURE SCENARIO		
RESIDENT ADULT		
Ingestion of Groundwater	8E+01	4E-03 *
Dermal Contact with Groundwater	1E+01	5E-04 *
Inhalation of Chemicals Volatilized from Groundwater	6E-02	3E-05 *
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	9E+01	4E-03
RESIDENT CHILD		
Ingestion of Groundwater	2E+02	1E-03
Dermal Contact with Groundwater	2E+01	2E-04
Inhalation of Chemicals Volatilized from Groundwater	3E-01	2E-05
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	2E+02	2E-03
UTILITY/MAINTENANCE WORKER		
Ingestion of On-site Subsurface Soils	2E-03	1E-08
Dermal Contact with On-site Subsurface Soils	2E-04	5E-10
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	3E-03	1E-08
UTILITY/MAINTENANCE WORKER		
Ingestion of ALW Disposal Area Subsurface Soils	2E-03	2E-08
Dermal Contact with ALW Disposal Area Subsurface Soils	2E-04	5E-10
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	2E-03	2E-08
UTILITY/MAINTENANCE WORKER		
Ingestion of ESA Area Subsurface Soils	3E+00	7E-06
Dermal Contact with ESA Area Subsurface Soils	8E-01	2E-06
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	4E+00	9E-06
UTILITY/MAINTENANCE WORKER		
Ingestion of Off-site Area Subsurface Soils	1E-03	1E-08
TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	1E-03	1E-08

* Adult Resident Cancer Risks are 30 year exposures,
24 years adult exposure plus 6 years child exposure

TABLE 7

SUMMARY OF ENVIRONMENTAL ASSESSMENT
SIDNEY LANDFILL

Chemical of Potential Concern	Existing Condition	Potential Risk Level Based on Hazard Quotients	Comments
Aldrin	Exceeds NYS SGV	Potential risk in South Pond sediment.	Only detected in South Pond (3/21 sediment samples). Risk likely to be lower than HQ suggests.
Aluminum	Present in leachate. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in surface soil. Potential risk for wildlife consumers of fish from North Pond.	Ubiquitous compound. Risk may be lower than HQ suggests.
Arsenic	Present in leachate. Exceeds NYS SGV Exceeds site surface soil background and toxicity data.	Potential risk in North Pond and South Pond sediment. Potential risk in On-site and Off-site surface soil.	Did not exceed NOAA ER-L or ER-M.
Barium	Present in leachate. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in On-site and Off-site surface soil. Potential risk for wildlife consumers of fish from North Pond.	Of concern in surface soil and fish tissue.
Beryllium	Exceeds site surface soil background.	No potential risk in surface soils.	No potential risk.
Bis[2-ethylhexyl]phthalate	Exceeds NYS AWQC in surface water.	Potential risk in North and South Pond surface water.	Did not exceed USEPA AWQC.
Cadmium	Exceeds NYS & USEPA AWQC in surface water. Exceeds NYS SGV. Exceeds site surface soil background and toxicity data.	Potential risk in surface water of North Pond, sediment of North Pond, South Pond and Misc. areas and On-site and ESA surface soil.	Only detected in 1/19 surface water samples (North Pond only). Did not exceed NOAA ER-L or ER-M. Only detected in 4/21 sediment samples. Only detected in 5/22 surface soil samples.

TABLE 7 (Continued)

SUMMARY OF ENVIRONMENTAL ASSESSMENT
SIDNEY LANDFILL

Chemical of Potential Concern	Existing Condition	Potential Risk Level Based on Hazard Quotients	Comments
Chlordane	Exceeds NYS SGV and NOAA ER-L and ER-M.	Potential risk in South Pond sediment.	Only of concern in sediment. Only detected in South Pond sediment samples.
Chromium	Present in leachate. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in Off-site surface soil.	Only of concern in Off-site surface soil.
Copper	Exceeds NYS and USEPA AWQC in surface water, and present in leachate. Exceeds NYS SGV. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in North and South Pond surface water, sediment of North Pond, South Pond, and Misc. areas, and On-site, Off-site and ESA surface soil.	Did not exceed NOAA ER-L or ER-M. Risk present in Control Pond as well as on-site areas.
DDE, DDD, DDT	Exceeds NYS SGV and NOAA ER-L and ER-M. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in South Pond sediment. No risk in North Pond sediment. Potential risk in ESA surface soil.	Risk likely in South Pond sediment.
Endosulfan	Exceeds NYS SGV. Present in fish tissue from North Pond.	Potential risk in South Pond sediment.	Only detected in South Pond sediment. Risk likely in South Pond sediment.
Endrin	Exceeds NYS SGV, NOAA ER-L and ER-M, and USEPA proposed SQCV. Present in fish tissue from North Pond.	Potential risk in South Pond sediment. Possible concern in fish tissue (for protection of mink).	Only detected in South Pond and Control Pond sediment. Risk also present in Control Pond sediment. Possible bioaccumulation effects (sediment to fish)

TABLE 7 (Continued)

SUMMARY OF ENVIRONMENTAL ASSESSMENT
SIDNEY LANDFILL

Chemical of Potential Concern	Existing Condition	Potential Risk Level Based on Hazard Quotients	Comments
Heptachlor Epoxide	Exceeds NYS SGV.	Potential risk in South Pond sediment.	Only detected in South Pond sediment (2/21 sediment samples). Risk likely to be lower than HQ suggests.
Iron	Exceeds NYS and USEPA AWQC in surface water, and present in leachate. Exceeds NYS SGV. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in surface water of North Pond, South Pond and Misc. areas. Potential risk in leachate if wildlife use leachate as drinking water. Potential risk in North Pond, South Pond and Misc. areas sediment and On-site, Off-site, ALW and ESA surface soil.	Essential element. Risk likely lower than HQs suggest. Maximum concentration in surface water detected in North Pond. Maximum concentration in sediment detected in South Pond. Risk also present in Control Pond.
Lead	Exceeds NYS SGV and NOAA ER-L. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in North Pond, South Pond and Misc. areas sediment. Potential risk in On-site, Off-site and ESA surface soil.	Exceedances in sediment not severe. Did not exceed NOAA ER-M or site background. Potential risk also present in Control Pond. Risk likely to be lower than HQs suggest.
Magnesium	Present in leachate. Present in fish tissue from North Pond.	Potential risk to wildlife consumers of fish (mink).	Potential risk.
Manganese	Exceeds toxicity data in surface water, and present in leachate. Exceeds NYS SGV. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in North Pond, South Pond and Misc. areas surface water and sediment and in On-site and Off-site surface soil. Potential risk in fish tissue for the protection of mink.	Found in most media at elevated concentrations. Risk uncertain since Mn is essential nutrient for plants and animals. Potential risk also present in Control Pond. In sediment, maximum concentration detected in South Pond.

TABLE 7 (Continued)

SUMMARY OF ENVIRONMENTAL ASSESSMENT
SIDNEY LANDFILL

Chemical of Potential Concern	Existing Condition	Potential Risk Level Based on Hazard Quotients	Comments
Mercury	Present in fish tissue from North Pond.	Potential risk to wildlife consumers of fish (mink).	Potential risk in fish tissue.
Methoxychlor	Exceeds NYS SGV.	Potential risk in South Pond sediment.	Only detected in South Pond.
Nickel	Present in leachate. Exceeds NYS SGV and NOAA ER-L. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in North Pond, South Pond, and Misc. areas sediment and in On-site and Off-site surface soil.	In sediment, maximum concentration detected in South Pond. Did not exceed NOAA ER-M. Potential risk also present in Control Pond. Found in most media at elevated concentrations. Risk likely.
PCBs	Exceeds NYS and USEPA AWQC in surface water, and present in leachate. Exceeds NYS SGV and NOAA ER-L and ER-M. Exceeds site surface soil background and toxicity data.	Potential risk in surface water of South Pond, and in North Pond, South Pond and Misc. areas sediment. Potential risk in Off-site surface soil.	Risk in surface water and sediment likely. In surface water, only detected in South Pond. In sediment, maximum concentration detected in South Pond.
Selenium	Exceeds site surface soil background.	No potential risk in surface soils.	No potential risk.
Silver	Exceeds NYS and USEPA AWQC in surface water, and present in leachate. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in South Pond surface water. Potential risk in Off-site surface soil.	Only detected in 1/18 surface water samples (South Pond). Only detected in 4/22 surface soil samples. Risk likely lower than HQs suggest.
Zinc	Exceeds NYS SGV and ER-L. Exceeds site surface soil background and toxicity data. Present in fish tissue from North Pond.	Potential risk in North Pond and South Pond sediment and in On-site, Off-site and ESA surface soil.	No leachate data available. Did not exceed NOAA ER-M. Potential risk also present in Control Pond.

											Table 8	
	WATER											
	Drinking water											
	EPA-MC	EPA-MC	CPTP-WA	CPTP-O	CPTP-M	CPTP-	WQC-WO(9)	WQC-O(9)	NYS-MC	EPA-SMC	NYS-G	NYS-H(W
	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)
VOLATILE ORGANICS												
Total VOCs												
Chloromethane							0 (0.19)	0 (0.19)	5			
Bromomethane			48	4000			0 (0.19)	0 (0.19)	5		5	5*
Vinyl Chloride	0	0.002	2	525			0 (2.0)	0 (2.0)	2		2	0.3*
Chloroethane							IND	IND	5		5	5*
Methylene Chloride	0	0.005	4.7	1600			0 (0.19)	0 (0.19)	5		5	5*
Acetone									50		50*	50*
Carbon Disulfide									50			
1,1-Dichloroethene	0.007	0.007	0.057	3.2			0 (0.033)	0 (0.033)	5		5	0.07*
1,1-Dichloroethane									5		5	5*
cis- 1,2-Dichloroethene	0.07	0.07					IND	IND	/5		5	5*
trans- 1,2-Dichloroethene	0.1	0.1					IND	IND	\		5	5*
Chloroform	0	0.1 (1)	5.7	470			0 (0.19)	0 (0.19)	100 (1)		7	7
1,2-Dichloroethane	0	0.005	0.38	99			0 (0.94)	0 (0.94)	5		5	0.8
2-Butanone									50			
Bromochloromethane											5	5*
1,1,1-Trichloroethane	0.2	0.2					18400	19000	5		5	5*
Carbon Tetrachloride	0	0.005	0.25	4.4			0 (0.0004)	0 (0.00042)	5		5	0.4*
Bromodichloromethane	0	0.1 (1)	0.27	22					100 (1)		50*	50*
1,2-Dichloropropane	0	0.005					IND	IND	5		5	0.5*
cis-1,3-Dichloropropene	0		/10	/1700			0 (0.65)	0 (0.67)			5	5*
trans-1,3-Dichloropropene	0		\	\			87	87	5		5	5*
Trichloroethene	0	0.005	2.7	81			0 (2.7)	0 (2.8)	5		5	3*
Dibromochloromethane		0.1 (1)					0 (0.19)	0 (0.19)	100 (1)		50*	50*
1,1,2-Trichloroethane	0.003	0.005	0.6	42					5		0.6	5
Benzene	0	0.005	1.2	71			0 (0.6)	0 (0.6)	5		0.7	0.7
Bromoform	0	0.1 (1)	4.3	360					100 (1)		50*	50*
4-Methyl-2-Pentanone									50			
2-Hexanone									50		50	50*
Tetrachloroethene	0	0.005	0.8	8.85			0 (0.8)	0 (0.88)	5		5	0.7*
1,1,2,2-Tetrachloroethane			0.17	11			0 (0.17)	0 (0.17)	5		5	0.2*
1,2-Dibromomethane											5	5

	WATER											
	Drinking water											
	EPA-MC	EPA-MC	CPTP-WA	CPTP-O	CPTP-M	CPTP-	WQC-WO(9)	WQC-O(9)	NYS-MC	EPA-SMC	NYS-G	NYS-H(W
	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)
Toluene	1	1	6800	200000			14300	15000	5		5	0
Chlorobenzene	0.1	0.1	680	21000			488	488	5		5	20
Ethylbenzene	0.7	0.7	3100	29000			1400	2400	5		5	5*
Styrene	0.1	0.1							50		5	50
Xylenes (Total)	10	10							5		5	5*
INORGANICS												
Aluminum										0.05 - 0.2		
Antimony	0.006	0.006	14	4300							3*	3*
Arsenic		0.05	0.018 (5)	0.14 (5)	360	190	0.022	0.0022	50		25	50
Barium	2	2							1000		1000	1000
Beryllium	0.004	0.004									3*	3*
Cadmium	0.005	0.005			3.9	1.1	10	10	10		10	10
Calcium												
Chromium (III)	0.1	0.1			1700	210	(2)	(2)	/50		/50	/50
Chromium (VI)					16	11	(2)	(2)	\		\	\
Cobalt												
Copper	1.3	1.3			18	12	1000	1000	1000	1	200	200
Iron		0.3							300	0.3	300	300
Lead	0	0.015			82	3.2	50	50	50		25	50
Magnesium											35000*	35000
Manganese									300	0.05	300*	300
Mercury	0.002	0.002	0.14	0.15	2.4	0.012	0.144	10	2		2	2
Nickel	0.1	0.1	610	4600	1400	160	13.4	15.4				
Potassium												
Selenium	0.05	0.05			20	5	10	10	10		10	10
Silver					4.1		50	50	50	0.1	50	50
Sodium											20000	
Thallium	0.0005	0.002	1.7	6.3			13	17.8			4*	4*
Vanadium												
Zinc					120	110	5000	5000	5000	5	300	300
Chloride										250		
Sulfate										250		
Cyanide			700	220000	22	5.2					100	100
PESTICIDES												
Total Pesticides												
alpha-BHC			0.0039	0.013			0 (0.0092)	0 (0.073)				

	WATER											
	Drinking water											
	EPA-MC	EPA-MC	CPTP-WA	CPTP-O	CPTP-M	CPTP-	WQC-WO(9)	WQC-O(9)	NYS-MC	EPA-SMC	NYS-G	NYS-H(W
	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)
beta-BHC			0.014	0.046			0 (0.0163)	0 (0.0233)				
delta-BHC							IND	IND				
gamma-BHC (Lindane)	0.0002	0.0002	0.019	0.063	2	0.08	0 (0.0123)	0 (0.174)	4			
Heptachlor	0	0.0004	0.00021	0.0002	0.52	0.004	0 (0.00028)	0 (0.011)			/ND	/0.009
Heptachlor epoxide	0	0.0002	0.0001	0.0001	0.52	0.004			5		\	\
Aldrin			0.00013	0.0001	3				5		ND	0.002*
Dieldrin			0.00014	0.0001	2.5	0.002	0 (0.00007)	0(0.011)			ND	0.0009*
Endosulfan I			0.93	2	0.22	0.056	74	138				
Endosulfan II			0.93	2	0.22	0.056						
4,4'-DDE			0.00059	0.0006							/ND	/0.01
4,4'-DDD			0.00083	0.0008							\	\
4,4'-DDT			0.00059	0.0006	1.1	0.001	0 (0.00024)	0 (0.0012)	50			
Endrin	0.002	0.002			0.18	0.002	1	1	0.2		ND	0.2
Endosulfan sulfate			0.93	2								
Methoxychlor	0.04	0.04	0.76	0.81					50		35	35
Endrin ketone												
Endrin aldehyde			0.76	0.81								
alpha-Chlordane	/0	/0.002			/2.4		0 (0.00046)	0 (0.00022)			/0.1	
gamma-Chlordane	\	\	0.00057	59	\	0.004	0 (0.00046)	0 (0.00022)			\	0.02*
Toxaphene	0	0.003	0.00073	0.0003		0.000	0 (0.00071)	0 (0.00026)	5		ND	0.01*
Polychlorinated biphenyls, t	0	0.0005							1		0.1	0.01
Aroclor-1016			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1221			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1232			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1242			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1248			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1254			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
Aroclor-1260			0.00004	5E-05		0.014	0 (0.00079)	0 (0.00013)				
SEMI-VOLATILES												
Total Semi VOCs												
Individual Semi VOCs												
Phenol			21000	5E+06			3500	3500	50			
2-Chlorophenol							0.1	0.1	5			
2,4-Dichlorophenol			93	790			3090	3090	50			0.3
4-Chloro-3-Methylphenol							3000	3000	50			
2,4,6-Trichlorophenol			2.1	6.5			0 (1.2)	0 (1.8)	50			

	WATER											
	Drinking water											
	EPA-MC	EPA-MC	CPTP-WA	CPTP-O	CPTP-M	CPTP-	WQC-WO(9)	WQC-O(9)	NYS-MC	EPA-SMC	NYS-G	NYS-H(W
	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)
2,4,5-Trichlorophenol							2600	2600	50			
Pentachlorophenol	0	0.001	0.28	8.2	20 (7)	13 (7)	1010	200	50			0.4
Total chlorinated phenols												
2-Methylphenol									50			
4-Methylphenol									50			
2-Nitrophenol									50			
2,4-Dimethylphenol							400	400	50			
2,4-Dinitrophenol			70	14400			70	70	50			
4-Nitrophenol									50			
4,6-Dinitro-2-methylphenol			13.4	765					50			
Total unchlorinated phenols												
Total phenols											1	1
4-Chlorophenyl-phenyl ether									5			
bis(2-Chloroethyl)ether			0.031	1.4			0 (0.030)	0 (0.030)	5		1	0.3*
Dichlorobenzenes, total												
1,3-Dichlorobenzene (m-)	0.6	0.6	400	2600			400	470	5		5	20
1,4-Dichlorobenzene (p-)	0.075	0.075	400	2600			400	470	5		/4.7	30
1,2-Dichlorobenzene (o-)	0.6	0.6	2700	17000			400	470	5		\	
2,2'-Oxybis(1-Chloropropane)												
N-Nitroso-di-n-dipropylamine									50		50*	50*
Hexachloroethane			1.9	8.9			0 (1.9)	0 (2.4)	5			
Nitrobenzene			17	1900			19800	19800	5		5	30
Isophorone			0.0028	0.031			5200	5200	50		50*	50*
bis(2-Chloroethoxy)methane									50			
1,2,4-Trichlorobenzene	0.07	0.07					IND	IND	5		5	10
Naphthalene									50		10*	10
4-Chloroaniline									5			
Hexachlorobutadiene	0.001		0.44	50			0 (0.45)	0 (0.45)	5		5	0.5
2-Methylnaphthalene							0 (0.0028)	0 (0.0028)	50			
Hexachlorocyclopentadiene	0.05	0.05	240	17000			206	206	5		5	1
2-Chloronaphthalene							IND	IND	50		10*	10
2-Nitroaniline									5			
Dimethylphthalate			313000	3E+06			313000	350000	50		50*	50*
Acenaphthylene									50		20*	20
2,6-Dinitrotoluene											5	0.07*
3-Nitroaniline									5			

	WATER											
	Drinking water											
	EPA-MC	EPA-MC	CPTP-WA	CPTP-O	CPTP-M	CPTP-	WQC-WO(9)	WQC-O(9)	NYS-MC	EPA-SMC	NYS-G	NYS-H(W
	(mg/l)	(mg/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(mg/l)	(ug/l)	(ug/l)
Acenaphthene							0 (0.0028)	0 (0.0031)	50		20*	20
Dibenzofuran									50			
2,4-Dinitrotoluene			0.11	9.1			0 (0.11)	0 (0.11)	5			
Diethylphthalate			23000	120000			350000	434000	50		50*	50*
Fluorene			1300	14000			0 (0.0028)	0 (0.0028)	50		50*	50*
4-Nitroaniline									5			
N-nitrosodiphenylamine			5	16			0 (4.9)	0 (7.0)	50		50*	50*
4-Bromophenyl-phenyl ether									5			
Hexachlorobenzene	0	0.001	0.00075	0.0008			0 (0.00072)	0 (0.021)	5		0.35	0.02*
Phenanthrene							0 (0.0028)	0 (0.0031)	50		50*	50*
Anthracene			9600	110000			0 (0.0028)	0 (0.0031)	50		50*	50*
Carbazole												
Di-n-butylphthalate			2700	12000			34000	44000	50		50	50*
Fluoranthene			300	370			42	188	50		50*	50*
Pyrene							0 (0.0028)	0 (0.0031)	50		50*	50*
Butylbenzylphthalate	0	0.1							50		50*	50*
3,3'-Dichlorobenzidine			0.04	0.077			400	470	50			
Benzo(a)anthracene	0	0.0001	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		0.002*	0.002*
Chrysene	0	0.0002	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		0.002*	0.002*
bis(2-Ethylhexyl)phthalate		0.006	1.8	5.9					50		50	4*
Di-n-octylphthalate									50		50*	50*
Benzo(b)fluoranthene	0	0.0002	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		0.002*	0.002*
Benzo(k)fluoranthene	0	0.0002	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		0.002*	0.002*
Benzo(a)pyrene	0	0.0002	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		ND	0.002*
Indeno(1,2,3-cd)pyrene	0	0.0004	0.0028	0.031			0 (0.0028)	0 (0.0031)	50		300	300
Dibenz(a,h)anthracene	0	0.0003	0.0028	0.031			0 (0.0028)	0 (0.0031)	50			
Benzo(g,h,i)perylene							0 (0.0028)	0 (0.0031)	50			

APPENDIX III

ADMINISTRATIVE RECORD INDEX

3.2 Sampling and Analysis Data/Chain of Custody Forms

P. 300142- 300152 Letter to Mr. Richard Ramon, P.E., U.S. EPA, Region II, from Mr. G. David Knowles, P.E., L.S., Site Manager, Malcolm Pirnie, Inc., re: Sidney Landfill RI/FS Water Level Data, January 22, 1993. Attachment: "Water Level Data - Sidney Landfill, Delaware County, New York", Revised January 13, 1993.

3.3 Work Plans

P. 300153- 300224 Report: RI/FS Health and Safety Plan, Sidney Landfill, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, July 1991.

P. 300225- 300287 Letter of Transmittal to Suzanne Tramontana, U.S. EPA, RegionII, from Mr. Bruce Nelson, Malcolm Pirnie, Inc., re: Enclosed Work Plan Addenda and Cover Letter, October 12, 1992. Attachment 1: Letter to Mr. Richard Ramon, U.S. EPA, Region II, from Mr. G. David Knowles, P.E., L.S., Site Manager, Malcolm Pirnie, Inc., re: Enclosed Sidney Landfill RI/FS Work Plan Addenda, October 12, 1992. Attachment 2: Report: Work Plan - Addendum, Sidney Landfill, Delaware, County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, October 1992.

P. 300288- 300331 Report: Work Plan - Addendum, Sidney Landfill, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, March 1993.

3.4 Remedial Investigation Reports

P. 300332- 300372 Letter to Dr. Vinh Cam, U.S. EPA, Region II, from Mr. Bruce R. Nelson, Project Hydrogeologist, Malcolm Pirnie, Inc., re: Enclosed Report, March 19, 1991. Attachment: Report: Report for Archeological Potential, SEQR Parts 1A & 3, Town of Sidney Landfill Remedial Investigation & Feasibility Study, Richardson Hill Road, Delaware County, New York, prepared for Malcolm Pirnie, Inc., prepared by Hartgen Archeological Associates, Inc., March 1991.

P. 300372A- 300856 Report: Draft Final Remedial Investigation Report, Vol. I, Including Appendices A-B, Sidney Landfill, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, July 1995.

P. 300857- 301470 Report: Draft Final Remedial Investigation Report, Vol. II, Appendices C-P, Sidney Landfill, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, July 1995.

7.0 ENFORCEMENT

7.1 Enforcement History

P. 700001- 700109 Letter to Ms. Cathy Moyik, Regional Project Officer, U.S. EPA, from Mr. Scott B. Graber, TES V Regional Manager, CDM Federal Programs Corporation, re: Enclosed Letter Report for EPA Work Assignment C02003, Final Responsible Party Search Report, November 30, 1990. Attachment: Report: Letter Report, Final Responsible Party Search Report, prepared by Techlaw, Inc., prepared for U.S. EPA, Office of Waste Programs Enforcement, November 30, 1990. (Note: This report is CONFIDENTIAL. It is located at the Region II Superfund Records Center, U.S. EPA, 290 Broadway, 18th floor, New York, NY 10007-1866).

8.0 HEALTH ASSESSMENTS

8.3 Correspondence

P. 800001- 800003 Letter to Mr. Richard Ramon, P.E., U.S. EPA, Region II, from Mr. G. David Knowles, P.E., L.S., Site Manager, Malcolm Pirnie, Inc., re: Proposed Timing and Approach for Risk Assessments which are part of Sidney Landfill RI/FS, Delaware County, New York, November 3, 1992.

10.0 PUBLIC PARTICIPATION

10.2 Community Relations Plans

P. 1000001- 1000028 Report: Community Relations Plan, Sidney Landfill, New York Site ID No. 413004, Town of Sidney, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, June 1991.

10.9 Proposed Plan

P. 1000029- 1000040 Report: Superfund Proposed Plan, Sidney Landfill Site, Town of Sidney, Delaware County, New York, prepared by the U.S EPA, Region II, July 1995.

APPENDIX IV

STATE LETTER OF CONCURRENCE

APPENDIX V

RESPONSIVENESS SUMMARY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York 12233

EARTH DAY 25 1995 ENVIRONMENTAL PARTNERS

Michael D. Zagata
Commissioner

SEP 28 1995

Ms. Kathleen Callahan
Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, NY 10007-1866

Re: Sidney Landfill Site ID No. 413004
Record of Decision

Dear Ms. Callahan:

The New York State Department of Environmental Conservation has reviewed the record of decision for the Sidney Landfill site. The Department concurs with the selected remedy of Alternative 2A, installation of four landfill caps with "hot spot" remediation in the vicinity of MW-2S, as it is detailed in the above-referenced document.

If you have any questions, please contact Mr. Jeffrey McCullough, of my staff, at (518) 457-3976.

Sincerely,

for Charles N Goldorf

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

THE SIDNEY LANDFILL SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

1.0 SITE IDENTIFICATION

1.1 Background - RCRA and other information

P. 100001- 100020 Letter to Mr. John Frisco, U.S. EPA, Hazardous Waste Site Branch, from Mr. Irving L. Bonsel, P.E., Associate Sanitary Engineer, Region IV, New York State Department of Environmental Protection, re: Enclosed Report, April 1, 1983. Attachment: Report: Investigation and Removal of Contaminated Soil at the Hill Site, Sidney, New York, prepared for the Bendix Corporation, prepared by Geraghty & Miller, Inc., March 30, 1983.

1.4 Site Investigation Reports

P. 100021- 100190 Draft Report: Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations, Sidney Landfill, Town of Sidney, Delaware County, New York, Site Code 413004, prepared for New York State Department of Environmental Conservation, prepared by Wehran Engineering, P.C., July 1986.

P. 100191- 100493 Report: Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations, Appendices A-E, Sidney Landfill, Town of Sidney, Delaware County, New York, Site Code 413004, prepared for New York State Department of Environmental Conservation, prepared by Wehran Engineering, P.C., June 1987.

3.0 REMEDIAL INVESTIGATION

3.1 Sampling and Analysis Plans

P. 300001- 300141 Report: Quality Assurance Project Plan, Sidney Landfill, Delaware County, New York, prepared by Malcolm Pirnie, Inc., prepared for U.S. EPA, Region II, July 1991.

APPENDIX V

RESPONSIVENESS SUMMARY

Sidney Landfill Superfund Site

INTRODUCTION

A responsiveness summary is required by Superfund regulation. It provides a summary of citizens' comments and concerns received during the public comment period, and the United States Environmental Protection Agency's (EPA's) and the New York State Department of Environmental Conservation's (NYSDEC's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's and NYSDEC's final decision for selection of a remedial alternative to address the contamination at the Sidney Landfill site.

OVERVIEW

The public generally supports the preferred remedy, excavating and relocating the waste from the Can and Bottle Dump Area to the adjacent North Disposal Area, installing a landfill cap consistent with 6 NYCRR Part 360 in four areas, extracting contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S, followed by air-stripping and discharge to surface water, long-term monitoring of the groundwater, surface water, and sediments, and recommending the implementation of institutional controls (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the caps).

The primary concerns were related to the contamination that is present in South Pond and the threat that the site poses to private water supplies. It was explained at the public meeting that, while sediment samples collected from South Pond contained PCBs and a variety of pesticides, based upon the documented release of PCBs and solvent-containing waste oils to South Pond from a waste oil pit located on the adjacent Richardson Hill Road Landfill Superfund site, it is believed that the contamination in South Pond is attributable to the Richardson Hill Road Landfill site, rather than the Sidney Landfill site. It is anticipated that the remedial investigation and feasibility study (RI/FS) for the Richardson Hill Road Landfill site will be completed in the summer of 1996. The remedy that is ultimately selected for the Richardson Hill Road Landfill site will address the contaminated sediments in South Pond. With regard to the private water supplies, two private springs located adjacent to the site show chemical contamination above drinking water standards. Both springs have whole-house treatment systems, which are currently being maintained by potentially responsible parties associated with the Richardson Hill Road Landfill site. As a result of the treatment systems, these water supplies show no contamination at the point of use. Based upon the results of samples collected from private wells located downgradient from the site, there is no indication that these wells have been or are expected to be impacted by the site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The RI report, FS report, and Proposed Plan for the site were released to the public for comment on July 27, 1995. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, New York and the information repository at the Sidney Memorial Library. The notice of availability for the above-referenced documents was published in the *Press and Sun Bulletin* on July 27, 1995. The public comment period related to these documents was held from July 27, 1995 to August 26, 1995.

On August 2, 1995, EPA conducted a public meeting at Sidney Civic Center to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the site, to discuss and receive comments on the Proposed Plan, and to respond to questions from area residents and other interested parties.

SUMMARY OF COMMENTS AND RESPONSES

The following correspondence (see Appendix V-a) was received during the public comment period:

- Letter to Richard Ramon, P.E., dated August 22, 1995, from Samuel S. Waldo, Director, Environmental Affairs, Amphenol Corporation, and Robert J. Ford, Director, Site Remediation, AlliedSignal, Inc.
- Letter to Richard Ramon, P.E., dated August 25, 1995, from David Rider, P.E., Administrative Engineer, New York City Department of Environmental Protection.
- Letter to Richard Ramon, P.E., undated, from Kate Wheeler, Neighbors United for Community Health.

A summary of the comments contained in the above letters and the comments provided by the public at the August 2, 1995 public meeting, as well as EPA's and NYSDEC's response to those comments, follows.

Letters

Letter to Richard Ramon, P.E., dated August 22, 1995, from Samuel S. Waldo, Director, Environmental Affairs, Amphenol Corporation, and Robert J. Ford, Director, Site Remediation, AlliedSignal, Inc.

Comment #1: The ecological risk assessment states that a potential risk exists in the South Pond as a result of the levels of pesticide residues detected there. It is further stated that, because contamination in South Pond likely originated from the

Richardson Hill Road Landfill, any remedial activities to address the contamination in South Pond would be undertaken in conjunction with the remediation of the Richardson Hill Road Landfill site. The data from Richardson Hill Road Landfill site, however, does not support a conclusion that the pesticide residues, if present at all, resulted from activities associated with the Richardson Hill Road Landfill site.

Response #1: Sediment samples from South Pond collected during the Sidney Landfill site RI contained PCBs and a variety of pesticides. Based upon the documented release of PCBs and solvent-containing waste oils to South Pond from a waste oil pit located on the Richardson Hill Road Landfill site, it is believed that, with the exception of the pesticides, the contamination in South Pond is attributable to the Richardson Hill Road Landfill site, rather than the Sidney Landfill site. While the RI data indicate that the Sidney Landfill site is not the source of the pesticide contamination that was detected in South Pond, it does not appear that the Richardson Hill Road Landfill site is the source either. It should be noted that even the control pond had pesticides present.

Comment #2: The Proposed Plan calls for the installation of four independent 6 NYCRR Part 360 caps. While there is no reason to believe that the 6 NYCRR Part 360 caps would not perform as anticipated, it is suggested that the remedy be modified slightly to call for the installation of caps "consistent with the requirements of 6 NYCRR Part 360." There have been recent improvements in cap technology and materials of construction which could provide equivalent or increased protection in a more cost-effective manner. The recommended modification would allow design of caps utilizing the most current technology available, while still meeting the performance requirements of 6 NYCRR Part 360.

Response #2: As suggested, the cap designs will be *consistent* with the requirements of 6 NYCRR Part 360.

Comment #2: The Proposed Plan calls for the installation of a "hot-spot" groundwater recovery and treatment system in the vicinity of monitoring well MW-2S to address the light non-aqueous phase liquid (LNAPL). Since subsequent sampling of this monitoring well indicated only residual LNAPL, and since downgradient wells do not indicate the presence of LNAPL, there does not appear to be recoverable contamination hot-spots. Therefore, it is recommended that any effort to institute groundwater treatment be considered as a phased task in conjunction with the site-wide trend analysis. In addition, a period of routine monitoring is appropriate prior to determining the need for and the feasibility of a focused groundwater treatment system.

Even if the "hot-spot" groundwater treatment is implemented, there should be flexibility in selecting a treatment technology (i.e., the treatment technology should not be limited to air-stripping).

Response #3: The area affected by the LNAPL is limited to the area in the vicinity of monitoring well MW-2S. That is why the area is designated as a "hot-spot." The need to remediate this area remains, even though the thickness of the LNAPL has diminished, because the groundwater in the "hot-spot" is expected to contain elevated concentrations of the contaminants detected in the LNAPL, and would continue to act as a source of contamination. It is also possible that bedrock fracture enhancement in the vicinity of the "hot-spot" will result in additional LNAPL being released and mobilized for recovery, thereby allowing for the recovery of additional contamination.

Based upon the results of the RI/FS, air stripping was determined to be the most cost-effective means of treating the extracted groundwater from the "hot-spot," because of the high concentrations of volatile organics that are present. Should the results of the pre-remedial design studies indicate that either the concentration of the contaminants in the hot spot is much smaller than the RI data indicate, or the quantity of contaminated groundwater is very small, such that the contamination may be removed in a very short time frame, then an alternate treatment process may be determined to be more economical.

Letter to Richard Ramon, P.E., dated August 25, 1995, from David Rider, P.E., Administrative Engineer, New York City Department of Environmental Protection.

Comment #1: The Proposed Plan states that a portion of the site drains to the Trout Creek, a tributary to the Cannonsville Reservoir of the New York City water supply. However, the plan does not discuss how the protection of the reservoir was considered when the various alternatives were developed.

Response #1: While the protection of the Cannonsville Reservoir, which is located 17 miles downstream from the site, was not specifically evaluated in the FS, the selected remedial alternative will be protective of the reservoir in that extracting and treating the groundwater hot spot will prevent the migration of contamination and capping the waste disposal areas will control surface water runoff and erosion and will prevent further contamination of the groundwater.

Comment #2: Were the entire Target Compound List (TCL) and Target Analyte List (TAL) analyzed for all samples during the RI?

Response #2: The entire TCL and TAL were analyzed for all samples during both phases of the RI for the Sidney Landfill.

Comment #3: Are any of the waste disposal areas located below the water table?

Response #3: The results of soil borings suggest that all of the waste disposal areas are located above the water table.

Comment #4: How many aquifers underlie the site and what is the direction of flow in the different aquifers? Is there any groundwater discharge to the surface water?

Response #4: Groundwater at the site is located, primarily, within the bedrock; however, at the base of Richardson Hill, groundwater is present within the glacial till. The predominant groundwater flow direction within these two units is to the west, down a topographic slope, to the valley floor. There is also a component of flow in the bedrock that is to the east of Richardson Hill. While the vertical hydraulic gradients calculated for the site do not indicate upward gradients, which would indicate groundwater discharge to the surface water bodies in the valley floor, several springs are present in the vicinity of the site which would indicate that groundwater does discharge to the surface in certain areas around the site.

Comment #5: How was the presence or the absence of DNAPL or LNAPL determined?

Response #5: During the RI, the sample results were reviewed to determine whether there were concentrations of contaminants which approached approximately one percent of their solubility (EPA's guidance on determining whether NAPL may be present). NAPL was not observed. Based on analytical results of samples and the visual observation of floating product, it was determined that LNAPL was present in monitoring well MW-2S . The LNAPL was monitored during each water-level monitoring event for thickness and the bottom of monitoring well MW-2S was checked with an interface probe for the presence of DNAPL, which was not found.

Comment #6: What is the contaminant loading to surface water during storm and non-storm events?

Response #6: Although samples were collected during non-storm conditions during the RI, contaminant loading to the adjacent water bodies was not calculated. Surface water sampling was not conducted during storm events. Once the disposal areas are capped, the contaminant loading to neighboring water bodies during storm and non-storm events will be significantly reduced or eliminated.

Comment #7: What is the extent of surficial soil contamination in areas other than those areas that are to be capped?

Response #7: Contaminants detected in the surface soils outside the areas to be capped were predominately pesticides and PCBs. Semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) were detected in samples along the west side of the site. The contaminants found, and the respective ranges, are summarized as follows: PCB Aroclor 1248 (43-890 µg/l); PCB Aroclor 1254 (240-670 µg/l); 4,4'-DDE (1.9- 8 µg/l); 4,4'-DDT (2.4 µg/l); 1,2-dichloroethene (23-98 µg/l); 1,1,1-trichloroethane (9-10 µg/l); 1,1-dichloroethane (9-21 µg/l); 1,4-dichlorobenzene (68 µg/l); 4-methylphenol (390 µg/l); bis(2-Ethylhexyl)phthalate (150-5100 µg/l); Benzo (k) Fluorene (10-11 µg/l); Benzo (b) Fluorene (18-28 µg/l); Butyl-benzyl-Phthalate (11 µg/l); Chrysene (21 µg/l); Flourantene (50 µg/l); Methylene Chloride (2 µg/l); Phenanthrene (38 µg/l); trichloroethene (11-23 µg/l); and Toluene (2 µg/l).

While surficial soil contamination is present in areas beyond the limits of the areas that will be capped, the levels of contamination in these areas do not pose an unacceptable human health or ecological risk.

Comment #8: What are the exposure scenarios used in the human health and ecological risk assessments?

Response #8: The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site, if no remedial action were taken.

The human health risk assessment began with selecting contaminants of concern that would be representative of site risks. The contaminants included 18 volatile organic compounds, 21 semi-volatile organic compounds, 9 pesticides, PCBs, 17 metals, and cyanide. Several of the contaminants, including vinyl chloride, benzene, and arsenic, are known to cause cancer in laboratory animals and are suspected to be human carcinogens.

In the current-use scenario, exposure to the chemicals of potential concern in spring water during potable use by resident adults and children; exposure to the chemicals of potential concern in on-site surface soil, on-site leachate, surface soil from the Alleged Liquid Disposal Area, and off-site surface soil by adolescent trespassers; and exposure to the chemicals of potential concern in surface water and sediment from North Pond and the small ponds and wetlands in the vicinity of the site by adolescent recreationalists were evaluated. In the future-use scenario, exposures to the chemicals of potential concern in subsurface soils on site, at the Alleged Liquid Disposal Area, at the Eastern Stained Area (part of the Southeast Disposal Area), and off-site by utility/maintenance workers were evaluated.

The ecological risk assessment evaluated the potential risks of exposure to the contaminants of concern to several indicator species. Largemouth bass was the only species of fish caught from North Pond and the control location. Therefore, this species was used as an indicator of conditions in the ponded areas in the vicinity of the site. For assessment of risks from exposure to surface soils, the cottontail rabbit, a common mammal known to occur on the site, was used as an indicator. Mink and osprey were chosen as indicators for analysis of risk through exposure to contaminants in fish tissue, since these species may inhabit the vicinity of the landfill, and are known to consume fish as the bulk of their diet.

For the ecological risk assessment, if criteria or guideline values were exceeded, the chemicals were chosen as chemicals of potential concern for this assessment. The list was refined by considering frequency of detection and other properties of the chemicals which may affect exposure and toxicity.

Comment #9: How many extraction wells will be necessary to remediate the contaminated groundwater?

Response #9: It was estimated in the FS report that 20 extraction wells would need to be installed to remediate the contaminated groundwater in the vicinity of monitoring well MW-2S. The specific number of extraction wells that will be installed will be determined during pre-remedial design studies.

Comment #10: How do Alternatives 2A and 3A differ in the protection of human health and the environment?

Response #10: In terms of addressing the bedrock groundwater contamination in the vicinity of monitoring well MW-2S, Alternatives 2A and 3A would be equally protective. Under Alternatives 2A and 3A, the source of the bedrock groundwater contamination is expected to be significantly reduced or possibly eliminated due to the reduction of infiltrating precipitation by the capping of the waste disposal areas and the extraction of the contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S.

Since Alternative 3A would extract contaminated groundwater from the bedrock aquifer at locations in addition to the vicinity of monitoring well MW-2S, it would provide marginally more protection to human health and the environment than Alternative 2A, which would primarily rely on natural attenuation to address the contamination in the bedrock aquifer. However, since the levels of contamination in the bedrock aquifer are less than 200 μg/l for any contaminant (other than in the vicinity of monitoring well MW-2S), EPA anticipates that collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S, in conjunction with natural attenuation of the other contamination present in the bedrock aquifer, as called for in Alternative 2A, the selected remedy, would result in remediating the groundwater in a reasonable time frame and at a significantly lower cost than Alternative 3A.

Comment #11: What are the post-closure operation, maintenance, and monitoring activities proposed for the site?

Response #11: The post-closure operation, maintenance, and monitoring activities that would be undertaken as part of the selected remedy will include long-term monitoring of groundwater, surface water, and sediments, and routine inspections and maintenance of the caps, consisting of mowing, fertilizing, reseeding, and repairing any potential erosion or burrowing rodent damage. The specific details of the operation, maintenance, and monitoring activities will be developed as part of the remedial design.

Comment #12: What is the status of current remedial activities at the Richardson Hill Road Landfill site? Will there be a coordinated effort by EPA to ensure that the individual remedial actions for these two sites will address all of the deleterious effects associated with each of these sites?

Response #12: It is anticipated that the RI/FS for the Richardson Hill Road Landfill site will be completed in the summer of 1996. It is envisioned that the remedy that will be selected for the Richardson Hill Road Landfill site will meet the remedial action objectives (the specific goals to protect human health and the environment) that will be established for this site.

The selected remedy for the Sidney Landfill site, which includes, among other things, installing landfill caps in four areas and extracting, treating, and discharging to surface water the contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S, is expected to meet the remedial action objectives that were established for the site, namely, to: minimize infiltration and the resulting contaminant leaching to groundwater; control surface water runoff and erosion; mitigate the off-site migration of contaminated groundwater; restore groundwater quality to levels which do not exceed state or federal drinking-water standards; control generation and prevent migration of subsurface landfill gas; and prevent contact with contaminants in the groundwater.

EPA will ensure that the individual remedial actions for the two sites will address all of the contamination associated with each of the sites.

Comment #13: It is recommended that, after treatment, the extracted groundwater be discharged to surface waters outside of the New York City water supply watershed.

Response #13: The exact discharge location for the treated groundwater will be determined during the remedial design. The conceptual design of the selected remedy included discharge of the treated groundwater to a surface water which is part of the and is outside of the New York City water supply watershed. It is EPA's intention to discharge to a surface water in the Susquehanna River basin.

Letter to Richard Ramon, P.E., undated, from Kate Wheeler, Neighbors United for Community Health.

Comment #1: The RI/FS report provides little detail on the historical usage of the landfill by the Town and nearby industries. The historical usage of the landfill should be provided in greater detail so as to provide guidance on the likelihood that pockets of waste are present on the site.

Response #1: While the RI/FS report does not go into great detail on the historical usage of the landfill, based on interviews with former landfill employees, the review of historical aerial historical photographs, which were used to identify disturbed areas for the purpose of locating soil borings and monitoring wells, and the results of an extensive RI, the likelihood of undetected areas of waste is low. Any pockets of waste that are located in the waste disposal areas will be contained by capping.

Comment #2: It is not clear from the RI/FS report whether dense non-aqueous phase liquids (DNAPLs) are present on the site and whether they will be addressed by the remediation of the groundwater.

Response #2: During the RI, the sample results were reviewed to determine whether there were concentrations of contaminants which approached approximately one percent of their solubility (EPA's guidance on determining whether NAPL may be present). NAPL was not observed. Based on analytical results of samples and the visual observation of floating product, it was determined that LNAPL was present in monitoring well MW-2S. The LNAPL was monitored during each water-level monitoring event for thickness and the bottom of monitoring well MW-2S was checked with an interface probe for the presence of DNAPL, which was not found. The RI/FS report also identifies the presence of compounds with specific gravities greater than one, which if present at high enough concentrations, would have the potential of forming DNAPL. These compounds, however, were not detected at concentrations which are indicative of potential DNAPL formation.

Comment #3: No explanation is provided for the presence of 61,000,000 μg/l of PCBs at monitoring well MW-2S during the 1991 sampling round and the failure to detect it in a subsequent sampling round. Could the PCBs be present from an acute release from a buried drum? Is the one-time presence of these PCBs reflective of a "slug" of contamination passing though the site? Has the migratory pattern of this contaminant plume been determined through additional testing (e.g., where is it going and when will it get there)?

Response #3: During the first sampling round, floating product was detected in monitoring well MW-2S. Screening results of the sampling showed the presence of the PCB Aroclor 1242 (61,000,000 μg/l) and other compounds. The results from the second sampling round indicated that, while the floating product and PCBs were not detected at monitoring well MW-2S, high concentrations of volatile organic compounds were present.

Since monitoring well MW-2S is located just east of the North Disposal Area, it is likely that this disposal area was the source of the PCBs and other contaminants that were detected in this monitoring well. It is unknown whether the PCBs were originally contained in a drum. While it is not clear what happened to the PCBs that were detected in the first sampling round, it is presumed that they have either migrated downgradient or dispersed. The migratory pattern of the contaminant plume has not been determined.

Comment #4: How many groundwater sampling rounds exist for each well and what contaminants were found?

Response #4: Bedrock aquifer samples (there is no overburden aquifer present) were collected from site monitoring wells in 1991 (Round 1) and in 1994 (Round 2).

Round 1 groundwater sampling detected, predominantly, TCE, 1,1,1-TCA, and their breakdown products, along with the occasional presence of other volatile organic compounds, such as toluene, xylene, and carbon disulfide. Bis(2-Ethylhexyl)phthalate was the only SVOC detected with any regularity in the groundwater samples from Round 1. The pesticides aldrin, DDT, and heptachlor epoxide were also detected. During Round 1, floating product was detected in a monitoring well (MW-2S). Screening results of the floating product showed the presence of the following additional compounds: PCBs; ethylbenzene; 1,1,2,2-tetrachloroethane (TCA); tetrachloroethene (PCE); and 1,2,4-trimethylbenzene.

The results from Round 2 indicated the presence of TCE, TCA, 1,2-dichloroethene, dichloroethane, and vinyl chloride. Only one groundwater sample contained elevated pesticide concentrations. Benzene, ethylbenzene, toluene, and xylene were detected in monitoring well MW-2S.

Comment #5: The RI/FS report states that the sediment contamination in South Pond is the result of contaminants from the adjacent Richardson Hill Road Landfill site. The assumption that no contribution to South Pond occurred from the Sidney Landfill site does not appear to be justified, given the sediment data upgradient of this water body.

Response #5: No sediment samples were collected upgradient of South Pond. While the sediment sample collected farthest north in South Pond (closest to the Sidney Landfill) contained a maximum concentration of PCBs of 110 microgram/kilogram (μg/kg), the sediment sample collected closest to the Richardson Hill Road Landfill (located to the west of South Pond) had a concentration of PCBs in excess of 2,500 μg/kg. In addition to these sediment sample results, it has been well documented that the Richardson Hill Road Landfill had an oil pit which overflowed into South Pond.

Comment #6: The use of oils and other liquids to reduce dust at landfills was a common practice during the time that this facility was operational. Could the presence of PCBs in surface soils on the site and in South Pond sediments be a result of these activities?

Response #6: Since it was reported to EPA that oils were used for dust control on the roadways at the site, during the RI, surface soil samples were collected at several locations along the landfill's roadways. The results of this sampling indicate that PCBs were present in one location on a roadway, however, at levels below the New York State Department of Environmental Conservation's recommend soil cleanup guidance of 1 milligram/kilogram for surface soils. It is likely that the majority of the PCBs found on-site are attributable to disposal activities rather than dust control.

Comment #7: Are subsurface conditions sufficiently documented to install groundwater extraction wells at this time?

Response #7: While subsurface conditions at the site are sufficiently defined to support the selection of groundwater extraction in the vicinity of monitoring well MW-2S as a viable remedy, pre-remedial design studies will need to be conducted to define design parameters such as the placement of the extraction wells, pumping rates, etc.

Comment #8: Air stripping of groundwater is not an appropriate remedial action for groundwater containing PCBs. What actions/monitoring will occur to ensure that any PCBs in the groundwater are properly treated?

Response #8: Although PCBs were detected in monitoring well MW-2S during the first sampling round, they were not detected in the second sampling round. Therefore, treatment of PCBs was assumed to be unnecessary. If, however, during the pre-remedial design sampling or during long-term monitoring, PCBs are detected at levels which would require treatment to comply with surface water discharge requirements, an appropriate treatment unit would be included.

Comment #9: The proposed discharge of the treated effluent to surface water will require careful monitoring to ensure that aquatic life and downstream users (there are dairy farms just downstream) are protected. What monitoring schedule will be implemented to document that discharges meet EPA standards? What safeguards will be in place to ensure system shutdown in the event that unanticipated compounds (e.g., PCBs) are present in the effluent?

Response #9: The water treatment plant's effluent will be monitored to ensure that it complies with federal and state surface water discharge requirements. A long-term monitoring plan, which will be developed during the remedial design, will describe the sampling frequency, what parameters are to be sampled for, and corrective measures that would be implemented in the event of the treatment system's failure to properly treat the extracted groundwater.

Comments from the Public Meeting

Comment #1: How far downstream from the site were the surface water and sediments tested? What were the levels of contaminants that were detected?

Response #1: As part of the RI, water quality and sediments were sampled as far downstream as a tributary to Trout Creek, which is located less than one mile from the site. Sampling results at the farthest location (SW/SD 12) indicated the presence of low levels of bis(2-ethylhexyl)phthalate (1 μ/l) in the surface water and low levels of acetone (29μg/l) and di-n-butlyphthalate (68μg/l) in the sediments.

Comment #2: Are the contaminated sediments that were present in South Pond 20 years ago now in the Cannonsville Reservoir?

Response #2: The New York State Department of Health took water and sediment samples upstream and downstream of Trout Creek and found that, although South Pond was heavily contaminated, only low levels of contaminants were detected in sediments in the first downstream beaver pond. At the next downstream beaver pond (one-mile downstream), the sediments had only trace amounts of contamination. Therefore, it is highly unlikely that the Cannonsville Reservoir, which is located 17 miles downstream from South Pond would be impacted by contaminated sediments located in South Pond.

Comment #3: Does the contamination from the site threaten downgradient drinking water supplies?

Response #3: Two private springs located adjacent to the site show chemical contamination above drinking water standards. Both springs have whole-house treatment systems, which are currently being maintained by potentially responsible parties associated with the Richardson Hill Road Landfill site. As a result of the treatment systems, these water supplies show no contamination at the point of use. According to the New York State Department of Health, based upon the results of its samples collected from private wells located down-gradient from the site, there is no indication that these wells might be impacted by the site.

Comment #4: If someone's well is currently free of contaminants, but in the future, analyses indicate that the well is contaminated, would the homeowner be responsible for protecting his own water supply?

Response #4: If it is determined that the site is the source of contamination to a private water supply, protecting the water supply can be addressed under the Superfund program.

Comment #5: What kinds of contaminants were detected at the site and what are the potential impact of these contaminants on human health? Is the long-term exposure to any of the contaminants that are present likely to cause genetic damage? Are any of the contaminants carcinogens?

Response #5: Organic contaminants detected in the surface soils were predominantly pesticides and PCBs. Elevated inorganic contaminants, including, aluminum, arsenic, barium, cadmium, chromium, copper, lead, manganese, nickel, silver, thallium, and zinc were detected.

Trichloroethene and its breakdown products, 1,2-dichloroethene and vinyl chloride, are the primary groundwater contaminants that were detected over most of the site. Bedrock aquifer samples also detected, 1,1,1-trichloroethane and tetrachloroethene, along with the occasional presence of other VOCs, such as toluene, xylene, and carbon disulfide. PCBs and pesticides were also detected.

Some VOCs are considered to cause genetic damage and some do not. Xylene, toluene, and PCBs are nongenotoxic, but trichloroethene is considered a weak mutagen, vinyl chloride is considered mutagenic, and benzene and/or its metabolites seem to be genotoxic to humans, causing primarily chromosomal aberrations in the bone marrow and lymphocytes. There is not enough scientific data to determine if 1,2-dichloroethene, carbon disulfide, and 1,1,1-trichloroethene cause genetic effects in humans.

The following metals are considered to cause genetic effects in humans: copper, nickel, silver, thallium, beryllium, cadmium, chromium (hexavalent), arsenic, and aluminum. There is not enough scientific data to determine if manganese, zinc, antimony, or barium cause genotoxic effects.

In regard to systemic (noncancer) effects, different chemicals act on different organs and body systems. The neurological system is affected primarily by the following chemicals: lead, manganese, thallium, xylene, carbon disulfide, vinyl chloride, toluene, aluminum, and 1,1,1-trichloroethane. Chromium (hexavalent), antimony, beryllium, and nickel effect the respiratory tract. Zinc and copper act primarily on the gastrointestinal tract. The cardiovascular system is affected by benzene, arsenic, and barium. Silver affects the skin. Cadmium affects the kidneys. Trichloroethene causes effects on the liver.

With regard to carcinogens—benzene is a known carcinogen; PCBs, trichloroethene, tetrachlorethene, and vinyl chloride are suspected carcinogens. Xylene, carbon disulfide, 1,2-dichloroethene, and 1,1,1-trichloroethane are Class D carcinogens, which means that there is not enough scientific data to determine if the chemical causes cancer in humans. All of the metals mentioned above, except arsenic, beryllium, cadmium, chromium, lead, and nickel, are classified as Class D carcinogens. Of the remaining inorganics, arsenic and chromium (hexavalent) are known human carcinogens and the rest are suspected.

In the current-use scenario, exposure of resident adults and children to spring water and exposure of adolescent trespassers to on-site surface soil and on-site leachate result in risks in excess of EPA's acceptable risk range. The primary contributors to the risk estimates are tricholorethene and manganese in spring water and PCBs in on-site surface soil and on-site leachate.

In the future-use scenario, exposure of resident adults and children to groundwater and exposure of utility/maintenance workers to sub-surface soil at the Eastern Stained Area result in risks in excess of EPA's acceptable risk range. The primary contributors to the risk estimates are manganese, arsenic, antimony, barium, beryllium, vinyl chloride, and PCBs in groundwater and PCBs in the Eastern Stained Area.

Comment #6: Are signs posted along South Pond and North Pond?

Response #6: There are warning signs posted on a construction fence that was installed along Richardson Hill Road adjacent to South Pond. Since the levels of contamination in North Pond do not pose a threat, it has not been fenced or posted.

Comment #7: To what extent has wildlife, such as deer, been impacted by the site?

Response #7: Due to the site's location in a rural area and the presence of both upland and wetland habitats, the potential for utilization by wildlife is high. The presence of pesticides, PCBs, and inorganic compounds in environmental media, at concentrations which present a potential risk, are likely to have some adverse effect on wildlife utilizing the site vicinity, even if those effects are not apparent on an ecosystem level. If the site is unremediated, contaminants may continue to be released (e.g., via leachate, surface runoff, groundwater discharge) into the environment. Effects of contaminants could be more pronounced over time as a result of increasing concentrations in the media of concern and bioaccumulation through the food chain. Remediation of the site would limit future contaminant releases, and may allow the affected media to recover over time through such natural processes as dilution, sedimentation, and, for some organics, biodegradation.

Analytical data associated with the site's soil, surface water, and leachate was used to evaluate the potential risk to animal populations. This evaluation focused on earthworms, animals that feed on earthworms, moving up through the food chain or the food pyramid, because those are the things that are in contact with the soil and surface water, to see if, for example, predatory birds or other animals could be affected. The conclusion was that there were some potential risks, but the remedy will isolate the contaminants. Since deer eat vegetation instead of other animals, and because they are farther roaming (so they feed from a large area), it's unlikely that they would be affected from the landfill because they cover a larger area.

Comment #8: How is a landfill cap constructed and how will capping the disposal areas protect public health and the environment?

Response #8: Prior to the construction of the caps, test pits will be excavated to determine the actual limits of the waste disposal areas. Once the waste disposal areas are clearly defined they will be regraded and compacted to provide a stable foundation for placement of the various layers of the caps and to provide rapid runoff of rainwater. Since decomposing wastes produce methane gas which could cause bubbling under the caps, a gas-venting layer is installed. A 40-mil plastic cap, which is thermally seamed so that it's a continuous sheet, is then installed over the entire waste area. Vents are installed through the cap into the gas-venting layer. On top of the cap, a drainage layer is installed so that precipitation that does not run off the surface can drain off the cap. On top of this is placed six inches of topsoil to support the grass or vegetation, which would be mowed and maintained. The grass prevents erosion of the surface of the cap and draws moisture out of the cap. To prevent rainwater from seeping into the wastes at the bottom edge (toe) of a landfill cap, it is standard practice for the cap's toe to extend beyond the waste disposal area that is being covered.

Capping the wastes serves two purposes: First, capping will prevent direct contact with the wastes and leachate seeps. Second, the caps that would be installed would nearly eliminate the infiltration of rainwater into the waste disposal areas and the associated leaching of contaminants from these areas. Since the results of soil borings suggest that all of the waste disposal areas are located above the groundwater table, capping the wastes would effectively isolate the source of the contamination to the groundwater. Eventually, whatever contamination has migrated out of the waste disposal areas will move downgrade, dissipate, and/or biodegrade.

Comment #9: The RI/FS refers to a 30-year life for the cap. How long will operation and maintenance be performed.?

Response #9: A 30-year time frame is used in RI/FSs as a means of comparing the costs of the various alternatives that are evaluated. The cap is expected to last longer than 30 years with proper maintenance. The maintenance of the cap, which will include mowing the grass, repairing settling or burrowing damage to the cap, and the like, would continue indefinitely. Other operation and maintenance activities that would be performed at the site include maintaining the fences and collecting samples from the monitoring of the wells.

Comment #10: Who will pay for the annual operation and maintenance costs?

Response #10: If the potentially responsible parties do not elect to either perform or pay for the remedial action and the associated operation, maintenance, and monitoring, then EPA and NYSDEC would pay for the remedial action (which would include the construction of the caps, the fences, and up to ten years of groundwater extraction and treatment) and NYSDEC would pay for the post-remedial action operation, maintenance, and monitoring.

Comment #11: Why isn't Alternative 3A being selected?

Response #11: Under the selected remedy, Alternative 2A, the source of the bedrock groundwater contamination is expected to be significantly reduced or possibly eliminated due to the reduction of infiltrating precipitation by the capping of the waste disposal areas and the extraction of the contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S. Because of this and the fact that the levels of contamination in the bedrock aquifer are less than 200 μg/l for any contaminant (other than in the vicinity of monitoring well MW-2S), EPA anticipates that collecting and treating contaminated groundwater from the vicinity of monitoring well MW-2S, in conjunction with natural attenuation of the other contamination present in the bedrock aquifer, would result in remediating the groundwater in a reasonable time frame and at a significantly lower cost than Alternative 3A.

APPENDIX V-a

RESPONSIVENESS SUMMARY

LETTERS SUBMITTED DURING THE PUBLIC COMMENT PERIOD

APPENDIX V-a

RESPONSIVENESS SUMMARY

LETTERS SUBMITTED DURING THE PUBLIC COMMENT PERIOD

Amphenol

Amphenol Corporation

World Headquarters
358 Hall Avenue
P.O. Box 5030
Wallingford, CT 06492
Telephone (203) 265-8900

August 22, 1995

Mr. Richard Ramon, P.E., Project Manager
Western New York Superfund Section I
Emergency and Remedial Response Division
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: Proposed Remedial Plan
Sidney Landfill Superfund Site
Town of Sidney
Delaware County, New York

Dear Mr. Ramon:

The following comments on the RI/FS and proposed remedy at the subject site are being submitted jointly by Amphenol Corporation and AlliedSignal Inc., who are currently performing RI/FS activities at the adjacent Richardson Hill Road Municipal Landfill Site pursuant to an Administrative Order on Consent (Index No. II CERCLA-70-205).

In general, we are in concurrence with the approach taken by the USEPA in its proposed remedy; our comments, therefore, focus more on the implementability and constructibility of the preferred alternative. In addition, we have included comments regarding certain inconsistencies between the data reported in the Sidney Landfill RI Report and the data developed during the Richardson Hill Road RI.

1. In its ecological risk assessment (ERA), the Agency states that a potential risk exists in the South Pond as a result of levels of pesticide residues detected there. It is further stated that, because contamination in the South Pond most likely originated from the Richardson Hill Road Landfill, any remedial activities would be undertaken in conjunction with that project. Based on the Sidney Landfill RI Report, however, pesticide residues were only found in the first round of sampling, virtually disappearing from samples collected during Round 2.

In analyzed samples collected from surface and subsurface soils, ground water, sediments and surface water from the Richardson Hill Road Landfill site, no pesticides have ever been detected. Furthermore, a review of the preliminary data from sampling (from surface water, sediment and biota sources) conducted during the summer of 1995 for the Richardson Hill Road ERA confirms those earlier findings. The initial sampling conducted during Phase I of the Richardson Hill Road RI was reported to the USEPA in an Interim Technical Memorandum, dated May 1989, and subsequently accepted by the Agency. The most recent data will be presented in the ERA report. In view of the above, we do not believe that the data support a conclusion that pesticide residues, if present at all, result from activities associated with the Richardson Hill Road Landfill.

2. The preferred alternative calls for the installation of four independent 6 NYCRR Part 360 Landfill caps at the site. While we do not dispute that a Part 360 cap would perform as anticipated, we believe that the Agency should allow for engineering flexibility in the design of the remedy. Since those provisions of 6 NYCRR Part 360 became effective, there have been improvements in cap technology and materials of construction (e.g., geocomposite liners) which could provide equivalent or increased protection in a more cost effective manner. To that end, we would recommend that the preferred remedy be modified slightly to call for the installation of a cap consistent with (or in substantive compliance with) the requirements of 6 NYCRR Part 360. This modification would allow design of a cap utilizing the most current technology available, while still meeting the performance requirements of Part 360.

3. The preferred alternative also calls for the long-term monitoring of ground water and the installation of a "hot spot" ground water recovery and treatment system (utilizing air stripping technology) in the vicinity of MW-2S. Remedial actions focusing on site-wide ground water have been proposed as a contingent alternative should trend analysis undertaken as part of the five year review so indicate.

We do not believe that the data confirm the presence of a recoverable "hot spot" and would recommend that any effort to institute ground water treatment be considered as a phased task in conjunction with the site-wide trend analysis.

The initial sample collected from MW-2S consisted entirely of the LNAPL material found there. A subsequent sampling round at this well also consisted only of residual LNAPL. While the RI suggests that the LNAPL has migrated downgradient, the data from downgradient wells (MW-14S, MW-15S and MW-16S) do not indicate such migration. To the contrary, another conclusion to draw from that data and the sampling data from MW-13S (upgradient of MW-2S) is that any contamination in the vicinity of MW-2S is extremely localized, may not be a recoverable quantity and, therefore, would not represent a significant migration hazard. This fact, coupled with the paucity of actual ground water data from this well, leads us to conclude that a period of routine monitoring prior to determining the need for and feasibility of focused ground water treatment would be appropriate.

Notwithstanding the above, and presuming that "hot spot" treatment would be implemented, we believe that the Agency has unnecessarily restricted itself in specifically designating the manner in which the ground water would be treated (e.g., air stripping). If, in fact, this "hot spot" is localized, it may be both feasible and more cost effective to utilize carbon columns or some type of skid mounted temporary system which could be easily removed from the site once appropriate treatment goals were met. The description of the preferred alternative should provide this engineering flexibility.

We appreciate the opportunity to provide these comments to the Agency. Should you have any questions or require additional clarification regarding these comments please contact us.

Sincerely,

Samuel S. Waldo
Director, Environmental Affairs
Amphenol Corporation

For Robert J. Ford
Director, Site Remediation
AlliedSignal, Inc.

c: W. Gabriel
P. Gitlen
G. Lehman
H. Mitchell
P. Perez

047.wpd

. . . DEP

August 25, 1995

Richard Ramon, P.E.
Project Manager
Western New York Superfund Section I
Emergency and Remedial Response Division
United States EPA
290 Broadway, 20th Floor
New York, NY 10007-1866

New York City
Department of
Environmental
Protection

Bureau of Water
Supply & Wastewater
Collection

Shokan, New York 12481
(914) 657-2304

MARILYN GELBER
Commissioner

Robert P. Lemieux
First Deputy
Commissioner/
Acting Director

Re: Superfund Proposed Plan
Sidney Landfill Site
Town of Sidney, Delaware County
NYCDEP Log #3114

Dear Mr. Ramon:

The New York City Department of Environmental Protection (DEP) has reviewed the Proposed Plan dated July 1995, for the above referenced superfund site. In addition, DEP staff attended the Public Meeting at the Sidney Civic Center on 8/2/95.

The proposed plan is generic in nature and lacks the required details to fully address the issues related to the protection of the Cannonsville Reservoir of the New York City Water Supply. Based upon the review of the Proposed Plan DEP offers the following comments:

1) The plan states that a portion of the site drains to the Trout Creek, a tributary to the Cannonsville Reservoir of the New York City Water Supply. However, the plan does not discuss how the protection of the Reservoir was considered when the various alternatives were developed.

2) Were the entire Target Compound List (TCL) and Target Analyte List (TAL) analyzed for all samples during the Remedial Investigation (RI) Phase?

3) Are any of the waste disposal areas below the water table?

4) The report inferred that there are at least two aquifers on the site.

- How many aquifers are underlying the site?
- What is the direction of flow in the different aquifers?
- When does the ground water flow become surface flow?

5) How did the EPA evaluate the RI results to determine the presence or the absence of Dense Non Aqueous Phase Liquid (DNAPL) or Light Non Aqueous Phase Liquid (LNAPL) phases?

6) What is the existing contaminant loading to neighboring waterbodies?

7) What is the maximum contaminant loading into the neighboring waterbodies during surface runoff?

8) What is the extent of surficial contamination in areas other than those areas that are to be capped?

9) What are the exposure scenarios and frequencies used in the human health and ecological risk assessment?

10) How did EPA determine that only one extraction well was sufficient to remediate the contaminated groundwater? Was a network of recovery wells proposed and considered in the Feasibility Study (FS)?

11) Alternatives 2A and 3A address the contaminants in the shallow and bedrock aquifers, respectively. However, the Proposed Plan does not explain in any detail the extent of contamination and how alternatives 2A and 3A would differ in the protection of human health and the environment?

12) What are the post closure operation and monitoring activities proposed for the site? Will these activities follow part 360 in terms of sampling frequency and post-closure well network installation?

13) What is the status of current remedial activities at the Richardson Hill Road Landfill? And what are the findings to date? Will there be a coordinated effort between different project managers within EPA to insure that the individually proposed remedial actions for these two sites will address all deleterious effects emanating from these two sites?

14) In regards to the extraction of contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S, DEP recommends that all of the contaminated groundwater that has gone through the air stripping process be discharged to surface waters outside of the New York City Water Supply Watershed.

DEP requests a meeting with appropriate parties to discuss their findings and recommendations prior to the issuance of the Record of Decision (ROD).

DEP also requests that a copy of the "Sidney Landfill Final Remedial Investigation Report" and the "Feasibility Study Report" be forwarded to my attention at the following address:

New York City DEP
P.O. 370
Shokan, NY 12481

Finally, DEP asks that copies of the results of any future monitoring that may be conducted on the Trout Creek be forwarded to the address above as well as any additional plans or designs for the remediation of the Sidney Landfill.

Thank you for the opportunity to comment on this proposal. If you have any questions regarding these comments, please contact Andrew Labruzzo at (914) 657-6972.

Sincerely,

David Rider
EB

David Rider, P.E.
Administrative Engineer

cc: J.K. Cloonan, P.E., NYCDEP
H. Mahoney, NYCDEP
A. Nagel, NYCDEP
L. Kan, NYCDEP
L. Cerabino, NYCDEP

Neighbors United for Community Health

RR 1, Box 131
Sidney Center, NY 13839

Richard Ramon
Project Manager
Western New York Superfund Section I
Emergency and Remedial Response Division
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: Sidney Landfill Superfund Site Proposed Plan

Dear Rich:

We appreciate your extending the period of public comment to enable us to give a more complete response to the Proposed Plan. I realize this has been inconvenient, and thank you for your effort.

Together with our advisor, Paul Ciminello, we respectfully submit the following comments regarding the proposed plan, as detailed in the *Draft Final Remedial Investigation Report* ("*Report*") prepared by Malcolm Pirnie and dated July 1995 and the *Superfund Proposed Plan* ("*Plan*") prepared by the USEPA, dated July 1995. We understand that these comments will be part of the official record.

1. The *Report* provides very little detail on the historic usage of the Landfill by the Town and/or nearby industries. The usage of the Landfill should be detailed to provide guidance on the matrix of materials at this site and to provide guidance on the likelihood that pockets of waste are present on the site currently undiscovered.

2. The *Report* states that no dense non-aqueous phase liquids are present on the site; however, concurrently the report identifies the presence of tetrachloroethene and other DNAPLs. It is not clear if remedial plans will address the presence of these compounds, particularly as they relate to vertical migration of on-site contaminants through the site's underlying aquitard.

3. No explanation is provided for the presence of 61,000,000 micrograms per liter of PCBs at monitor well "MW-28" during the 1991 sampling round. A subsequent sampling round from this well did not detect an PCBs. Could these PCBs be present from an acute release from a buried drum? Is the one-time presence of these PCBs reflective of a "slug" of contamination passing through the site? Has the migratory pattern of this contaminant plume been determined through additional testing (e.g., where is it going and when will it get there)?

4. The figures accompanying the *Report* imply that two rounds of groundwater data were collected; however the text references samples being collected after the installation of every well. How many groundwater sampling rounds exist for each well and what are the data?

5. It is stated in the *Report* that the contamination (e.g., sediment levels) in the South Pond is the result of contaminants from the adjacent Richardson Hill Landfill. The assumption that no contribution to the South Pond occurred from the Sidney Landfill does not appear to be justified, given the sediment data upgradient of this water body.

6. The use of oils and other liquids to reduce dust in landfills was a common practice during the time that this facility was operational. Could the presence of PCBs in surface soils on the site (and in the South Pond sediment) be the result of these activities?

7. The preferred alternative as detailed in the *Plan* recommends the installation of groundwater extraction wells, on-site treatment of extracted groundwater and surface discharge of the effluent. Subsurface conditions may not be sufficiently documented, making the implementation of a remedial system premature.

8. Air stripping of groundwater is not an appropriate remedial action for groundwater containing PCBs. What actions/monitoring will occur to ensure that any PCBs in the groundwater extraction flow are properly treated?

9. The proposed discharge of surface waters will require careful monitoring to ensure that aquatic life and downstream users (the dairy farms just downstream) are protected. What monitoring schedule will be implemented to document that discharges meet USEPA standards? What safeguards will be in place to ensure system shutdown in the event that unanticipated compounds (e.g., PCBs) are present in the effluent?

We thank you in advance for your attention to these comments.

With best regards,

Katherine R. Wheeler

faxed cc: Bruce Nelson
Joel Singerman