

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Robintech/Compudyne, Inc. Site

Site Number 7-54-007

Town of Owego

Tioga County, New York

Record of Decision

March 1995



New York State Department of Environmental Conservation
GEORGE E. PATAKI, Governor

MICHAEL D. ZAGATA, Commissioner

DECLARATION STATEMENT - RECORD OF DECISION

ROBINTECH/COMPUDYNE, INC

**Inactive Hazardous Waste Site
Owego (T), Tioga County, New York
Site No.7-54-007**

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Robintech/Compudyne, Inc. inactive hazardous waste disposal 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 the Robintech/Compudyne, Inc. 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 Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Robintech/Compudyne, Inc. Site and the criteria identified for evaluation of alternatives the NYSDEC has selected Groundwater Withdrawal and Treatment with Iterative Source Control Pumping. This remedy consists of withdrawing, treating, and disposing of groundwater at the Town of Owego Publicly Owned Treatment Works; and implementing an iterative source control pumping program in the saturated zone of the source area soils. The components of the remedy are as follows:

- Two additional recovery wells will be installed to supplement the existing recovery well. The existing recovery well was previously installed as part of an approved Interim Remedial Measure (IRM). Groundwater will be pretreated on site using the existing IRM treatment system and discharged to the Town of Owego's Publicly Owned Treatment Works (POTW). A pump test will be performed to determine the optimum flow rate for groundwater recovery.

- Contaminated saturated soils located beneath the source area will be remediated by an iterative source control pumping. The iterative source control pumping is defined as phased groundwater withdrawal from discrete zones within the overburden aquifer immediately downgradient of the contaminated source area. By slightly increasing the rate of groundwater flow through the highly contaminated source area, solubilization/dissolution of the chemicals will occur. The compounds of concern would be flushed from the contaminated soil. The contaminated groundwater will be pumped from the recovery well and will be pretreated on-site using the existing IRM treatment system and discharged to the Town of Owego's POTW. A high increase in the groundwater flow rate (pumping rate) could result in the downward movement of contamination, due to the density of the chemicals of concern, and would not travel to the recovery well. A pump test will be performed to establish the optimum pumping rate and performance criteria will be determined for this system during the remedial design phase. After remediation of the saturated overburden soils, the need and feasibility of remediating the bedrock aquifer will be evaluated.
- Confirmatory sampling will be performed on soil and groundwater to determine the effectiveness of the groundwater recovery wells and the iterative soil flushing process.
- Since the remedy results in hazardous waste remaining untreated at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored. this long term monitoring program will be a component of the operations and maintenance for the site.
- A possible impact of metals to a wetland immediately south of the facility has been identified. An additional investigation will be undertaken to determine whether the Robintech/Compudyne Site is a possible source of the contamination and if other sources exist. If it is confirmed that there is an impact attributed to Robintech/Compudyne, the wetlands will undergo a Remedial Investigation/Feasibility Study as a separate operable unit.

New York State Department of Health Acceptance

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

Declaration

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

3/23/95
Date


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

TABLE OF CONTENTS

SECTION	PAGE
1: Site Description	4
2: Site History	4
2.1 Operational/Disposal History	4
2.2 Remedial History	7
3: Current Status	7
3.1 Summary of Remedial Investigation	7
3.2 Interim Remedial Measures	9
3.3 Summary of Human Exposure Pathways	10
3.4 Summary of Environmental Exposure Pathways	10
4: Enforcement Status	11
5: Summary of Remediation Goals	11
6: Summary of the Evaluation of Alternative	11
6.1 Description of Remedial Alternatives	12
6.2 Evaluation of Remedial Alternatives	14
7: Summary of the Selected Alternative	17
8: Highlights of Community Participation	18
 Figures	
- Site Location Map	5
- Site Map	6
- Shallow Groundwater Contamination Site Map.	20
- Groundwater Recovery Well Locations	21
 Tables	
- Remedial Alternative Costs	22
 Appendix	
- Appendix A: Responsiveness Summary	23
- Appendix B: Administrative Record	24

SECTION 1: SITE LOCATION AND DESCRIPTION

The Robintech/Compudyne site is located at 1160 Taylor Road in the Town of Owego, Tioga County, New York and is Site No. 7-54-007. Hadco Corporation (Hadco) maintains and operates a large manufacturing facility on the site. The site occupies a property of approximately 17.3 acres which is bordered to the south by a municipal sewage treatment plant, and to the east by Barnes Creek. The site is located approximately one half mile north of NY Route 17, and NY Route 17C. A wetland is located south of the site, and the Susquehanna River is located approximately one half mile south of the site as shown by the site maps (Figures 1&2).

The land to the west of the site is undeveloped while the land to the north and east has been developed for industrial use. Loral Corp. (formerly IBM), site number 7-54-006 (Class 4), owns and operates a large facility east of the Hadco facility. In addition, the Broadway Complex, site number 7-54-013 (Class 2a), which is also located immediately east of the Hadco facility is leased by Loral Corp. A complex of buildings referred to as the Victory Plaza is located northeast of the site.

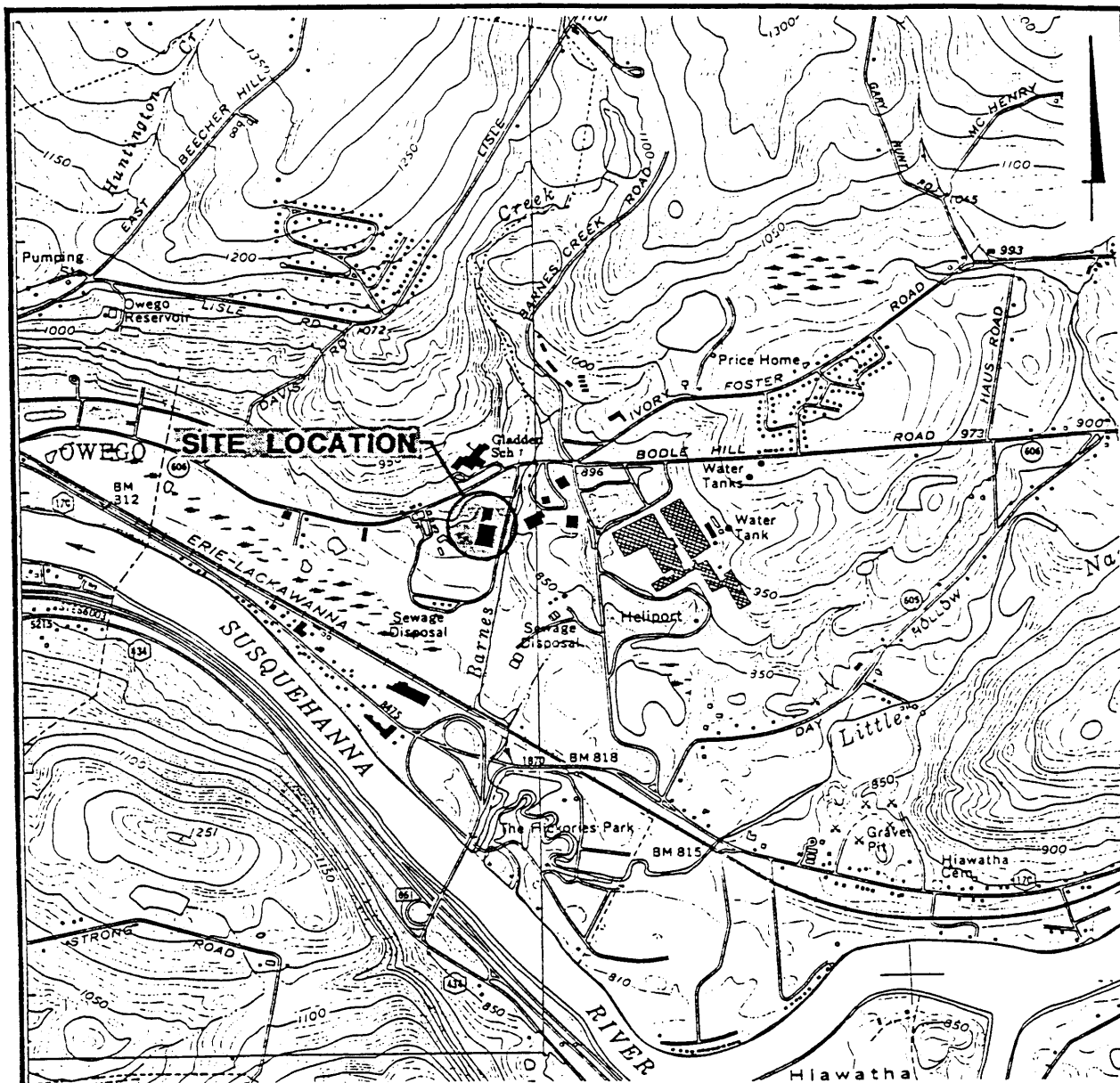
Operable Unit No. 1, which is the subject of this ROD, consists of the Robintech/Compudyne main plant site. An Operable Unit represents a discrete portion of the remedy for a site, which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from the contamination present at a site. A second potential operable unit for this site is described in Section 2.2 below.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The original property was subdivided from the Taylor family farm in 1956 and sold to Mr. George Warneke. He sold the property to the Owego Development Company which developed this and surrounding properties for industrial use. The property was then leased to Mutual Design which operated the first manufacturing facility at this site through 1970. The organization which owned and operated this facility from 1970 through 1979 was Robintech, Inc. During this period, Robintech expanded the facility in 1975 and again in 1977. The Robintech facility and the original 3.6 acre parcel of land it occupied were purchased by Hadco in 1979. The size of the site was increased to its current size of 17.3 acres through the purchase of two adjacent parcels of land in 1981 (4.5 acres) and in 1984 (9.2 acres). Since acquiring the site, Hadco has expanded the facility five times, including two expansions in 1983, an addition in 1984, another in 1985 and most recently in 1988. A separate building was also constructed south of the main facility to house an on-site biological wastewater treatment system.

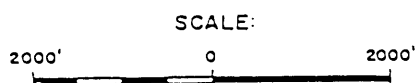
FIGURE 1



ROBINTCH/COMPUDYNE, INC. SITE
AND VICINITY
OWEGO, NEW YORK

CONTOUR INTERVAL = 10 FEET

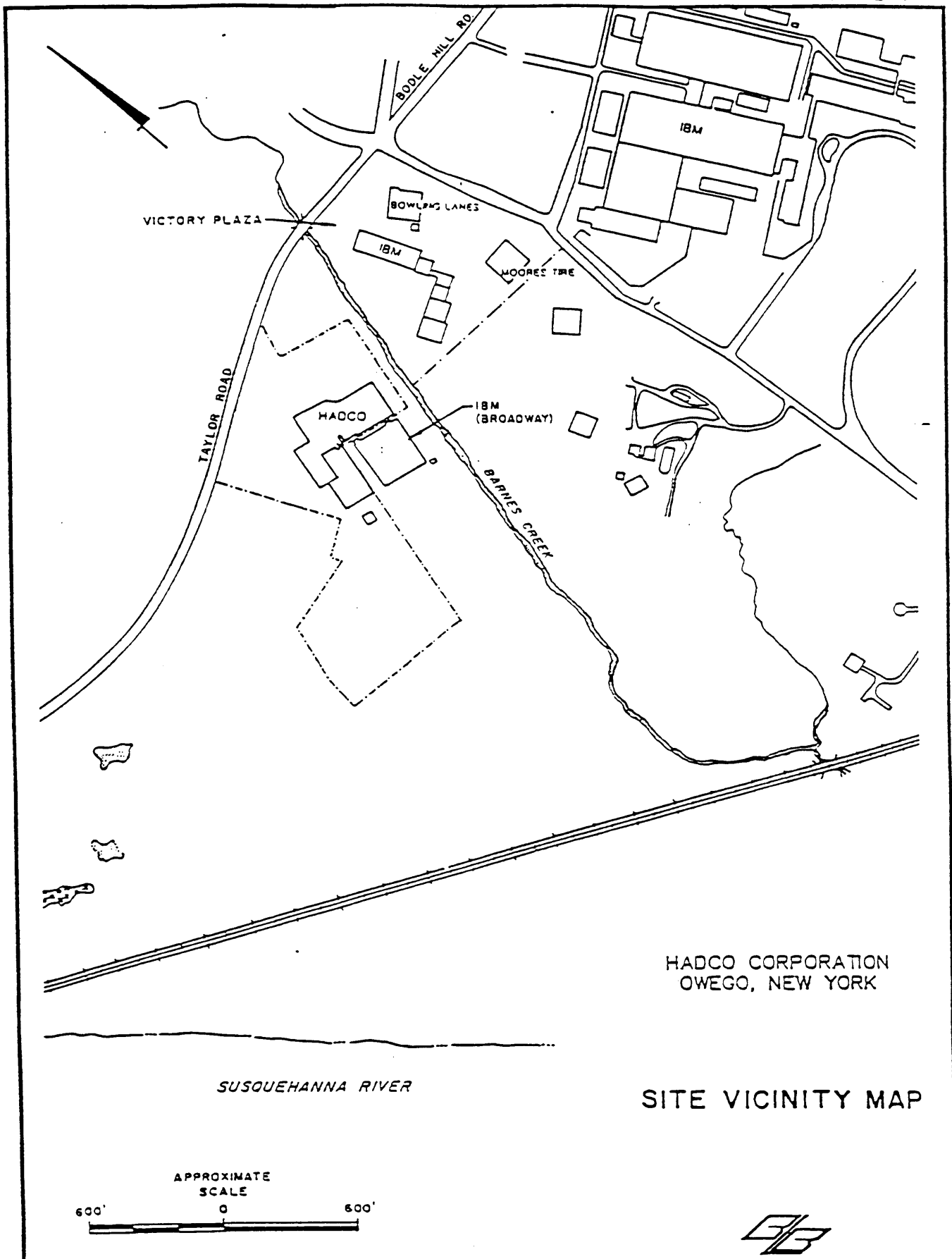
SITE LOCATION MAP



SOURCE: USGS 7 1/2 MINUTE TOPOGRAPHIC QUADRANGLE:
APALACHIN, NEW YORK, 1973



BLASLAND & BOUCK ENGINEERS, P.C.



HADCO CORPORATION
OWEGO, NEW YORK

SITE VICINITY MAP

A review of the site history had indicated that there were two areas at the site which were potential sources of hazardous waste to the subsurface environment. These potential source areas included:

- A former Robintech septic system leach field located under the wet process area of the plant, which is no longer considered a source; and
- A former Robintech chemical storage area located under the existing "clean room".

2.2: Remedial History

The previous investigations implemented at the site have included: a Preliminary Site Evaluation; a Phase I Hydrogeologic Investigation; a Phase II Hydrogeologic Investigation; and the performance of an initial RI task associated with the establishment of a site-specific Project Compound List (PCL). As part of these previous programs a network of sixteen monitoring wells was installed at the locations indicated on Figure 3. The analytical results of these previous investigations have shown dissolved volatile constituents in the groundwater underlying this site. The main plant site has been investigated as Operable Unit 1 (OU1) and is the subject of this ROD.

A possible impact of metals to a wetland immediately south of the facility has been identified. An additional investigation will be undertaken to determine whether the Robintech/Compudyne Site is a possible source of the contamination and if other sources exist. If it is confirmed that an impact to the wetlands has occurred, then the wetlands will undergo an RI/FS as a second operable unit.

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, HADCO has recently completed a Remedial Investigation/ Feasibility Study (RI/FS).

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 February 1991 and December 1992, the second phase between December 1992 and November 1993. The reports entitled "Remedial Investigation Report, HADCO Corporation, Owego, New York," dated December 1992, and "Supplemental Remedial Investigation Report," dated November 1993 have been prepared describing the field activities and findings of the RI in detail.

The RI activities consisted of the following:

- Geophysical survey to determine depth to bedrock.
- Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.

- Excavation of test pits to locate underground drainage/ leachfields.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the analytical data obtained from the RI was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Robintech/Compudyne, Inc. site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil and sediment analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals for soil.

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

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

Soils: A total of 24 soil borings were installed in or near the former chemical storage area to characterize the physical and chemical nature of the subsurface soil. Based on the analytical results of those borings, it was determined that a thin lens of unsaturated soil in an area under, and immediately adjacent to, the floor of the former chemical storage room was the primary source of volatile organic and metal contamination identified at the site. The concentrations of several volatile organic compounds, primarily trichloroethene (TCE, < 1 ppm to 17,000 ppm), 1,1,1-trichloroethane (TCA, < 1 ppm to 210 ppm), methylene chloride (< 1 ppm to 22 ppm), 1,1 dichloroethene (1,1-DCE, < 1 ppm to 45 ppm), tetrachloroethene (PCE, < 1 ppm to 110 ppm), toluene (< 1 ppm to 200 ppm), and total xylenes (< 1 ppm to 10 ppm), detected in the soil samples were at levels above Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM) 4046. The TAGM soil cleanup levels were established based on soil cleanup objectives that will be protective of human health and/or the environment.

The concentrations of most inorganic constituents detected in the soil samples from the former chemical storage area were within the common background range for central New York State. However, the range of concentrations of both chromium (13.3 ppm to 2,130 ppm) and copper (37 ppm to 2,680 ppm), detected in a thin lens of unsaturated soil in an area under, and immediately adjacent to, the floor of the former chemical storage room. Seventeen (17) of the eighteen (18) soil borings samples were above the common background levels of New York State, which range from 1.5 to 40 ppm for chromium and from 1 to 50 ppm for copper.

Groundwater: The analytical results of the groundwater samples collected from the monitoring wells located on and adjacent to the Robintech/Compudyne site indicate the presence of organic and inorganic constituents at concentrations exceeding NYSDEC Class GA Groundwater standards.

The organic constituents detected in the groundwater samples include a number of halogenated VOCs, principally TCE (< 1 ppm to 630 ppm), TCA (< 1 ppm to 690 ppm), and DCE (< 1 ppm to 23 ppm), and several aromatic hydrocarbons, including toluene (< 1 ppm to 24 ppm), ethylbenzene (< 1 ppm to 2.1 ppm), and xylenes (< 1 ppm to 2.9 ppm). The principal source of VOCs for the groundwater beneath the Robintech/Compudyne facility appears to be the contaminants in the soil identified near the former chemical storage area. Groundwater samples collected from the shallow overburden monitoring well located immediately downgradient of the former chemical storage area (MW-19, see figure 3 which indicates the distribution of

VOC's in selected groundwater wells) consistently contained the highest concentrations of TCE (up to 630 ppm). The concentrations of TCE detected in the groundwater samples collected from MW-19 were nearly 50% of the solubility of TCE in water indicating a likely source exists in the ground as a separate phase. The groundwater standard for the above noted VOC compounds is .005 ppm.

Several inorganic constituents (beryllium, 0.0056 ppm to 0.011 ppm; chromium, <1 ppm to 18.1 ppm; copper, <1 ppm to 22.5 ppm; lead, 0.004 ppm to 0.133 ppm; and zinc, 0.01 ppm to 1.628 ppm) were detected in groundwater samples at concentrations which exceed their respective NYSDEC Class GA groundwater standards. The standards for the above noted inorganics are as follows; beryllium .011 ppm, chromium .05 ppm, copper .2 ppm, lead .025 ppm, and zinc .3 ppm.

Surface Water and Sediments: The RI included the collection of surface water and sediment samples from four locations along Barnes Creek for the purpose of evaluating the potential impacts to surface water quality from the Robintech/Compudyne, site. The RI also included the collection of two sediment samples from the wetlands downgradient of the site to evaluate the potential for the site to have impacted these wetlands.

The results of the analyses performed on the surface water and sediment samples indicate that the Robintech/Compudyne site is not adversely impacting Barnes Creek. The concentrations of inorganics detected in the samples collected adjacent to and downstream of the Robintech/Compudyne site are generally consistent with the concentrations detected in the samples collected upstream. With respect to the organic compounds, TCE (<1 ppm) was detected in the upstream surface water sample, indicating a source of TCE upstream of the Robintech/Compudyne site, and only trace concentrations of several volatile constituents were detected in the sediment samples.

The results of VOC analyses performed on the wetlands sediment samples show no indication of the presence of VOCs in the sediment. The results of the inorganic analyses show concentrations of chromium ranging from 683 to 790 ppm, copper ranging from 8.3 to 162 ppm, and zinc ranging from 48 to 102 ppm. Based on these findings, this wetland will be further evaluated as described in section 2.2.

3.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are implemented at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

An IRM was implemented at the site in October 1993, to begin remediating VOCs in the groundwater downgradient of the source area. The IRM, which consists of groundwater extraction and treatment as described below, will continue to be operated as part of the final groundwater remedial alternative.

The interim groundwater extraction and treatment system consists of the following:

- Extraction of groundwater from monitoring well PW-3 at a flow rate of between 10 to 12 gallons per minute (gpm). The location of PW-3 is shown on figure 4;
- On site treatment of the extracted groundwater using a low profile, shallow tray air stripper with the necessary emission controls; and

- Discharge of treated effluent to the Town of Owego's Publicly Owned Treatment Works (POTW).

3.3 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at and around the site. A more detailed discussion of the health risks can be found in Section 5.0 of the RI Report.

An exposure pathway is the process by which an individual comes 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.

Potential exposure pathways for this site include:

1. Exposure to contaminated on-site soils via dermal contact and the inhalation of organic vapors and/or airborne particulates released from these on-site soils. The exposure pathways for on-site soil contamination were considered potentially complete only for on-site excavation workers.
2. Exposure to contaminated groundwater via ingestion, dermal contact, and the inhalation of organic vapors released from the groundwater. The exposure pathways for groundwater were considered potentially complete only for off-site residents that might use the contaminated groundwater and on-site excavation workers that might encounter contaminated groundwater.

Downgradient private wells were sampled and no site contamination was detected. Additional monitoring wells, which will also serve as early warning wells, are planned for installation between the site and the private wells during the investigation of the wetland. The expanded groundwater recovery and treatment provided for in the proposed remediation should effectively contain and clean-up the groundwater contamination and substantially reduce the possibility of any future impact to the private wells. A monitoring program will confirm this.

3.4 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Habitat Based Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure have been identified.

- Barnes Creek was investigated and only trace contaminants were identified (TCE < 1 ppm), therefore remediation will not be necessary.
- A potential impact to the Susquehanna River should contaminated groundwater continue to migrate from this site.

- Elevated levels of inorganics, specifically chromium (up to 790 ppm) and copper (up to 162 ppm), have been detected in the regulated wetland located south of the facility. As stated previously, the wetland will be further investigated to determine whether the Robintech/Compudyne site has impacted, or has contributed to an impact, to this wetland. If an impact is attributed to this site it will be addressed as a separate operable unit.

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 NYSDEC and Hadco Corp. entered into a Consent Order on February 8, 1989. The Order obligates the responsible party to implement an RI/FS remedial program. Upon issuance of this Record of Decision the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

The following is the chronological enforcement history of this site.

<u>Date</u>	<u>Index No.</u>	<u>Subject of Order</u>
2/8/89	A701518809	RI/FS
3/31/93	A701518809 (Modified)	IRM

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. These goals are established under the overall goal of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

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

The goals selected for this site are:

- Reduce, control, or eliminate the contamination present within the soils on site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the soil to the groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Robintech/ Compudyne Inc. site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Focused Feasibility Study, Robintech/ Compudyne, Inc. Site," July 1994. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils and groundwater at the site.

Based on the results of a preliminary screening, the following remedial alternatives for these two media were retained for detailed evaluation:

■ Alternative 1: No Action

Capital Cost	\$ 0
Annual O&M	\$ 15,000
Present Worth	\$ 230,000

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. Under this alternative, the site would remain in its present condition, and human health and the environment would not be provided any additional protection.

The no action alternative would not use any remedial technologies for the treatment of soil or groundwater. The site would remain in its current condition, the IRM would continue, and no effort would be made to change the current site conditions. However, a groundwater monitoring program would be implemented. To effectively monitor the groundwater beneath and in the vicinity of the site, select existing wells would be sampled on a semi-annual basis and analyzed for target compound list VOCs, chromium, copper, lead, and zinc.

■ Alternative 2: Groundwater Withdrawal and Treatment

Capital Cost	\$ 159,585
Annual O&M	\$ 121,248
Present Worth:	\$ 2,023,167

This alternative would consist of withdrawing groundwater using extraction wells, pretreating the groundwater on-site and then discharging the treated groundwater to the sanitary sewer for final treatment at the Town of Owego POTW. Under this alternative, existing on site IRM well PW-3, and new downgradient overburden and bedrock wells located near the southern property boundary would be pumped.

■ Alternative 3 Soil Vapor Extraction and Groundwater Withdrawal and Treatment

Capital Cost	\$ 910,507
Annual O&M	\$ 121,248
Present Worth	\$ 2,774,089

This alternative would consist of withdrawing, treating, and disposing of groundwater at the Town of Owego POTW; and implementing soil vapor extraction (SVE) technology in the unsaturated zone of the contaminated source area soils. The SVE process induces a negative pressure gradient within the soil through vapor extraction wells. As the induced vacuum moves through the subsurface soils, VOCs at the soil/groundwater

interface vaporize, and VOC vapors migrate toward the vacuum extraction well, where they are drawn to the surface and treated or removed with emission controls.

■ Alternative 4 Off-site Disposal of Soil at a Permitted Facility and Groundwater Withdrawal and Treatment

Capital Cost	\$ 1,553,988
Annual O&M	\$ 121,248
Present Worth	\$ 3,417,570

This alternative would consist of withdrawing, treating, and properly disposing of groundwater at the Town of Owego POTW (as outlined in Alternative 3) and excavating the contaminated soils located below the clean room to a depth of 10 feet below ground surface. The excavated soil would be disposed of at an off site facility in accordance with all applicable federal and state laws and regulations.

■ Alternative 5: Soil Vapor Extraction, Groundwater Withdrawal and Treatment with Source Control Pumping

Capital Cost	\$ 962,507
Annual O&M	\$ 144,528
Present Worth	\$ 3,183,902

This alternative would consist of withdrawing, treating, and disposing of groundwater at the Town of Owego POTW; implementing SVE technology in the unsaturated zone of the source area soils; and installing a withdrawal well immediately downgradient of the source area saturated soils to remove the contaminants by pumping the groundwater in this area.

■ Alternative 6: Groundwater Withdrawal and Treatment with Iterative Source Control Pumping

Capital Cost	\$ 255,675
Annual O&M (Years 0 through 6)	\$ 123,048
Annual O&M (Years 7 through 30)	\$ 144,528
Present Worth	\$ 2,367,952

Remedial Alternative 6 would consist of withdrawing, treating, and disposing of groundwater at the Town of Owego POTW; and implementing an iterative source control pumping program in the saturated zone of the source area soils.

This Iterative Pumping Program (referred to as iterative soil flushing in the referenced documents) is defined as phased groundwater withdrawal from discrete zones (varying depths) within the overburden aquifer immediately downgradient of the contaminated source area. By slightly increasing the rate of groundwater

flow through the highly contaminated source area, solubilization and/or dissolution of the chemicals of concern would occur and the compounds of concern would be removed from the contaminated soil by the withdrawal of the groundwater at the iterative pumping well. A high increase in the groundwater flow rate (pumping rate) could result in the downward movement of contamination, due to the density of the chemicals of concern, and would not travel to the recovery well. A pump test will be performed to establish the optimum pumping rate and performance criteria will be determined for this system during the remedial design phase. The contaminated groundwater would be withdrawn by a recovery well and treated. Residual DNAPLs (Dense Non-Aqueous Phase Liquids) present in a particular zone of the overburden aquifer should be effectively removed by this process.

The pumping would start with the upper portion of the aquifer and continue to lower segment(s). This iterative process would continue until the residual DNAPLs throughout the overburden aquifer have been adequately addressed. An evaluation would be performed to consider whether an expansion of the recovery process would be required to incorporate the bedrock aquifer at a future date.

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 (6 NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The six alternatives being considered have been restated below as a reference for the following evaluation:

- Alternative 1: No Action
- Alternative 2: Groundwater Withdrawal and Treatment
- Alternative 3: Soil Vapor Extraction and Groundwater Withdrawal and Treatment
- Alternative 4: Off-site Disposal of Soil at a Permitted Facility, and Groundwater Withdrawal, and Treatment
- Alternative 5: Soil Vapor Extraction, Groundwater Withdrawal with Source Control Pumping
- Alternative 6: Groundwater Withdrawal and Treatment with Iterative Source Control Pumping

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

All of the remedial alternatives (except no-action) would be designed and implemented to meet SCGs. However, complete restoration of the bedrock is technically impracticable using currently available remedial techniques. The development of remedial techniques to address groundwater impacted by DNAPLs is rapidly progressing. It would be recommended that a review of available groundwater remediation techniques be conducted periodically to determine if a remedial technique would be implemented at the

Robintech/Compudyne site to achieve SCGs and to cost-effectively reduce the overall time frame for implementation.

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

All of the alternatives, except no-action, would be protective of human health and environment. All of the remedial alternatives, except the no-action alternative, would be expected to hydraulically control the chemicals of concern in the overburden groundwater with the goal to achieve the RAOs (Remedial Action Objectives) off-site and provide removal of the dissolved phase VOCs observed in the bedrock at the downgradient property boundary.

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

All of the remedial alternatives, except for the no-action alternative, involve some degree of soil excavation or disturbance activities. However, Alternatives 3 through 6 involve more soil excavation activities than Alternative 2 due to implementation of the SVE and pumping systems. Alternative 4 involves significantly more soil excavation activities than the other alternatives because, under Alternative 4, the source area soils would be excavated. Soil alternatives that involve soil excavation activities present a potential for short-term risks to on-site workers due to dust migration and volatilization of chemicals during implementation.

Potential short-term risks, if any, to public health from inhalation of organic vapors associated with the groundwater treatment system and SVE system, would be evaluated during the remedial design. An analysis of the potential air quality impacts, including compliance with 6NYCRR Part 212, would be required and an air pollution control system would be installed for the protection of human health and compliance with air emission standards.

Although the duration of the treatment alternatives (Alternatives 2 through 6) cannot be accurately predicted, it is expected that these alternatives would be implemented for a substantial period of time (i.e., greater than 30 years), due to the groundwater component of the alternatives. This period would not be expected to decrease appreciably, even if the source area soils were treated using a SVE system, or if they were excavated, because the saturated overburden beneath the site would continue to act as a source. Similarly, implementation of source pumping with SVE would not appreciably reduce the operational time period for the groundwater component of Alternative 5, due to the potential presence of DNAPLs, the low permeability and porosity of the unsaturated soils, the presence of seasonal water in the unsaturated soils, and the time period required for successful completion of the soil flushing technology effort. Thus, implementation of the alternatives which provide for reduction of VOC mass within the unsaturated zone of the overburden in the source area (Alternatives 3, 4, and 5), would not be expected to reduce the duration of the groundwater component of these alternatives to less than 30 years.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the

selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The no-action alternative would not meet RAOs for the Robintech/ Compudyne site. Risks identified in the Risk Assessment (RA), resulting from the chemicals of concern present in the groundwater and source area soils, would not be eliminated or reduced under the no-action alternative. The no-action alternative also allows continued leaching of chemicals of concern to the groundwater. The remaining remedial alternatives would meet the RAOs for the site, except for complete restoration of the bedrock groundwater quality, which is currently considered technically impracticable due to the possible presence of DNAPLs in the fractured bedrock. Each alternative (except Alternative 1- No-Action) involves pumping and treating of the overburden groundwater, which would be expected to reduce downward plume migration into the bedrock, and pumping of a bedrock well located near the downgradient property boundary to remove dissolved phase VOCs. There are no known consumers of the bedrock groundwater. Thus, even if complete restoration of the bedrock is not achieved, Alternatives 2 through 6 would be protective of human health.

The installation of a withdrawal well immediately downgradient of the source saturated soils, with pumping just above the bedrock that is included in Alternative 5, might result in an increased mobility of the residual DNAPL which is believed to exist within the source area, thus potentially increasing groundwater contamination in the bedrock. However, the iterative groundwater withdrawal at the source area included in Alternative 6 should substantially reduce the potential of a negative impact to the bedrock groundwater quality through the solubilization and removal of DNAPL from the shallow overburden that could occur prior to the initiation of pumping from the deep overburden.

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

The no-action alternative would not reduce the toxicity, mobility, or volume of the chemicals of concern in site soils. Alternatives 2 through 6 would reduce the toxicity, mobility, and volume of the chemicals of concern in the groundwater. Alternatives 3, 4, and 5 would also address the relatively small volume of chemicals of concern in the unsaturated source area soils.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technical aspects evaluated include the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administrative aspects evaluated include availability of the necessary personnel and materials, and potential difficulties in obtaining specific operating approvals, and accesses for construction, etc.

All of the remedial alternatives are technically feasible and could be implemented at the site. All alternatives (except no-action) would require performing pump tests on the downgradient pumping wells to estimate groundwater capture zones. Excavation of contaminated soils would require the removal of a portion of a large building and disruption of the manufacturing activities of the plant, this negatively impacts the implementability of this alternative. Testing of the effectiveness of the SVE system would be required prior to implementation of Alternatives 3 and 5 and based on tightness of site soils and the limited area of vadose zone contamination, SVE would not be practical. Pump testing, to assist in estimating groundwater pump rates and capture zones in the saturated overburden source area soils, would be required prior to implementation of Alternatives 5 and 6.

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 1.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The NYSDEC and NYSDOH conducted a public meeting regarding the PRAP on February 7, 1995. There were no public objections to the proposed remedy made at the meeting. Based on the comments and questions raised at the public meeting the public is in support of the selected remedy of Groundwater Withdrawal and Treatment with Iterative Source Control Pumping. Concerns raised during the meeting focused on the Broadway Complex, site number 7-54-013, and the wetland located south of the HADCO facility. The public was told at the meeting that a preliminary site assessment (PSA) will be performed at the Broadway Complex and additional investigative work will be performed on the wetland. The NYSDEC accepted written comments on the PRAP through March 1, 1995. No written comments were received. A "Responsiveness Summary" was prepared to address the comments received at the public meeting and is included herein as Appendix A. The final remedy selected does not differ from the proposed remedy.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

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

This selection is based upon the comparative analysis of six alternatives:

The no-action alternative (Alternative 1) would not reduce the toxicity, mobility, or volume of the VOCs in groundwater or site soils. Alternatives 2 through 6 would reduce the toxicity, mobility, and volume of the VOCs in groundwater; and Alternatives 3, 4, and 5 would also reduce the toxicity, mobility, and volume of VOCs in the unsaturated source area soils. The source pumping component of Alternatives 5 and 6 provides for additional reduction of VOCs contamination in groundwater, compared to Alternatives 2, 3, and 4. Alternative 6 will provide for an additional reduction in toxicity, mobility, and volume while reducing the concern of further negative impact to groundwater quality due to potential remobilization of DNAPL.

All of the alternatives except no-action, would be protective of human health and the environment. However, Alternative 6: Groundwater Water Withdrawal and Treatment, and Iterative Source Control Pumping would be the most cost-effective alternative capable of satisfying the seven evaluation criteria outlined previously, and meeting the Remedial Action Objectives (RAOs) for the site.

Therefore, Alternative 6 is the selected remedial alternative for treatment of the chemicals of concern at the Robintech/ Compudyne site (See Figure 4).

The estimated present worth cost to implement the remedy will be \$ 2,400,000. The cost to construct the remedy has been estimated to be \$ 256,000 and the estimated average annual operation and maintenance cost for 30 years is \$ 145,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS would be resolved.
2. A pump test to establish optimum pumping rates for the iterative source control pumping system. Groundwater extraction has been estimated at ± 1 gpm.
3. Iterative source control pumping, consisting of groundwater withdrawal through a well located immediately downgradient of the source area, designed and operated to increase groundwater flow through the saturated soils beneath the source area. Performance criteria will be established for this system during the remedial design phase.
4. Installation of a groundwater withdrawal well(s) at the southern boundary of the site. Prior to installation a pump test will be performed to determine the optimum location and flow rate for the well(s). This well(s) will be operated in conjunction with the existing IRM well and the iterative pumping well to hydraulically contain the plume. See Figure 4.
5. Groundwater extracted by these wells will be pretreated on-site using the existing IRM treatment system, equipped with air emission controls, and discharged to the POTW at the Town of Owego, in accordance with Hadco's existing POTW discharge permit.
6. After the remediation of the saturated soils of the overburden aquifer in the source area has been completed, the need and feasibility of remediating the bedrock aquifer will be evaluated.
7. Confirmatory sampling will be performed to determine the effectiveness of the iterative source control pumping system and hydraulic containment of the plume. Groundwater elevation data will also be obtained to verify the effectiveness of the hydraulic containment.
8. Since the remedy results in hazardous waste remaining untreated at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored. This long term monitoring program will be a component of the operations and maintenance for the site.

SECTION 8: SUMMARY OF CITIZEN PARTICIPATION ACTIVITIES

As part of the remedial investigation process, a citizen participation plan was developed for the Robintech/Compudyne Inc. site. The principal objectives of the Citizen Participation Plan are: inform the public about conditions at the site; educate the public regarding the PRAP; obtain public comment on the PRAP; obtain support (community acceptance) of the remedial action; and insure that all comments obtained from the public are evaluated and answered in a Responsiveness Summary.

The following public participation activities were conducted for this site:

- January 31, 1995 Start of the Public Comment Period for the Proposed Remedial Action Plan (PRAP).
- February 7, 1995 Public meeting to present the Proposed Remedial Action Plan and receive public comment
- March 1, 1995 Close of Public Comment Period for the Proposed Remedial Action Plan

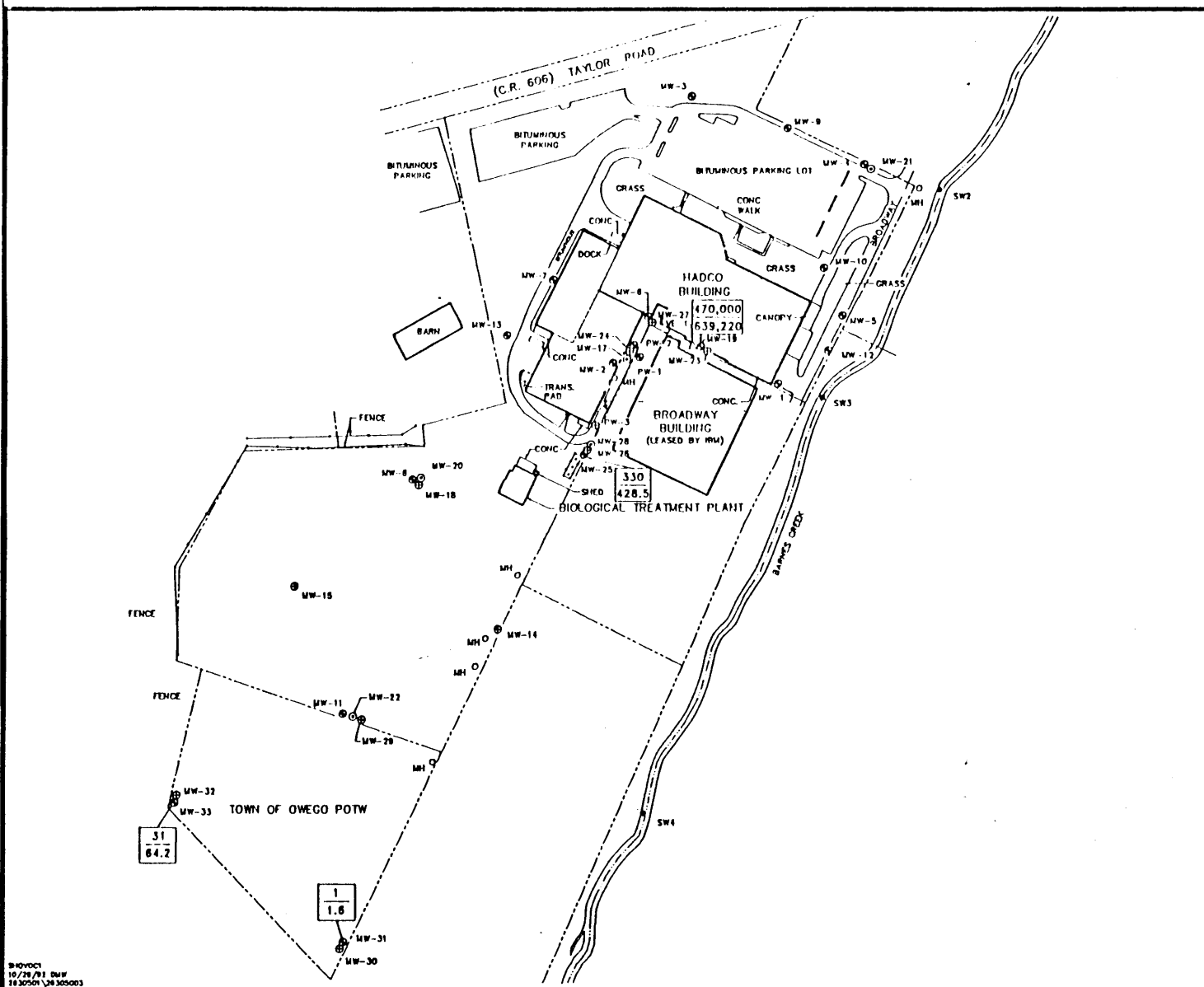
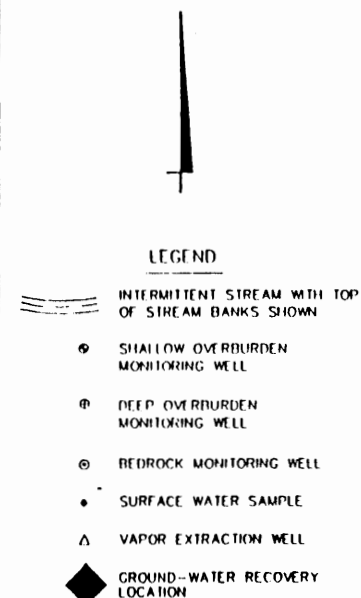


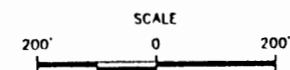
FIGURE 3

FIGURE 4



ROBINTECH/COMPUDYNE, INC. SITE
OWEGO, NEW YORK

ALTERNATIVE 6 GROUND-WATER RECOVERY LOCATION MAP



BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

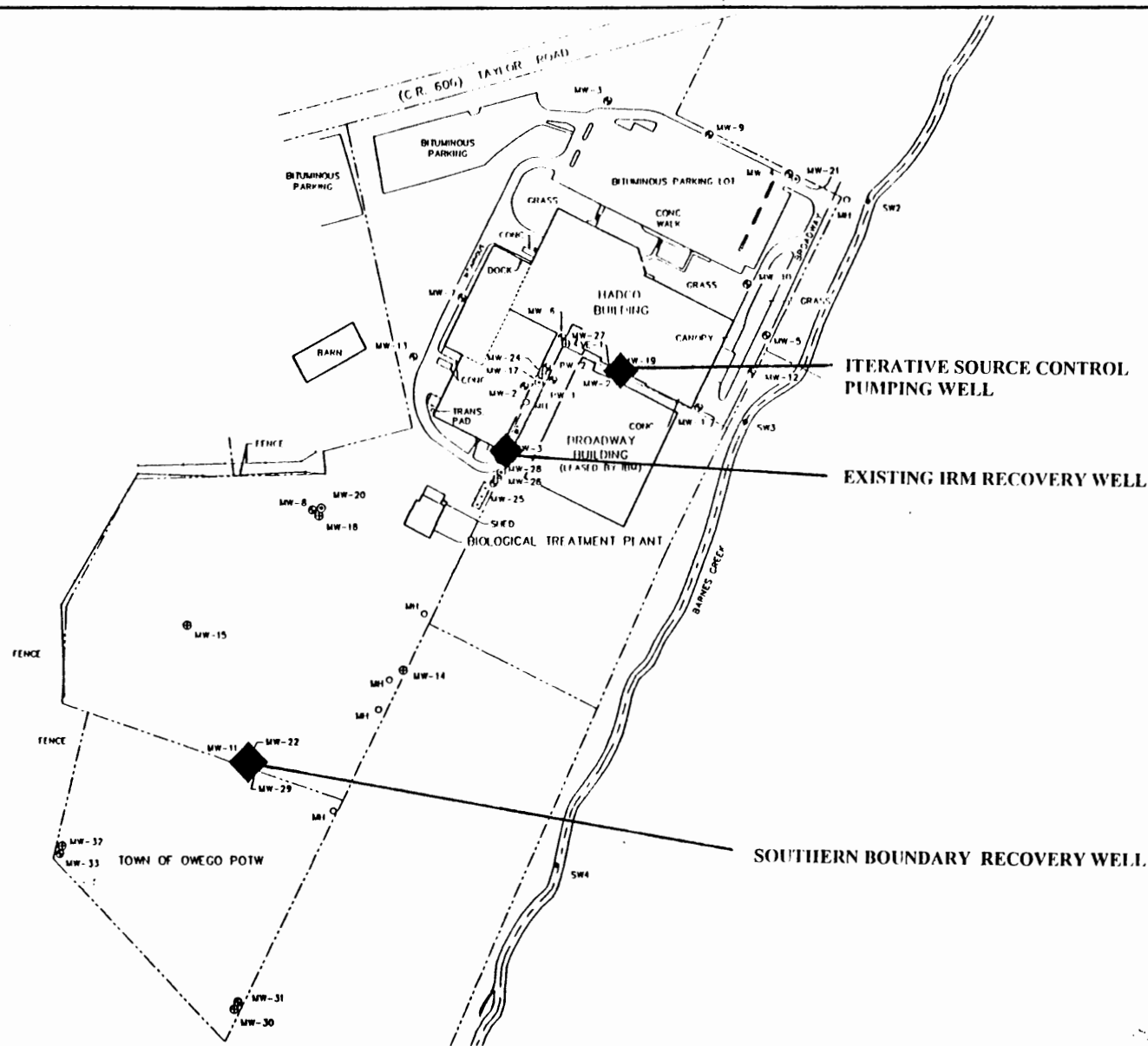


TABLE 1 ESTIMATED REMEDIAL COSTS

ALTERNATIVE	CAPITAL COST	ANNUAL O&M	PRESENT WORTH
1- No Action	\$ 0	\$ 15,000	\$ 230,000
2- Groundwater Withdrawal & Treatment	\$ 159,000	\$ 121,248	\$ 2,030.167
3- Soil Vapor Extraction with Groundwater Withdrawal and Treatment	\$ 910,507	\$ 121,248	\$ 2,774,089
4- Off-Site Disposal of Soil at a Permitted Facility and Groundwater Withdrawal and Treatment	\$ 1,553,988	\$ 121,248	\$ 3,417,570
5- Soil Vapor Extraction, Groundwater Withdrawal and Treatment with Source Control Pumping	\$ 962,507	\$ 144,528	\$ 3,183,902
6- Groundwater Withdrawal and Treatment with Iterative Source Control Pumping	\$ 255,675	\$ 123,048 (Yrs. 0-6) \$ 144,528 (Yrs. 7-30)	\$ 2,367,952

Appendix A

RESPONSIVENESS SUMMARY FOR THE ROBINTech/COMPUDYNE, INC. PROPOSED REMEDIAL ACTION PLAN

A public meeting was held on February 7, 1995 at the Owego Town Hall to review and gather public comment on the Proposed Remedial Action Plan (PRAP) for the Robintech/Compudyne, Inc. Site, which is an inactive hazardous waste disposal site being addressed by the State Superfund program. At this meeting the New York State Department of Environmental Conservation (NYSDEC) made a brief presentation of the results of the Remedial Investigation/Feasibility Study and the PRAP. The PRAP summarizes the nature and extent of the contamination at the site, evaluates proposed alternatives to remediate the site, and selects a proposed remedy from the alternatives evaluated. The proposed remedy for this site is Groundwater Withdrawal and Treatment with Iterative Source Control Pumping. This remedy consists of withdrawing, treating, and disposing of groundwater at the Town of Owego Publicly Owned Treatment Works; and implementing an iterative source control pumping program in the saturated zone of the soils in the contamination source area. The following are the comments received at the Public Meeting, with NYSDEC's response:

- COMMENT 1: At one time IBM was interested in drilling a well or had been asked to drill a test well on the Broadway property. Was this request related to the outlined investigation?
- RESPONSE 1: IBM Broadway building is a Class 2A site on the State's Registry of Hazardous Waste Sites due to the discovery of a contaminated septic tank. It is believed that the request for test wells was related to that issue. It is also noted that at some point in the near future this site will either be de-listed or reclassified as a Class 2 site, based on the results of the pending investigation.
- COMMENT 2: Will the testing on the Broadway building go back to the owner or to IBM?
- RESPONSE 2: Who will be ultimately responsible for the costs associated with testing at the Broadway Complex will be determined by NYSDEC's legal staff.
- COMMENT 3: On the graphic with the three (3) recovery wells noted on it, what is the boundary for the mentioned wetlands?
- RESPONSE 3: The wetlands are located below the Town of Owego property on the mentioned graphic.
- COMMENT 4: Is it connected to the Brick Pond?
- RESPONSE 4: No, there is an elevated area of dry land between the two wetlands.

Appendix B

Administrative Record

The following documents constitute the Administrative Record for the Robintech/Compudyne, Inc. Site Remedial Investigation/Feasibility Study (RI/FS).

1. "Preliminary Site Evaluation. Hadco Corporation, Owego, New York. Bodle Hill Road". 1984
2. "Phase I Hydrogeologic investigation. Hadco Corporation. Owego, N.Y." 1985
3. "Phase II Hydrogeologic Investigation. Hadco Corporation. Owego, N.Y. Bodle Hill Road". 1985
4. "Assessment of Volatile Organic Compounds in soil and Groundwater, Hadco Corporation, Owego, New York "January 1988
5. "Remedial Investigation Report, Hadco Corporation, Owego, New York" December 1992
6. "Supplemental Remedial Investigation Report, Hadco Corporation, owego, New York". November 1993
7. "Focused Feasibility Study, Robintech/Compudyne, Inc. Site, Owego, New York". July 1994
8. "Proposed Remedial Action Plan, Robintech/Compudyne, Inc. Inactive Hazardous Waste Site" January 1995
9. "Robintech/Compudyne, Inc., Fact Sheet - January 1995."
10. "Responsiveness Summary for the Robintech/Compudyne, Inc. Proposed Remedial Action Plan" March 1995
11. Listing in the New York State Registry of Inactive Hazardous Waste Disposal Sites.