Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Patton's Busy Bee Disposal Site
Town of Alfred, Allegany County
and Town of Hartsville, Steuben County
Site Number 9-02-014

October 1996

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Patton's Busy Bee Disposal Site
Alfred (T), Allegany County
Hartsville (T), Steuben County
Inactive Hazardous Waste Site No. 9-02-014

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Patton's Busy Bee Disposal Inactive Hazardous Waste Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

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

Assessment of the Site

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

Description of the Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for Patton's Busy Bee Disposal Site and the criteria identified for the evaluation of alternatives, the NYSDEC has selected Institutional Actions for the Busy Bee Landfill and associated groundwater. The components of the remedy are as follows:

- Continued emptying of the leachate collection tanks at the site and transporting leachate for offsite treatment and disposal.

- Maintenance of the landfill cap.

- Appropriate measures to limit site access.

- Long-term targeted residential well monitoring under the guidance of NYSDOH, with future installation and maintenance of individual well treatment units for any home(s) which becomes impacted by landfill constituents at levels above drinking water standards. Initially, selected residential wells will be monitored annually. A determination will be completed in three years to determine if a change in sampling frequency is necessary.

- Since the remedy results in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. This program will include an annual review to evaluate the effectiveness of the selected remedy as a component of the normal operation and maintenance for the site.

New York State Department of Health Acceptance

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

Declaration

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

10/17/96
Date

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

RECORD OF DECISION

Patton's Busy Bee Disposal Site
Town of Alfred, Allegany County, New York
Town of Hartsville, Steuben County, New York
Site No. 9-02-014
October, 1996

SECTION 1: SITE LOCATION AND DESCRIPTION

Patton's Busy Bee Disposal Site consists of the Busy Bee Landfill, located off Clark Road one mile east of Alfred Station, in the Town of Alfred, Allegany County, and the adjacent Henry Landfill, located in the Town of Hartsville, Steuben County. The Busy Bee Landfill, located on top of a hill, covers approximately eight acres. The Henry Landfill is located on the northeast side of the hill and covers approximately five acres. Figure 1 shows the site location.

Operable Unit No. 1 consists of the Busy Bee Landfill, Operable Unit No. 2 is the Henry Landfill, and Operable Unit No. 3 is contaminated groundwater in bedrock beneath the Busy Bee Landfill. An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be investigated or addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

SECTION 2: SITE HISTORY

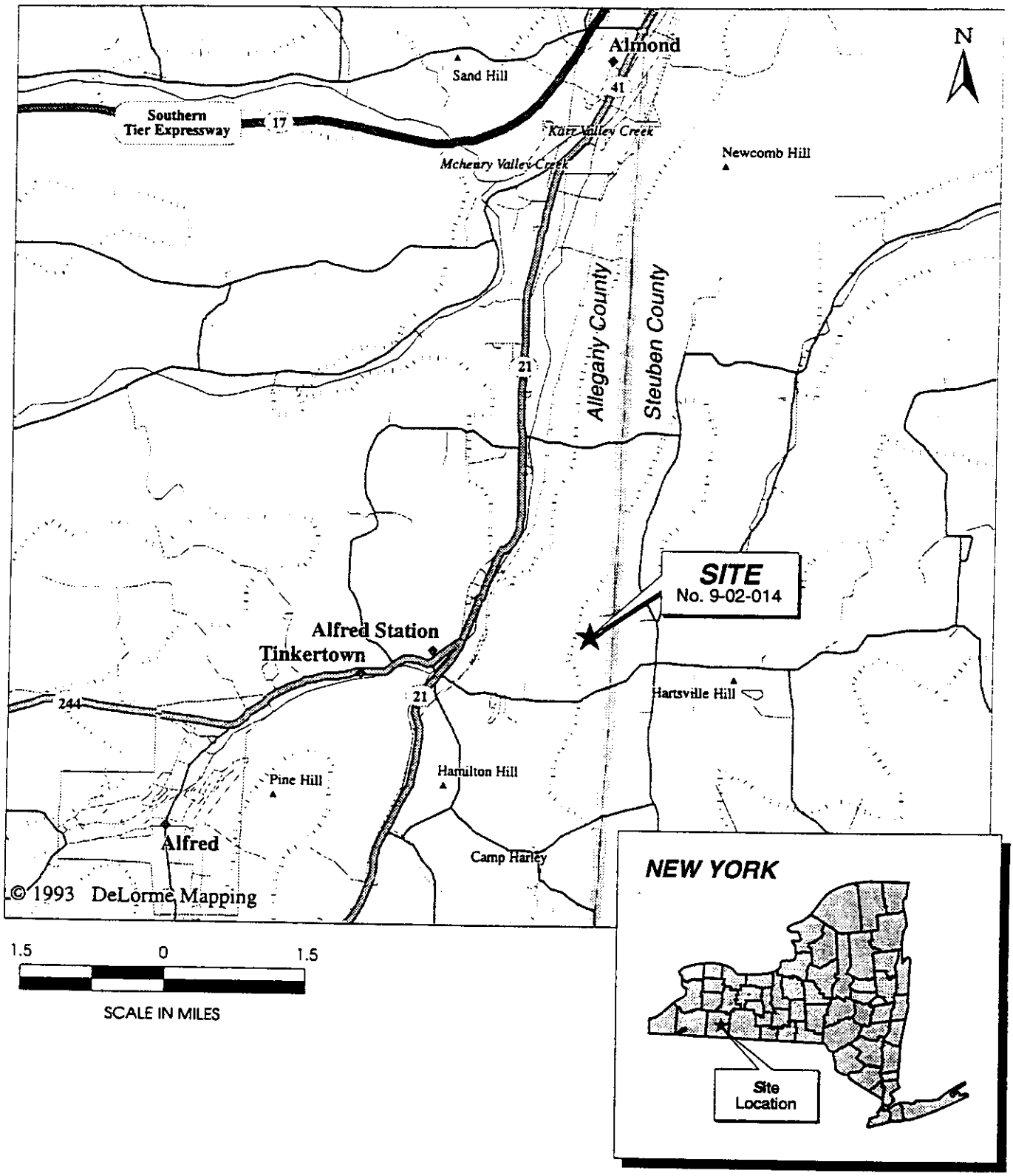
2.1: Operational/Disposal History

1967 (approx): The Henry Landfill began operating; accepting municipal waste.

1974 (approx): LaVerne Patton leased the Henry Landfill and continued existing operations.

1980: LaVerne Patton ceased operations at the Henry Landfill and received a NYSDEC permit to operate the Busy Bee landfill as a sanitary landfill, accepting municipal and industrial waste. Waste was deposited into three unlined trenches.

1981: SKF Industries later reported to have disposed 77 tons of a corrosive alkaline metal cleaning solution (a characteristic hazardous waste, code D002) at the Busy Bee Landfill, from February through August, 1981.



URS CONSULTANTS, INC.	PATTON'S BUSY BEE DISPOSAL SITE SITE LOCATION MAP	FIGURE 1

AG5240-33352.00-012694

1987: Mr. Patton began constructing a "remedial trench" along the southern and eastern sides of the unlined trenches of the Busy Bee Landfill. A clay liner and leachate collection system was installed in the remedial trench to intercept leachate from the unlined trenches and transfer it into four leachate collection tanks buried adjacent to the landfill. The lined trench received primarily construction and demolition debris, along with automobile shredder waste.

1988: The Busy Bee Landfill ceased accepting waste under terms of a NYSDEC Consent Order and cap construction began.

2.2: Remedial History

1986: The NYSDEC executed a Consent Order with LaVerne Patton to close the Busy Bee Landfill.

1987: The NYSDEC executed another Consent Order with LaVerne Patton to close the Busy Bee Landfill.

1988: Patton's Busy Bee Disposal Site was listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site. Class 2a is a temporary classification when there is insufficient information to determine site impacts.

1990: The NYSDEC conducted a Preliminary Site Assessment (PSA) to evaluate conditions at the site and obtain information to reclassify the site (to determine if a threat exists to public health or environment).

1991: Patton's Busy Bee Disposal Site was reclassified as a Class 2 site: one which presents a significant threat to public health or the environment. It was assigned a priority ranking of I, due to the threat to private water supplies.

1991-93: NYSDEC pursued Potentially Responsible Parties (PRPs) without success to implement a Remedial Program.

1993: NYSDEC issued a Work Assignment under a State Superfund Standby Contract with URS Consultants to conduct a Remedial Investigation and Feasibility Study (RI/FS).

SECTION 3: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health or the environment, the NYSDEC has recently completed a Remedial Investigation/Feasibility Study (RI/FS) using monies from the State Superfund.

3.1: Summary of the Remedial Investigation

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

The RI was conducted in two phases. The first phase was conducted between April and August 1994 and the second phase between May and July 1995. A report entitled **Final Report, Remedial Investigation**, dated November 1995, has been prepared describing the field activities and findings of the RI in detail.

The RI included the following activities:

- Electromagnetic survey to locate any buried debris outside the landfill masses;
- Soil sampling and analysis to identify the presence of contamination;
- Monitoring well installations to analyze groundwater for contamination and define hydrogeologic conditions;
- Test pit excavations to confirm the edge of the waste mass in the unlined trench area, and to investigate areas of magnetic anomalies;
- Video inspection of the interior of the western leachate line between the Busy Bee landfill and the leachate collection tanks to evaluate its integrity;
- Surface water and sediment sampling to analyze for contamination;
- Residential well sampling to determine if contaminants have migrated off-site to residential areas;
- Fish and Wildlife Impact Analysis;
- Regular emptying of the leachate collection tanks and offsite leachate treatment;
- Qualitative Health Risk Assessment.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Patton's Busy Bee Disposal site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. Soil cleanup guidelines contained in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4030 for the

protection of groundwater, background soil concentrations, and risk-based remediation criteria were used as SCGs for soil. The NYSDEC Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediments was used to evaluate surface water sediments.

The original description in the NYS Registry of Inactive Hazardous Waste Disposal Sites of the Patton's Busy Bee Disposal Site did not include the Henry Landfill. However, it became apparent during the early stages of the remedial investigation that the Henry Landfill had the potential to cause or contribute to a significant human health or environmental threat and that separating the potential environmental impacts of the two landfills could be difficult. Consequently, the site description was expanded to include the Henry Landfill. The remedial investigation addressed both landfills.

Evaluation of the RI data did not identify the presence of hazardous waste at the Henry Landfill. Persistent leachate outbreaks occur, especially along the eastern margin of the Henry Landfill; however, hazardous waste constituents were not identified in leachate seep samples. Additionally, groundwater contamination by hazardous waste constituents is so minimal that treatment would not be required. Although the Henry Landfill was not properly capped, the Superfund Program cannot legally provide public funding to construct a proper cap because consequential amounts of hazardous waste have not been identified. Consequently, the Henry Landfill will not be addressed by the State Superfund Program. The Final FS and this PRAP evaluate remedial technologies and alternatives for the Busy Bee Landfill and associated groundwater.

The following summary of results of the RI includes data from both landfills. Chemical concentrations are reported in parts per billion (ppb) for water, and parts per million (ppm) for soils and sediments. For comparison purposes, SCGs are given for each medium.

Site Geology and Hydrogeology:

Twelve monitoring wells had been installed prior to the RI; fourteen were installed during Phase 1 of the RI, and five during Phase 2. Figure 2 shows approximate monitoring well locations at the site. Due to a very thin veneer of overburden and an absence of overburden groundwater, all wells were installed into bedrock. Bedrock beneath the site consists of nearly horizontal alternating layers of shale and sandstone. The permeability of the sandstone layers is greater than the permeability of the shale layers, so most of the groundwater is within the sandstone. However, there are fractures within the shale that allow vertical groundwater movement. Groundwater appears to flow primarily horizontally through the sandstone layers, with some groundwater flow vertically downward through fractures in the shale to the lower sandstone units. For the ease of discussion, the sandstone layers have been labeled **A** through **E**, from the first encountered to the fifth.

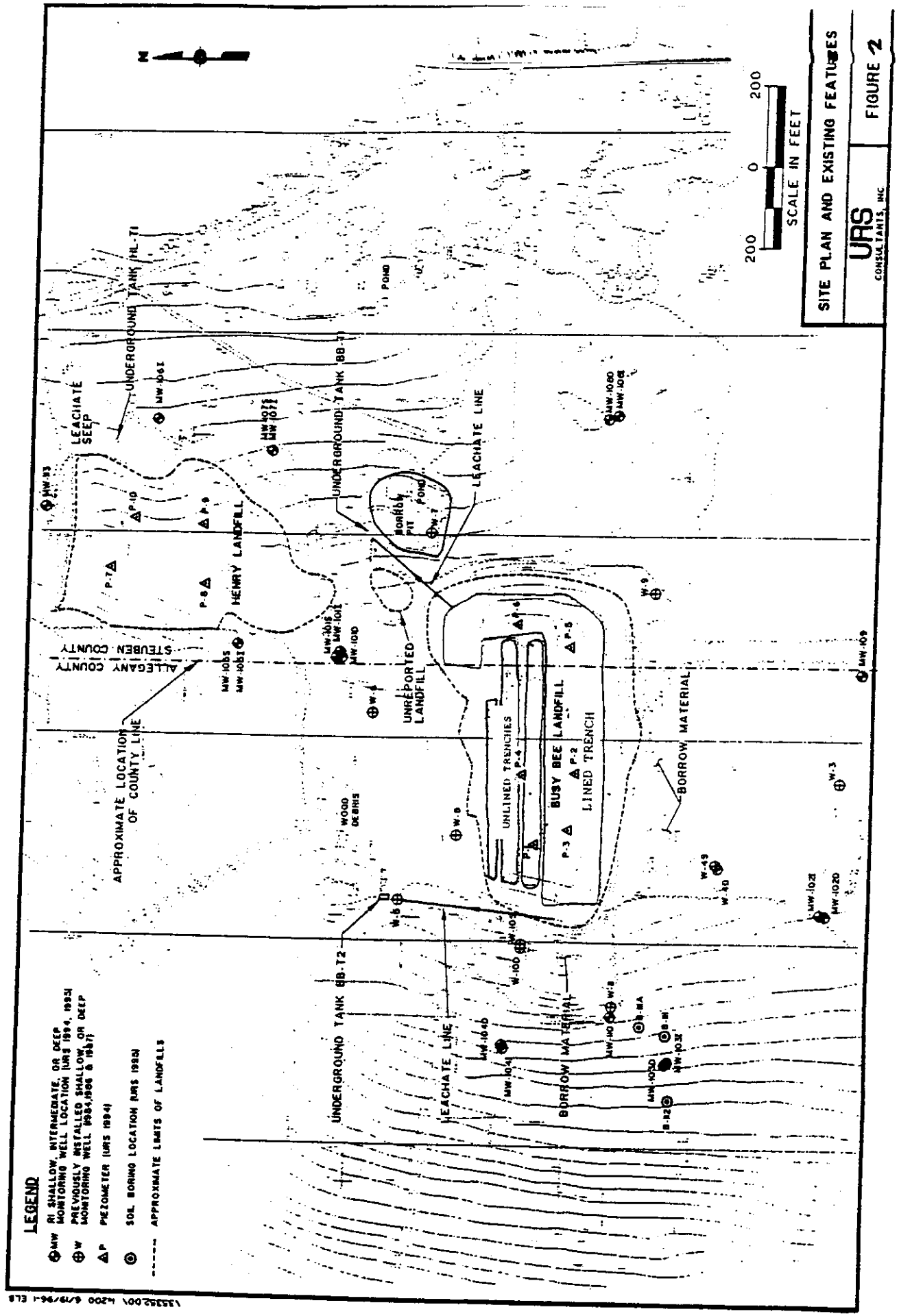

SITE PLAN AND EXISTING FEATURES
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FIGURE 2
SCALE IN FEET
200
0
200
N
LEGEND
RI SHALLOW, INTERMEDIATE, OR DEEP MONITORING WELL LOCATION (URS 1994, 1995)
PREVIOUSLY INSTALLED SHALLOW, OR DEEP MONITORING WELL (1984,1986 & 1987)
PIEZOMETER (URS 1994)
SOIL BORING LOCATION (URS 1995)
APPROXIMATE LIMITS OF LANDFILLS
LEACHATE SEEP
UNDERGROUND TANK HL-T1
POND
UNDERGROUND TANK BB-T1
LEACHATE LINE
BORROW PIT POND
HENRY LANDFILL
UNREPORTED LANDFILL
UNLINED TRENCHES
BUSY BEE LANDFILL
LINED TRENCH
BORROW MATERIAL
WOOD DEBRIS
APPROXIMATE LOCATION OF COUNTY LINE
ALLEGANY COUNTY
STEUBEN COUNTY
UNDERGROUND TANK BB-T2
LEACHATE LINE
BORROW MATERIAL

Because the bedrock layers of the hill beneath the landfill are nearly horizontal, the individual rock layers daylight to overburden as one moves downhill, away from the site. Figure 3 is a cross-section of the site, extending from south of the Busy Bee Landfill through the northern edge of the Henry Landfill. The vertical scale is exaggerated about ten times so that features can be seen more easily.

Groundwater flow directions:

A sandstone: This layer underlies most of the Busy Bee Landfill, but ends just outside the limits of the landfill. Only two wells have been installed in this layer, and groundwater flow direction can't be determined. It is most likely that A-layer groundwater, when present, moves both vertically down to the B-zone as well as outward in a radial fashion.

B, C, and D sandstones: Groundwater flow is to the southwest, with a small component of flow in the D sandstone zone to the southeast from the Henry Landfill.

E sandstone: Groundwater flow is to the northwest.

Busy Bee Landfill

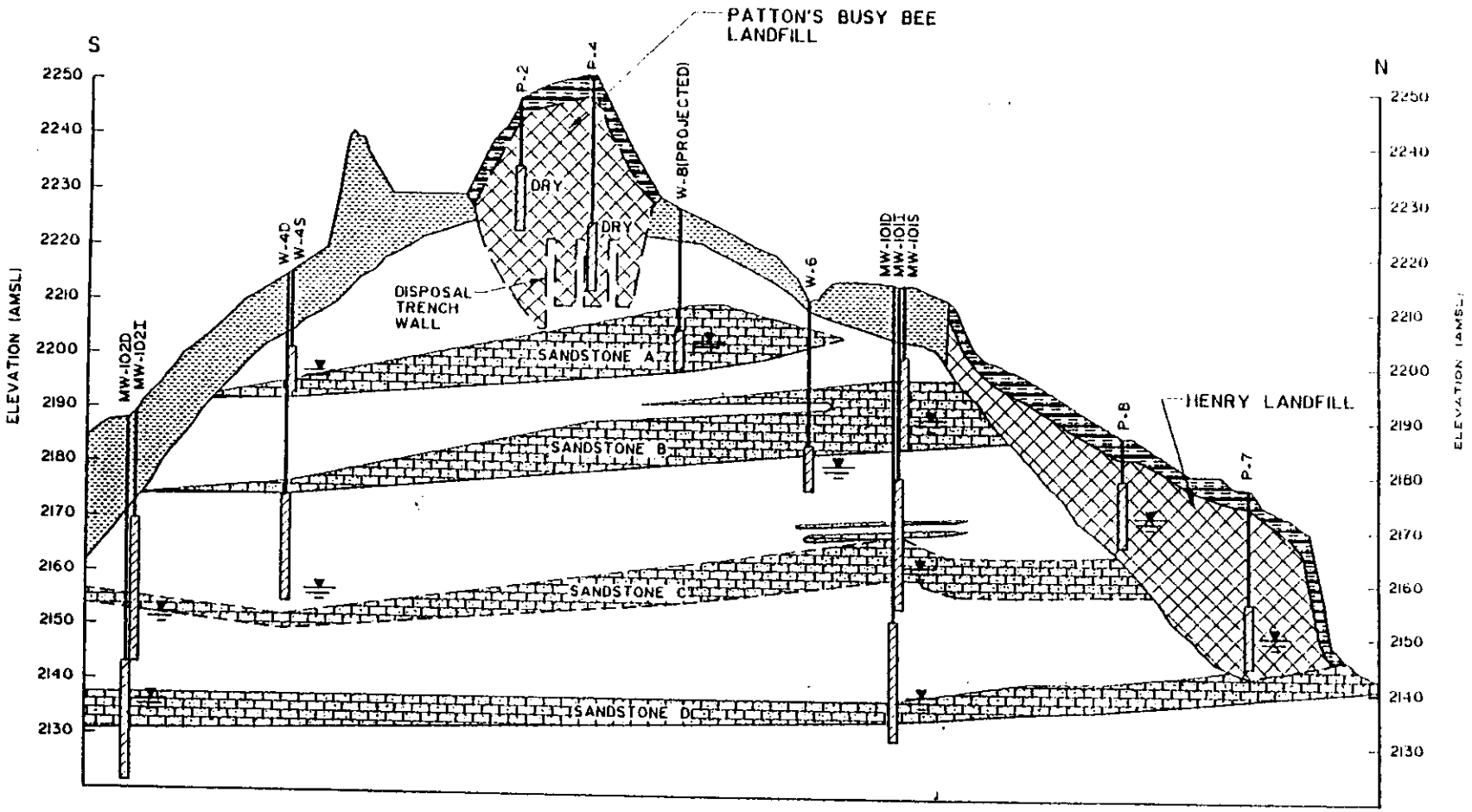
The Busy Bee Landfill consists of three older, unlined trenches and a newer, lined "remedial" trench. The lined trench was constructed, in part, to intercept and collect leachate migrating to the south and east from the older, unlined trenches. It has a two foot liner of low permeability material (approx. 1×10^{-8} cm/sec) beneath the waste. Perforated leachate collection pipes were placed in the trench over the low permeability layer before waste was deposited. Leachate is drained into two pairs of collection tanks located northeast and northwest of the landfill. These tanks have been emptied regularly by a subcontractor to the NYSDEC under the State Superfund Program since the Spring of 1994.

The Busy Bee Landfill ceased accepting waste in 1988. Capping was completed in 1991. Five gas vents were installed through the cap into waste. The cap material consists of two to four feet of low permeability material. Tests performed on the cap material in 1991 showed its permeability to be 1×10^{-7} cm/sec or less. It appears that the cap does meet the requirements of the applicable Solid Waste regulations (1985 6NYCRR Part 360: 18" low permeability soil barrier of 1×10^{-5} cm/sec, covered with a six inch layer of topsoil).

The Busy Bee Landfill unlined trenches likely are in direct contact with sandstone unit A.

Henry Landfill

The Henry Landfill is an older, unpermitted disposal area located north of and adjacent to the Busy Bee Landfill. Not much is known of its disposal history. It is believed that landfilling operations began in the late 1960s and ceased in the late 1970s when Mr. Patton received a NYSDEC permit to operate the Busy Bee Landfill. The Henry Landfill is unlined, and



VERTICAL EXAGGERATION IS 10X

NOTES:

1. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.
2. GROUNDWATER ELEVATIONS SHOWN WERE RECORDED ON 6/12/95.
3. VERTICAL EXAGGERATION 10X.

LEGEND

- WELL CASING
- WELL INTAKE
- GRAVELLY CLAYEY SILT COVER SOIL
- SHALE
- OVERBURDEN/ WEATHERED ROCK
- SANDSTONE
- FILL
- INFERRED CONTACT
- GROUNDWATER ELEV

200 0 200 HORIZ. SCALE IN FEET

20 0 VERT. SCALE IN FE

CROSS-SECTION

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FIGURE 3

covered with six inches to two feet of soil material. The cover permeability has not been determined.

The Henry Landfill is likely in direct contact with sandstone units C and D.

A buried leachate collection tank was located during investigative activities in 1995. Since then, this tank has been emptied regularly along with the Busy Bee leachate collection tanks. Additionally, a previously undocumented waste area was located across the site access road from the Henry Landfill during test pit excavation activities.

3.1.1 Nature of Contamination

As described in the RI Report, many soil, groundwater, surface water, sediment and leachate samples were collected at the Site to characterize the nature and extent of contamination.

The primary groundwater contaminants are Volatile Organic Compounds (VOCs) such as trichloroethene, dichloroethene, and trichloroethane. These are chlorinated solvents which are generally used for degreasing. Some home cleaning products also contain one or more of these compounds. Exposure to large concentrations of these compounds by inhalation (breathing vapors) or ingestion (drinking contaminated water) is known to be toxic to animals. Although studies have not been performed on humans, these compounds are suspected to have similar effects.

3.1.2 Extent of Contamination

Tables 1 through 6 summarize the extent of contamination for the contaminants of concern in groundwater and compares the data with the proposed remedial action levels (Standards, Criteria, and Guidance, or SCGs) for the Site. The following are the media which were investigated and a summary of the findings of the investigation. Data from both landfills are included in this summary, although the PRAP addresses only the Busy Bee Landfill and contaminated groundwater.

Surface Soil

Although several VOCs and Semi-Volatile Organic Compounds (SVOCs) were identified in surface soils near both landfills, only four compounds were present above SCGs: Benzo(a)anthracene, chrysene, benzo(a)pyrene, and dibenzo(a,h)anthracene. Several metals, including cadmium, thallium, and nickel, also were present above SCGs, based on metals concentrations in site background surface soil samples. These exceedances are shown on Tables 1A and 1B.

Surface Water

Two ponds at the Site were sampled: a residential pond and a pond in the borrow pit next to the Busy Bee Landfill. Volatile organic compounds (acetone, 1,1,1-trichloroethane, and trichloroethene) were detected, but below surface water standards, in the residential pond during the first round of sampling. When this pond was resampled, these compounds were not detected. No SVOCs were detected in either of the ponds. Surface water standards were exceeded in both ponds for three metals: aluminum, iron, and lead. The standard for silver was exceeded in one of the ponds.

In addition to sampling the ponds, surface water was sampled at several other locations near the landfills. There were four low level detections of acetone, one of trichloroethene, and one of methylene chloride, all below surface water standards. One SVOC (methylphenol) was detected, at a level below the standard. Surface water standards for cadmium, copper, iron, lead, and zinc were exceeded.

Exceedances of surface water standards are shown on Tables 2A and 2B.

Sediments

Three sediment samples from the ponds were analyzed. One VOC (acetone) was detected in one sample, at a level below the screening criteria. Heptachlor, a pesticide, was detected in another sediment sample at 0.0044 (4.4×10^{-3}) ppm, above the screening criteria of 0.0008 (8.0×10^{-4}) ppm. Several SVOCs were identified in a background sediment sample; all were below SCGs. Screening criteria for inorganic compounds that exceeded "lowest effect levels on aquatic life" are shown on Tables 3A and 3B for comparison.

Groundwater

The primary groundwater contaminants are VOCs, specifically, chlorinated solvents and their breakdown products: trichloroethene, dichloroethene, and trichloroethane. The highest concentrations were measured in shallow monitoring well W-10S (off the western end of the Busy Bee Landfill) during the first round of sampling: over 40,000 ppb total VOCs. This well was dry for subsequent sampling events. Groundwater contamination in all other site wells is significantly less. The well with the next highest level of contamination is W-4S, off the southwest corner of the Busy Bee Landfill, where total VOCs measured 207 ppb.

Groundwater contamination is much lower near the Henry Landfill. The groundwater standard for benzene of 0.7 ppb was exceeded in three wells near the Henry Landfill, with the highest level being 3 ppb. Chlorobenzene was detected in one well, where it was measured at 7 ppb, slightly above the groundwater standard of 5 ppb. Acetone exceeded the 50 ppb groundwater standard in one well at 160 ppb.

Groundwater standards for several metals were exceeded. All compounds that exceeded groundwater standards are shown on Tables 4A and 4B.

Waste Materials

Busy Bee Landfill Waste: A sample of waste from a boring in the Busy Bee Landfill showed elevated levels of VOCs (including acetone, 2-butanone, benzene, toluene, xylene) and SVOCs (including methylphenol and phthalates). Several pesticides were detected. One PCB, Aroclor 1254, was identified at 11 ppm, below the hazardous waste value of 50 ppm. Elevated levels of several metals also were identified. Table 5A lists compounds that exceeded soil SCGs, based on background soil concentrations.

Henry Landfill Waste: Waste from a boring into the Henry Landfill was analyzed. Several VOCs were identified, including acetone and 2-butanone. Several SVOCs were identified, including phenol and methylphenol. Elevated levels of several metals also were identified. Table 5B lists compounds that exceeded soil SCGs, based on background soil concentrations.

A previously **unreported waste area** across the site access road next to the Henry Landfill was discovered during a test pit excavation. A soil sample obtained from a test pit excavation into waste showed the presence of four VOCs (acetone, 2-butanone, ethylbenzene, and xylene) and four SVOCs (naphthalenes and phthalates), all eight of which were below soil SCGs, based on background soil concentrations. Additionally, one PCB, Aroclor 1242, was detected (0.099 ppm) below SCGs. Several metals were identified. Table 5C lists compounds that exceeded soil SCGs, based on background soil concentrations.

Leachate

Busy Bee Landfill: Three Busy Bee Landfill leachate samples were obtained, two from the leachate collection tanks and one from a seep. Several VOCs, SVOCs, and metals were detected, as shown on Table 6A. Ethylbenzene and bis (2-ethylhexyl) phthalate exceeded surface water guidance values. One pesticide, Beta-BHC was detected at a low level. No other organic compounds were detected.

Henry Landfill: Four leachate samples were obtained, one each from the leachate collection tank, a piezometer installed into waste, a seep, and a test pit in the unreported waste area. Acetone, 2-butanone, benzene, toluene, ethylbenzene, and xylene exceeded surface water standards. Low levels of other VOCs and SVOCs were present. Several metals were identified.

All compounds detected in leachate samples are shown on Tables 6A and 6B.

Residential Wells

A total of sixteen neighboring residential wells have been periodically sampled by the NYS Department of Health since 1991. These residential wells were sampled again during the RI. During the first round of sampling, two wells showed the presence of common petroleum-related compounds. One residential well showed xylene at 3 ppb. Another well showed xylene at 14 ppb, toluene and ethylbenzene each at 2 ppb. The drinking water standard for each of these three compounds is 5 ppb. When these two wells were subsequently resampled, these compounds were not detected. It was determined that these low-level detections of petroleum compounds were not site-related because they were not contaminants otherwise associated with site groundwater.

One spring that serves as a residential water supply also was sampled, and no organic compounds were found. Two metals, aluminum and iron, were present above SCGs.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 7.0 of the RI Report.

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

There are no known completed pathways at the site. A possible future human exposure pathway could be the ingestion of contaminated groundwater by nearby residents utilizing bedrock wells as a private water supply. Analysis of residential well water has shown no evidence of landfill contamination at the present time. Most of these wells are installed into bedrock much lower in elevation than the impacted bedrock at the site, or they are located upgradient of the site.

3.3 Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures which may be presented by the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. No pathways for environmental exposure to fish and wildlife have been identified. Neither surface water samples nor sediment samples identified elevated levels of site contaminants. No landfill impacts to surface waters or sediments were identified.

SECTION 4: ENFORCEMENT STATUS

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

The PRPs for the site, documented to date, include: LaVerne Patton, SKF USA Inc., Loohn's Laundry Service, and Morrison Knudsen. NYSDEC is continuing the search to identify additional PRPs.

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

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable the generation of leachate within the fill mass.
- Eliminate the potential for direct human or animal contact with waste in the landfill.
- Reduce, control, or eliminate, to the extent practicable, migration of contaminants in the landfill to groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the Area Of Concern (AOC), to the extent practicable.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Patton's Busy Bee Disposal site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled **Phase II Feasibility Study, June 1996.**

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

6.1: Description of Alternatives

The potential remedies are intended to effectively control the migration of contaminants from landfill waste into groundwater, and to reduce contamination in groundwater migrating offsite to meet groundwater standards. The Feasibility Study (FS) evaluated the following alternatives for the Busy Bee Disposal Site Operable Units (OUs):

Operable Unit 1, Busy Bee Landfill:

Alternative OU1-1:	No Action
Alternative OU1-2:	Institutional Action, including cap maintenance, leachate collection, long term monitoring

Operable Unit 2, Henry Landfill: Alternatives were not presented for this OU because consequential amounts of hazardous waste were not identified in the Henry Landfill, and therefore, it cannot be addressed by the State Superfund Program.

Operable Unit 3, Groundwater:

Alternative OU3-1:	No Action
Alternative OU3-2:	Institutional Action, including residential well monitoring
Alternative OU3-3:	Groundwater Collection and Treatment, including residential well monitoring
Alternative OU3-4:	Water Supply Extension

For details of each individual alternative, the reader is referred to the FS. These alternatives for each OU were combined into four site-wide alternatives for evaluation in this Proposed Remedial Action Plan. The four site-wide alternatives are:

Alternative I:	No Action for Busy Bee Landfill and Groundwater

Alternative II:	Institutional Actions for the Busy Bee Landfill and Groundwater
Alternative III:	Institutional Actions for the Busy Bee Landfill, and Groundwater Collection and Treatment
Alternative IV:	No Action for the Busy Bee Landfill, and Extension of Water Supply System

These four site-wide alternatives are evaluated in the following sections.

Alternative I: No Action

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any protection to human health or the environment. Operation and Maintenance (O & M) of the current leachate collection system would be discontinued. Leachate would be allowed to enter the groundwater system. Cap maintenance would not take place. No monitoring to assess possible future exposures would occur.

Present Worth:	$0
Capital Cost:	$0
Annual O&M:	$0
Time to Implement:	no time required

Alternative II: Institutional Actions

This site-wide alternative consists of institutional actions for both the Busy Bee Landfill and groundwater operable units. It would provide for continued operation and maintenance of the leachate collection system, maintenance of the landfill cap, and long term monitoring. Appropriate measures would be taken to limit site access. For groundwater, it would provide for routine targeted residential well monitoring, with installation and maintenance of individual residential well water treatment units in any home which may become impacted above drinking water standards by landfill contaminants.

Capital Cost:	$ 12,000
O&M over 30 years:	$ 654,000
Total Present Worth:	$ 666,000
Time to Implement:	Three months

Alternative III: Institutional Actions for the Busy Bee Landfill and Groundwater Collection and Treatment

This site-wide alternative consists of institutional actions as described in Alternative II. Groundwater would be collected from extraction wells installed in rock-blasted trenches in the

upper sandstone units southwest of the Busy Bee Landfill. An on-site treatment facility would be constructed to treat extracted groundwater to appropriate standards before being discharged to surface water. As with Alternative II, residential water supply wells would be monitored regularly. Additionally, it would include installation and maintenance of individual residential well water treatment units in any home which may become impacted above drinking water standards by landfill contaminants.

Capital Cost:	$ 992,000
O&M over 30 years:	$ 1,152,900
Total Present Worth:	$ 2,144,900
Time to Implement:	Two years

Alternative IV: No Action for the Busy Bee Landfill and Extension of Municipal Water Supply to Residences

This site-wide alternative was developed to address only the potential future impacts of the landfill on residential water supplies. Under this concept, the existing water supply in Alfred Station would be extended up Hartsville Hill, turning north along Crosby Creek Road, and then northwest along Clark Road as far as the site access road. Construction of a booster pump station at the bottom of Hartsville Hill as well as a storage tank at the top of the hill would be required. Hookups would be available to each resident along the supply line extension. Annual O&M costs would be the responsibility of residents and the municipality. Because homes would no longer use private water supplies, no groundwater monitoring would be required. No remedial actions would occur at the Patton's Busy Bee Disposal Site.

Capital Cost:	$657,000
O&M over 30 years:	$ 0 (O&M costs would be the responsibility of the supplier and/or homeowners)
Total Present Worth:	$657,000
Time to Implement:	Two years

6.2 Evaluation of Remedial Alternatives

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

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

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

Alternative I would not be consistent with Part 360 regulations for post-closure maintenance for the Busy Bee Landfill. Present site exceedances of chemical SCGs for groundwater would remain or even increase due to termination of leachate management efforts and future deterioration of the existing cap.

Alternative II would comply with SCGs for the Busy Bee Landfill. Continued operation and maintenance of the existing leachate collection system would aid in decreasing groundwater contamination. It is reasonable to expect that groundwater SCGs could be reached in a reasonable time frame and that the area of groundwater exceeding SCGs would significantly decrease. Institutional controls would ensure that drinking water standards would be met in the residential water supply.

Alternative III would comply with SCGs for both the landfill and groundwater. It would be expected that, except for the area immediately between the landfill and the collection trench, groundwater SCGs would be reached within a reasonable time. Institutional controls would ensure that drinking water standards would be met in the residential water supply.

Alternative IV would not comply with SCGs for either of the operable units, but would ensure that drinking water standards would be met in the residential water supply.

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

Risks to human health posed by the site, principally the potential for future contamination of residential wells through contaminated groundwater, would continue under Alternative I. Risks may actually increase with time due to the possibility of increased offsite migration of contaminants. Without post-closure maintenance at the landfill, the potential for more significant human and environmental exposures would increase as the existing landfill cover deteriorates and waste becomes exposed. There is no identified risk to the environment under existing conditions other than impacts to groundwater resources.

Human health would be protected under Alternative II. Routine residential well monitoring would identify any future impacts to private water supplies, and individual well treatment units would be provided and maintained at all homes where site contamination exceeds drinking water standards. Operation and maintenance of the leachate collection system would mitigate impacts to groundwater resources. Alternative II would protect against future human exposure to waste by providing for proper landfill maintenance.

Similar to Alternative II, Alternative III would be protective of human health through routine residential well monitoring and installation of treatment units, if necessary. In addition, it would be protective of groundwater resources by actively collecting and treating contaminated groundwater and leachate. Alternative III would also protect against future human exposure to waste by providing for proper landfill maintenance.

Alternative IV would protect human health by extending a water supply to nearby residences. However, the potential for future human and environmental exposure by contact with site waste would be greater than under either Alternative II or III since no efforts would be made to maintain the landfill cap. Alternative IV would allow leachate from the landfill to continue to migrate to the groundwater system.

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

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

Alternatives I and II present no adverse short-term impacts because there would be no construction activities. Alternatives III and IV involve significant construction activities. Alternative III would present potential minor short-term risks due to volatile organic emissions from excavations into bedrock, however, the risks could be easily controlled. Short-term risks from contaminants would be minimal with Alternative IV because construction activities would take place through uncontaminated materials. Alternative IV would create traffic concerns during construction activities along affected roadways, and there would be a potential for sediment and erosion problems along the waterline alignment.

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

Alternatives I and IV would offer no site remedy to address the presence of hazardous waste at the site. No monitoring or other controls would be implemented to protect the long term integrity of the cap or to collect leachate.

Both Alternatives II and III would minimize possible future human health risks at the site through proper long term O&M of the landfill cap and leachate collection system. Regular monitoring of on-site and residential wells would be adequate and reliable to protect remaining

risks. Alternative III would go one step farther by actively collecting contaminated groundwater and minimizing its potential to migrate, thus reducing remaining risk to the environment. Both Alternatives II and III would be permanent and effective in reducing contamination migration over the long term.

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

Alternatives I and IV would not reduce toxicity, mobility, or volume of contaminants at the site.

Alternative II would meet this criteria better than either Alternative I or IV. This alternative would not reduce the toxicity or volume of waste, but through routine maintenance and leachate collection, the mobility of contaminants into the groundwater system would be mitigated.

Alternative III would meet this criteria better than any of the other alternatives. This alternative would not reduce the toxicity or volume of waste, but through routine maintenance and leachate collection, the mobility of contaminants into the groundwater system would be minimized. Additionally, groundwater collection would also act to minimize any offsite migration of contaminated groundwater.

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

Alternatives I and II are easily implemented, with no administrative difficulties. Alternatives III and IV involve significant construction activities, but no insurmountable technical or administrative difficulties would be anticipated. Alternative IV would be the most difficult since it is anticipated that some right-of-way agreements would be required.

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

Alternative I is the least expensive, because no costs would be incurred. Alternative II includes costs for leachate collection and treatment and routine groundwater and residential well monitoring for thirty years. Alternative IV costs slightly less than Alternative II,

however, costs for O&M of the water supply system would be the responsibility of the supplier and/or homeowners. Alternative III involves major construction activities, and is significantly more expensive than the other alternatives: approximately three times the cost of Alternatives II or IV.

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

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. A "Responsiveness Summary" that describes public comments received and the Department responses is included as Appendix A. In general, the public comments received were supportive of the selected remedy. Several comments were received, however, pertaining to frequency of residential well sampling. To address these concerns, selected residential wells initially will be sampled annually for five years. At the end of five years, data will be evaluated and a determination made to continue sampling on an annual basis, or to increase or reduce the frequency.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC has selected Alternative II as the remedy for this site.

Alternative I would not be adequately protective of human health or the environment over the long term, and is rejected on that basis. Alternative II will be protective of both human health and the environment, will comply with Part 360 regulations for post-closure maintenance of the Busy Bee Landfill, and will be cost effective. Alternative III would involve a major construction effort and significantly more costs than Alternative II for only a minimal increase in environmental protection and is therefore rejected. Alternative IV would be protective of human health, but would not comply with any SCGs and would not provide adequate long term protection from direct contact with site wastes. Additionally, Alternative IV would require a major construction effort to provide a water supply to residences that have not, and may never be, impacted by the site. As such, Alternative IV is also rejected.

Maintenance of the existing leachate management system will minimize migration of contaminants from the Busy Bee Landfill to the groundwater system, and to residential well supplies. Routine cap maintenance will protect against deterioration and resultant future exposure to landfill waste and increased contaminant migration.

The estimated total present worth cost to implement the remedy is $ 666,000. The cost to construct the remedy is estimated to be $ 12,000. The estimated annual operation and

maintenance cost is $ 42,500. Based on thirty years operation and a 5% discount rate, the estimated present worth of operation and maintenance is $ 654,000.

The elements of the proposed remedy are as follows:

1. Continued emptying of the leachate collection tanks at the site and transporting leachate for offsite treatment and disposal.

2. Maintenance of the landfill cap.

3. Appropriate measures to limit site access.

4. Long-term annual targeted residential well monitoring under the guidance of the NYSDOH, with future installation and maintenance of individual well treatment units for any home(s) that becomes impacted by landfill constituents at levels above drinking water standards. Data will be evaluated annually and a determination will be completed after the first three years to determine if a change in sampling frequency is necessary. More frequent follow-up sampling will be performed for any well found to contain any site-related compounds.

5. Since the remedy results in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. This program will include an annual review to evaluate the effectiveness of the selected remedy as a component of the normal operation and maintenance for the site.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- Document repositories were established for public review of project related material.

- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.

- Fact sheets were distributed to the mailing list on June 16, 1993 and November 18, 1993 to provide residents with an update on the status of the remedial program at the site.

- A Citizen Participation Plan was prepared in February, 1994 and placed in the document repositories.

- A fact sheet was distributed in March 1994 to describe the RI Work Plan.
- An informational meeting was held on March 15, 1994 to present the RI Work Plan.
- A fact sheet was distributed in April 1995 to provide residents with an update on the RI, including additional field work to be done in 1995.
- A fact sheet summarizing the RI Report was distributed in December 1995.
- A fact sheet announcing the availability of the PRAP and the public meeting was distributed on July 17, 1996.
- A public comment period was held from July 19, 1996 through August 19, 1996 to receive public input on the PRAP.
- A public meeting was held on July 30, 1996 to present the PRAP and discuss and answer questions regarding the proposed remedy and the RI/FS.
- In September 1996 a Responsiveness Summary was prepared and made available to the public in this ROD to address the comments received during the public comment period for the PRAP.

Table 1A
Nature and Extent of Contamination
Surface Soils

Busy Bee Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Surface Soils	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	Benzo(a)pyrene	ND-0.077	2 of 13	0.061
	Pest/PCBs	None exceeded SCGs			
	Metals	Aluminum	11,500-23,000	1/13	21,800
		Arsenic	10.1-37	2/13	21.1
		Barium	84.5-392	1/13	300
		Beryllium	0.32-1.7	1/13	1.3
		Cadmium	2.0-4.2	13/13	1.0
		Cobalt	10.6-40.9	2/13	30
		Copper	10.1-30.4	4/13	25
		Lead	17-66.5	3/13	43.6
		Magnesium	2,460-5,540	8/13	4170
		Manganese	594-8,880	1/13	4,390
		Mercury	ND-0.15	2/13	0.1
		Nickel	19.2-64.1	9/13	28.2
		Thallium	ND-1.2	11/13	0.43
		Zinc	67.9-141	1/13	139

Data for thirteen samples. Compounds listed are those which exceeded surface soil standards, based on site background concentrations.

Table 1B
Nature and Extent of Contamination
Surface Soils
Henry Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Surface Soils	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND-0.69	1 of 6	0.224
		Chrysene	ND-1.6	1/6	0.4
		Benzo(a)pyrene	ND-2.5	2/6	0.061
		Dibenzo (a,h)anthracene	ND-0.12	1/6	0.014
	Pest/PCBs	None exceeded SCGs			
		Arsenic	11.9-76.3	2/6	21.1
		Barium	103-482	1/6	300
		Cadmium	2.8-9.1	6/6	1.0
		Cobalt	7.6-34.8	1/6	30
		Copper	20.3-91.4	3/6	25
		Iron	28,500-82,800	3/6	41,100
		Lead	10.3-335	1/6	43.6
		Magnesium	2,530-6,640	5/6	4170
		Manganese	442-7,830	2/6	4,390
		Mercury	ND-1.8	2/6	0.1
		Nickel	27.1-54.1	4/6	28.2
		Thallium	ND-1.8	4/6	0.43
		Zinc	79.2-174	2/6	139

Data for six samples. Compounds listed are those which exceeded surface soil standards, based on site background concentrations.

Table 2A
Nature and Extent of Contamination
Surface Water
Busy Bee Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Surface Water	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	None exceeded SCGs			
	Pest/PCBs	None exceeded SCGs			
	Metals	Aluminum	56.8-44,600	3 of 17	varies*
		Cadmium	ND-6.5	4/17	varies
		Copper	ND-43.2	7/17	varies
		Iron	196-53,500	16/17	300
		Lead	ND-75.8	3/17	varies
		Silver	ND-0.3	1/17	0.1
		Zinc	5.4-220	6/17	varies

Data from seventeen samples (fifteen locations, residential pond and spring sampled twice). Compounds listed are those which exceeded surface water standards.
* Some SCGs for surface water vary due to hardness and/or class of specific samples.

Table 2B
Nature and Extent of Contamination
Surface Water
Henry Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Surface Water	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	None exceeded SCGs			
	Pest/PCBs	None exceeded SCGs			
	Metals	Iron	3,060-5,480	3 of 3	300

Data from three samples. Compounds listed are those which exceeded surface water standards.

Table 3A
Nature and Extent of Contamination
Sediments
Busy Bee Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Sediments	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	None exceeded SCGs			
	Pest/PCBs	Heptachlor	ND-0.0044 ($4.4x10^{-3}$)	1 of 2	0.0008 ($8x10^{-4}$)
	Metals	Arsenic	7.3-12.6	2/2	6
		Cadmium	1.9-3.7	2/2	0.6
		Copper	18.2	½	16
		Iron	21,600-28,000	2/2	20,000
		Nickel	18.7-31.1	2/2	16

Compounds listed are those which exceeded "lowest effect guidance values."

Table 3B
Nature and Extent of Contamination
Sediments
Henry Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Sediments	Volatile Organic Compounds (VOCs)	None exceeded SCGs			
	Semivolatile Organic Compounds (SVOCs)	None exceeded SCGs			
	Pest/PCBs	None exceeded SCGs			
	Metals	Arsenic	15.6	1 of 1	6
		Cadmium	2.3	1/1	0.6
		Copper	17.5	1/1	16
		Iron	27,300	1/1	20,000
		Manganese	1,430	1/1	460
		Nickel	20.5	1/1	16

Compounds listed are those which exceeded "lowest effect guidance values."

Table 4A
Nature and Extent of Contamination
Groundwater

Busy Bee Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Vinyl chloride	ND-4	1 of 40	2
		1,1-dichloroethene	ND-11	1/40	5
		1,2-dichloroethene	ND-36,000	17/40	5
		1,1,1-trichloroethane	ND-23	3/40	5
		Trichloroethene	ND-4,300	12/40	5
		1,1,2-trichloroethane	ND-12	1/40	5
		Tetrachloroethene	ND-9	1/40	5
		Toluene	ND-10	1/40	5
	Semivolatile Organic Compounds (SVOCs)	Pentachlorophenol	ND-11	1/40	1
	Pest/PCBs	none			
	Metals	Antimony	ND-16.6	1/40	3
		Barium	12.8-1,510	1/40	1,000
		Beryllium	ND-14.2	1/40	3
		Cadmium	ND-41.9	1/40	10
		Chromium	ND-259	1/40	50
		Copper	ND-1,200	1/40	200
		Iron	39.5-463,000	33/40	300
		Lead	ND-1670	2/40	15
		Magnesium	1,490-95,100	2/40	35,000
		Manganese	3.4-12,900	8/40	300
		Zinc	3.4-1,640	1/40	300

Data from total of three rounds of sampling site monitoring wells. Compounds listed are those which exceeded groundwater standards.

Table 4B
Nature and Extent of Contamination
Groundwater
Henry Landfill

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Acetone	ND-160	1 of 22	50
		Benzene	ND-3	6/22	0.7
		Chlorobenzene	ND-7	2/22	5
	Semivolatile Organic Compounds (SVOCs)	none			
	Pest/PCBs	none			
	Metals	Antimony	ND-89.3	4/22	3
		Arsenic	ND-530	4/22	
		Barium	69.4-5,950	2/22	1,000
		Beryllium	ND-45	3/22	3
		Cadmium	ND-63.7	1/22	10
		Chromium	ND-2,720	1/22	50
		Copper	ND-854	2/22	200
		Iron	34.9-1,080,000	22/22	300
		Lead	ND-406	4/22	15
		Magnesium	9,650-367,000	12/22	35,000
		Manganese	32.8-75,100	17/22	300
		Zinc	4.6-2,860	4/22	300

Data from total of three rounds of sampling site monitoring wells. Compounds listed are those which exceeded groundwater standards.

Table 5A
Nature and Extent of Contamination
Busy Bee Landfill Waste

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION (ppm)
Landfill Waste	Volatile Organic Compounds (VOCs)	Acetone	1.3
		2-Butanone	1.1
		Benzene	0.085
		Toluene	1.7
		Xylene	5.1
	Semivolatile Organic Compounds (SVOCs)	4-Methylphenol	6.7
		Butylbenzylphthalate	52
		Bis(2-ethylhexyl) phthalate	380
		Di-n-octylphthalate	620
	Pest/PCBs	Heptachlor epoxide	0.090
		Aroclor 1254	11
	Metals	Antimony	108
		Arsenic	21.9
		Barium	2,690
		Cadmium	48.7
		Chromium	163
		Copper	1,070
		Lead	3,910
		Mercury	1.7
		Nickel	437
		Zinc	6210

Data for one sample from a piezometer boring into waste.
Compounds listed are those present at elevated concentrations.

Table 5B
Nature and Extent of Contamination
Henry Landfill Waste

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)
Landfill Waste	Volatile Organic Compounds (VOCs)	Acetone	0.22
		2-Butanone	0.34
	Semivolatile Organic Compounds (SVOCs) (SVOCs)	Phenol	0.9
		4-Methylphenol	3.3
	Metals	Cadmium	4.2
		Chromium	25.8
		Copper	45.9
		Lead	61.9
		Mercury	0.27
		Nickel	38
		Zinc	811

Data for one sample from a piezometer boring into Henry Landfill waste.
Compounds listed are those present at elevated concentrations.

Table 5C
Nature and Extent of Contamination
Landfill Waste, Unreported Waste Area

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)
Waste	Metals	Cadmium	2.5
		Chromium	24.3
		Copper	31.9
		Lead	90.2
		Mercury	0.56
		Nickel	29.7
		Zinc	178

Data for one sample from the unreported waste area.
Compounds listed are those present at elevated concentrations.

Table 6A
Nature and Extent of Contamination
Busy Bee Landfill Leachate

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb) **
Leachate	Volatile Organic Compounds (VOCs)	Methylene chloride	ND-2	0 of 3	5
		Toluene	ND-3	0/3	5
		Chlorobenzene	2	0/3	20
		Ethylbenzene	ND-11	1/3	5
	Semivolatile Organic Compounds (SVOCs)	2,4-Dimethylphenol	ND-4	0/3	50
		Naphthalene	ND-1	0/3	10
		Diethylphthalate	ND-2	0/3	50
		Carbazole	ND-5	0/3	50
		Bis(2-ethylhexyl)phthalate	ND-9	1/3	4
	Pest/PCBs	Beta-BHC	ND-0.029	0/3	50
	Metals	Aluminum	158-449	3/3	100
		Antimony	ND-1.4	0/3	3
		Arsenic	3.4-9.4	0/3	50
		Barium	123-464	0/3	1,000
		Beryllium	ND-1.4	0/3	3
		Cadmium	ND-2.7	-/3	varies*
		Chromium	ND-64.6	1/3	50
		Cobalt	ND-10.7	2/3	5
		Copper	4.9-10.3	-/3	varies
		Iron	872-43,800	3/3	300
		Lead	ND-6.8	-/3	varies
		Magnesium	19,600-44,800	1/3	35,000
		Manganese	2,650-6,640	3/3	300
		Mercury	ND-0.18	0/3	2
		Nickel	29.5-168	-/3	varies
		Selenium	ND-22	1/3	10
		Silver	ND-0.4	0/3	50
		Thallium	ND-2.8	0/3	4
		Vanadium	ND-1.7	0/3	14
		Zinc	20.3-38.8	0/3	300

Data from three leachate samples, two obtained from leachate collection tanks, one from a seep. All compounds detected are listed.
**No SCGs exist for leachate. SCGs are given for surface water for comparison purposes.
* Some SCGs for surface water vary due to hardness and/or class of specific samples.

Table 6B
Nature and Extent of Contamination
Henry Landfill Leachate

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Leachate	Volatile Organic Compounds (VOCs)	Chloroethane	ND-4	0 of 4	5
		Acetone	5-200	1/4	50
		1,2-dichloroethene	ND-4	0/4	5
		2-Butanone	ND-170	1/4	50
		Benzene	ND-8	2/4	0.7
		4-Methyl-2-pentanone	ND-9	0/4	50
		Toluene	ND-13	1/4	5
		Chlorobenzene	ND-19	0/4	20
		Ethylbenzene	ND-22	3/4	5
		Styrene	ND-2	0/4	50
		Xylene	ND-41	3/4	5
	Semivolatile Organic Compounds (SVOCs)	1,4-dichlorobenzene	ND-4	0/4	20
		Naphthalene	ND-8	0/4	10
		2-methylnaphthalene	ND-2	0/4	50
		Diethylphthalate	ND-4	0/4	50
	Metals	Aluminum	77.5-1,060,000	3/4	100
		Antimony	ND-42.2	1/4	3
		Arsenic	8.4-535	1/4	50
		Barium	308-84,200	2/4	1,000
		Beryllium	ND-333	2/4	3
		Cadmium	ND-3870	-/4	varies*
		Chromium	1.1-12,400	2/4	50
		Cobalt	2.9-6190	3/4	5
		Copper	2.6-34,900	-/4	varies
		Iron	14,200-29,800,000	4/4	300
		Lead	2.1-41,000	-/4	varies
		Magnesium	39,400-2,070000	4/4	35,000
		Manganese	2,990-352,000	4/4	300
		Mercury	ND-34.3	2/4	2
		Nickel	7.4-14,700	-/4	varies
		Silver	ND-344	2/4	50
		Vanadium	ND-8,600	2/4	14
		Zinc	39-135,000	2/4	300

Data from four leachate samples: one each from leachate collection tank, piezometer, seep, and a test pit. All compounds detected are listed.
**No SCGs exist for leachate. SCGs are given for surface water for comparison.* Some SCGs for surface water vary due to hardness and/or class of specific samples.

Table 7
Remedial Alternative Costs

Remedial Alternative		Capital Cost	Annual O&M	Present Worth O & M*	Total Present
Alternative I:	No Action	$ 0	$ 0	$ 0	**$ 0**
Alternative II:	OU 1: Institutional Actions:	0			
	Cap Maintenance		2,500	38,400	38,400
	On Site Well Monitoring		10,000	154,000	154,000
	Leachate Management		19,700	303,000	303,000
	OU 3: Institutional Actions:				
	Residential Well Monitoring	0	10,000	154,000	154,000
	Individual Treatment Units (if required)	12,000	300	4,600	16,600
	Total:	12,000	42,500	654,000	**666,000**
Alternative III:	OU 1: Institutional Actions:	0			
	Cap Maintenance		2,500	38,400	38,400
	On Site Well Monitoring		10,000	154,000	154,000
	Leachate Management		19,700	303,000	303,000
	OU 3: Groundwater:				
	Collection and Treatment	980,000	29,200	448,900	1,428,900
	Residential Well Monitoring	0	13,200	204,000	204,000
	Individual Treatment Units (if required)	12,000	300	4,600	16,600
	Total:	992,000	74,900	1,152,900	**2,144,900**
Alternative IV:	OU 1: No Action:	0	0	0	0
	OU 3: Water Supply Extension:	657,000	**9,800	**151,000	**657,000
	Total:	$657,000	$ **9,800	$ **151,000	**$ **657,000**

* Present worth costs based on 30 year operation at 5% discount

** O & M costs for a water supply system would be the responsibility of the supplier and/or residents.

APPENDIX A

RESPONSIVENESS SUMMARY

PATTON'S BUSY BEE DISPOSAL SITE

Proposed Remedial Action Plan
Alfred (T), Allegany County
Hartsville (T), Steuben County
Site No. 9-02-014

The Proposed Remedial Action Plan (PRAP) for Patton's Busy Bee Disposal Site was prepared by the New York State Department of Environmental Conservation (NYSDEC) with input from the New York State Department of Health (NYSDOH) and issued to the public on July 18, 1996. This Plan outlined the basis for the recommended remedial action at Patton's Busy Bee Disposal Site and provided opportunities for public input prior to final remedy selection. The selected remedy consists of continued maintenance of the leachate management system, maintenance of the landfill cap, and appropriate measures to limit site access. Additionally, the remedy includes long-term annual targeted residential well monitoring under the guidance of NYSDOH, with future installation and maintenance of individual well treatment units for any home(s) that becomes impacted by landfill constituents at levels above drinking water standards. Data will be evaluated in three years to determine if a change in residential well sampling frequency is necessary.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on July 30, 1996, and included a presentation of the Remedial Investigation (RI) as well as a discussion of the PRAP. The meeting provided an opportunity for citizens to discuss their concerns and to ask questions and comment on the proposed decision. The comments have been integrated into the Administrative Record for this site. The public comment period closed on August 19, 1996.

This Responsiveness Summary responds to the questions and comments raised at the July 30, 1996 public meeting as well as to written comments received by NYSDEC. The following are the comments received at the public meeting, with responses of the NYSDEC and NYSDOH:

Question: How deep were the Busy Bee Landfill trenches?

NYSDEC Response: The unlined trenches at the Busy Bee Landfill are about twelve feet deep. The lined, "remedial" trench is about twenty feet deep.

Question: What is the direction of groundwater flow?

NYSDEC Response: Groundwater flow in the upper sandstone units is generally toward the southwest. This flow zone "daylights" above the level of existing residential wells. Groundwater flow in the lowest sandstone unit from which we collected data is toward the northwest. This deeper flow zone daylights at about the 2100 foot elevation level part way down the hill.

Question: I heard that TCE never degrades. If that is true, will it come out of the hillside at the gravel pit? How long will it take for TCE to disappear or degrade at this site? How fast will TCE flow in the groundwater? Will it degrade before it hits Canacadea Creek?

NYSDEC Response: Trichloroethene (TCE) degrades to dichloroethene (DCE) and other associated breakdown products. The rates of degradation vary from location to location depending on subsurface conditions. Research has shown that it can take from 34 days to 1,150 days for TCE to degrade to DCE (Principles of Contaminant Hydrogeology, Palmer, 1992, Lewis Publishers, Inc., Chelsea, Mi.). DCE, in turn, degrades to other intermediary chlorinated compounds, and ultimately, to carbon dioxide. Several processes contribute to the fate and transport of contaminants in groundwater, including contaminant degradation, matrix diffusion (or absorption into the small pores spaces of the rock), advection, dispersion and diffusion of the contaminant compounds in groundwater. The effects of these processes combined with the low concentrations observed in the underlying rock, and the fact that these bedrock layers outcrop close to the top of the hill, make it very unlikely that any of these compounds could be detected in groundwater at the gravel pit or Canacadea Creek (over 3,000 feet away to the west and more than 300 feet lower than the lowest bedrock zone studied).

Question: What is the relationship between the leachate and what is getting into the groundwater?

NYSDEC Response: The lined "remedial" trench was designed to collect leachate from all four trenches and direct it to buried tanks. As long as the collection tanks are emptied regularly, the collection system appears to be effective in intercepting a substantial volume (but not all) of leachate and preventing it from entering the groundwater system. If the leachate collection system is not maintained, it is likely that a significant volume of leachate can migrate into the groundwater system and increase contaminant levels.

Question: How often will leachate be removed from the tanks and who will do it? Will the same person be responsible for groundwater monitoring? How can the State guarantee that leachate removal will continue? What happens after 30 years?

NYSDEC Response: The Record of Decision (ROD) will contain a requirement for continued leachate management at the site. Legally, LaVerne Patton remains responsible for this effort, although he has not been meeting this commitment. NYSDEC will continue its efforts to identify viable responsible parties to implement the remedy described in the ROD, including the long-term operation and maintenance of the site. In the event that these efforts to obtain responsible party participation are not successful, the NYSDEC will continue to accept this responsibility. A contractor will be retained by NYSDEC to check the leachate collection tanks regularly and empty them when necessary.

Groundwater monitoring, whether funded by private parties or the State of New York, will probably be carried out through a separate contractor. The leachate management program and groundwater monitoring will continue as long as responsible private parties remain diligent in meeting their duties and/or the State of New York allocates resources to its inactive hazardous waste site program to protect human health and the environment.

Question: It seems like the NYSDEC is saying that the $2 million estimated for Alternative III is too much to pay for remediation of the site. Is this true? Are the DEC and DOH in collusion to not spend money to address these contaminants?

NYSDEC Response: As explained in the PRAP, Alternative III involves a major construction effort with intensive, long term operation, maintenance and monitoring at significantly higher cost than Alternative II. Alternative III would provide only a minimal increase in environmental protection over Alternative II, and the NYSDEC determined that the additional cost, whether to the taxpayers of New York State or to responsible parties, would not be appropriate.

The DEC and DOH are committed to spend the necessary resources to protect human health and the environment and are also responsible for spending these resources in a responsible, cost effective manner. Based on the results of the RI, it is our judgement that the less expensive Alternative II is protective of human health and the environment and that the added $2 million for Alternative III would not be cost effective.

Question: Could residential wells be sampled annually instead of once every three years? What compounds will be analyzed for? Wouldn't it be better to stagger the testing over the course of a year than to do them all at once?

NYSDEC Response: At the request of several residents, the frequency of residential well sampling will be changed from once every three years as proposed in the PRAP to annually. This change was made in the ROD. The NYSDEC and NYSDOH will require annual targeted residential well sampling. A three-year review will be completed to evaluate whether a change in sampling frequency is warranted. As with any of the residential sampling programs carried out in New York, more frequent follow-up sampling will be performed for

any well found to contain any site-related compounds. There is no advantage to staggering the sampling, and logistically more difficult. Residential well water likely will be analyzed for volatile organic compounds and metals.

Question: When does the DEC contract with the consultant end? When will someone else be contracted with to continue doing the work?

NYSDEC Response: Once the ROD is signed, the NYSDEC RI/FS work assignment contract requires no additional support from URS Consultants. When all site-related invoices have been paid by NYS to URS, the contract will close out.

The NYSDEC has already initiated the process to procure a contractor for continuing leachate removal and disposal. The contract will be completed as soon as possible so no interruption in leachate management will occur. Leachate management paid for by the Superfund will proceed while NYSDEC continues its search for PRPs.

Question: What is the status of the Superfund and the new Environmental Bond Act?

NYSDEC Response: The 1986 Environmental Quality Bond Act (a.k.a. Superfund) provided the NYSDEC with $1.1 billion for remediation of hazardous waste sites. Of this total, $606 million has been obligated (either expended or under contract), leaving $494 million uncommitted as of March 31, 1996.

The new "Clean Water, Clean Air" Bond Act to be placed before NYS voters this November, would provide $1.75 billion for the following categories of projects:

Clean Water Program - $790 million (municipal treatment improvements, etc);
Safe Drinking Water Program - $355 million (municipal drinking water systems);
Solid Waste Initiatives - $175 million (landfill closures);
Municipal Environmental Restoration Projects - $200 million (to clean up abandoned "brownfields" sites for reuse);
Air Quality Projects - $230 million (state investments in clean technologies).

More detailed information on the new Clean Water, Clean Air Bond Act is available from local State legislators.

Question: Is there enough money to implement the remedy and carry out the long term O&M?

NYSDEC Response: At this time, there is adequate money in the Superfund to perform this work should no private parties be found to meet this responsibility. There is

uncertainty concerning the long term availability of the Superfund that will have to be addressed by the public and its lawmakers.

Question: What effect will public comments have on the proposed plan?

NYSDEC Response: The residents' request for annual residential well sampling will be included as a detailed requirement in the ROD. There were no other specific requests for modifications to the PRAP.

Three letters were received regarding the PRAP. They will be filed with the Administrative Record for the site.

A letter was received from the Allegany County Department of Health with the following concerns and comments:

1. **Will sufficient State funds be available for thirty years' operation and maintenance?**

NYSDEC Response: At this time, there are sufficient funds available. However, we cannot be absolutely sure that additional funding will be made available by the State of New York when the 1986 Environmental Quality Bond Act funds supporting remediation of inactive hazardous sites are depleted.

2. **Does the DEC see any need to install on-site monitoring wells to the depth of the shallowest residential wells to monitor for groundwater contamination?**

NYSDEC Response: Results of the RI show a significant decrease in groundwater contaminant levels with increasing depth and distance from the Busy Bee Landfill. The low level of contaminants seen in the deepest bedrock groundwater zone don't support the installation of any more monitoring wells. The existing wells will be monitored, along with selected residential wells, and if monitoring results indicate increased contaminant migration, this decision will be re-evaluated.

3. **The Allegany County Health Department would like to see a full round of residential well sampling to coincide with initial on-site sampling to form a complete set of baseline data.**

NYSDEC Response: Arrangements will be made to do this.

4. **The Health Department would like to see all 16 residential wells sampled annually for at least the first three to five years, to be scaled back after that time if justified by sample results.**

NYSDEC Response: Selected residential wells, not necessarily including all 16 previously sampled wells, will be sampled annually for the first three years. At that time, the data will be evaluated to determine if a change in sampling frequency is necessary. As with any of the residential sampling programs carried out in New York, more frequent follow-up sampling will be performed for any residential well found to contain any site-related compounds.

A letter was received from an individual requesting that the frequency of residential well sampling be increased, possibly to semi-annual analysis.

NYSDEC Response: As discussed earlier in this Responsiveness Summary, targeted residential well sampling initially will take place annually. Data will be reviewed in three years to determine if a change in sampling frequency is necessary. If site-related compounds are confirmed in any residential well, more frequent follow-up sampling will be performed.

A letter was received from a local resident in support of the recommended remedy. The writer suggests that all residential wells be sampled in the first year of monitoring. He also recommends that local individuals be involved in site monitoring, to assure local residents that the long-term monitoring programs outlined in the ROD are being carried out.

NYSDEC Response: The Remedial Action Plan has been revised to include sampling selected residential wells annually for the first three years, with an evaluation at that time to determine if a change in sampling frequency is necessary (see earlier discussions). Local involvement in long-term monitoring may be possible; the NYSDEC will contact local officials when the O&M manual is prepared.

APPENDIX B

ADMINISTRATIVE RECORD

The following documents constitute the Administrative Record for Patton's Busy Bee Disposal Site Record of Decision:

Responsiveness Summary for Remedial Investigation/Feasibility Study and Proposed Remedial Action Plan (Appendix A of ROD), September 1996.

Letter dated August 17, 1996 from Peter S. Finlay regarding the PRAP.

Letter dated August 16, 1996 from James F. Booker regarding the PRAP.

Letter dated August 5, 1996 from the Allegany County Health Department regarding the PRAP.

Proposed Remedial Action Plan, Patton's Busy Bee Disposal Site, NYSDEC, July 1996.

Phase II Feasibility Study, Patton's Busy Bee Disposal Site, URS Consultants, June 1996

Final Report, Remedial Investigation, Patton's Busy Bee Disposal Site, URS Consultants, November 1995.

Citizen Participation Plan for the Remedial Investigation/Feasibility Study at the Patton's Busy Bee Disposal Site, URS Consultants, February 1994.

Remedial Investigation/Feasibility Study Health and Safety Plan, Patton's Busy Bee Disposal Site, URS Consultants, December 1993.

Remedial Investigation/Feasibility Study Work Plan, Quality Assurance Project Plan and Field Sampling Plan, Patton's Busy Bee Disposal Site, URS Consultants, February 1994.

Project Management Work Plan, Amendment No. 2, Patton's Busy Bee Disposal Site, URS Consultants, May 1995.

Project Management Work Plan, Amendment No. 1, Patton's Busy Bee Disposal Site, URS Consultants, May 1994.

Project Management Work Plan, Patton's Busy Bee Disposal Site, URS Consultants, December 1993.

Engineering Investigations at Inactive Hazardous Waste Sites, Preliminary Site Assessment, Patton's Busy Bee Disposal Site, URS Consultants, December 1990.

Certification Report, Final Capping, Patton's Busy Bee Disposal Service, JEB Consultants, November 1990.

Addendum to Supplemental Hydrogeological Investigation, Patton's Busy Bee Disposal Service, JEB Consultants, February 1988.

Hydrogeologic Investigation Report, Patton's Busy Bee Disposal Service, JEB Consultants, January 1987.

Liner Certification Report, Third Section - Remedial Trench, Patton's Busy Bee Disposal Service, JEB Consultants, November 1986.

Order on Consent No. 85-55, January 1986.

Order on Consent No. 87-137, November 1987.

NYSDEC, Division of Hazardous Waste Remediation Technical and Administrative Guidance Memoranda 4000-4053.

NYSDEC, Division of Water Technical and Operational Guidance Series

New York State Environmental Conservation Law 6 NYCRR Part 375, May, 1992.

National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, 1990.