NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation

Inactive Hazardous Waste Site Operations and Maintenance Review Report

Form Date 96.10.01

Site Name: Burroughs-UNISYS **Class:** 4 **Number:** 8-28-075

O&M Funding Source: ☐ State Superfund ☐ Federal Superfund ☐ Municipal ✔ Responsible Party

O&M Information: O&M Start: November 1998 End: December 2001 Annual Cost: Estimated

Interim Remedial Measures/Operable Units in O&M Phase:

☐ Drum Removal	☐ Soil Removal	☐ Tank Removal
☐ Cap/Cover	☐ Containment Structure	☐ Fence/Security
✔ Groundwater Recovery/Treatment	☐ Leachate Collection/Treatment	✔ Vapor Extraction/Treatment
☐ Air Sparging/Stripper System	☐ Treatment/Filtration Plant/System	☐ Potable Water Supply/System

✔ Other: Groundwater and vapor phase removal system removed. Monitoring wells remain.

Institutional Controls: ☐ Deed Restriction ☐ Discharge Permit ☐ Department of Health Sampling
☐ Other:

O&M Review Information:

Reports: Spill Report 1/85, ROD 3/22/94, PRP Evaluation 1/97, Consent Order 2/16/90, Reclass 11/98

Inspection: December 7, 1999 by Robert Long

Sampling: 1998 Annual Monitoring Report on CD-ROM (Excerpt attached)

Other:

Conclusions:

Remedy Effective? ✔ Yes ☐ No: Contaminant levels have not increased since remedial system shutdown
Data do not indicate off-site migration of contaminants.

ROD Compliance? ✔ Yes ☐ No: The remedy was operated pursuant to the ROD and approved O&M plan.
Groundwater monitoring continues pursuant to the O&M Plan.

Consent Order Compliance? ✔ Yes ☐ No: The effectiveness of the remedy is being monitored on a quarterly basis.

Other:

Recommendations:

Maintain locks on remaining monitoring wells

Department should be notified of any intrusive work in the remediation area

ROD/Consent Order Modifications? ✔ No ☐ Yes (per above) Reclassify the Site? ✔ No ☐ Yes → Class:

Comments: Next groundwater monitoring reports are due on 5/1/2000, 4/15/2001, and 2/15/2002

Project Manager:			Reviewer:		
Signature	Date		Signature	Date	
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UNISYS

1998 Annual Monitoring Report
Former Burrough-Unisys Facility
1225 Ridgeway Avenue
Rochester, New York
NYSDEC Site #8-28-075

1.0 Introduction

1.1 Purpose

The purpose of this report is to provide the New York State Department of Environmental Conservation (NYSDEC) with a status of the groundwater monitoring program and decommissioning of the Groundwater/Soil Vapor Extraction (GW/SVE) treatment system at the Former Burroughs-Unisys Facility located at 1225 Ridgeway Avenue, Rochester, New York. The GW/SVE treatment system was shut-down on March 25, 1997. NYSDEC approved the system shut-down and selected the **monitoring only** alternative for the site as recommended in the Focused Evaluation of Remedial Alternatives Report (Unisys, October 15, 1997) [Bi-Monthly Report #1].

1.2 Site Location and Description

The Former Burroughs-Unisys facility is located at 1225 Ridgeway Avenue, Rochester, New York. The location of the site is shown on Figure 1. The area surrounding the site is primarily zoned industrial/commercial. The site is bounded to the north by a large parcel owned by Eastman Kodak Company, to the east by commercial business, to the south and southwest by undeveloped parcels owned by 3M Corporation, and to the west by a parcel owned by Dimino Management, Inc.

The site plan is illustrated in Figure 2. The Ridgeway Avenue site consists of a manufacturing building, office building and a warehouse/storage building. Several businesses currently occupy these buildings and include NuKote International, Envotech, Inc., AAC Contracting, Inc., and SeaLand Contractors. In addition, the Acropolis Restaurant is located within the property boundary. The site is mostly covered with asphalt, concrete or buildings, with only a few small, grassy areas. The location of buildings, treatment system, roadways, and the monitoring wells and GW/SVE system are also shown on Figure 2.

1.3 Site History

Since the beginning of industrial activity at this site in 1968, solvents have been used for manufacturing carbon copy paper, printer ribbons and other office supply products. Burroughs-Unisys manufactured these products at this facility from 1976 to 1986. Although Burroughs sold the business operations in 1986 to NuKote International, similar manufacturing operations and chemical use continued at this facility. A detailed discussion of the property including ownership and lease agreements is presented in the *Remedial Investigation Report* (Unisys, 1992).

Primary solvents used in the manufacturing process included isopropyl alcohol (isopropanol or IPA), methyl ethyl ketone (2-butanone or MEK), toluene and methanol. These solvents were stored in underground storage tanks (USTs) in the northeast corner of the site. Historical records and environmental investigations revealed that between 1986 and 1992, IPA, methanol, MEK, and toluene were the only chemicals stored in the former USTs, which impacted soil and groundwater beneath the site by 1985. These are four of the five contaminants identified in the ROD as SSICs, and used for the RAOs for soil and groundwater. Acetone, the fifth SSIC, was not stored at the facility. The presence of acetone has been attributed to subsurface biodegradation of IPA (Geraghty & Miller, 1988).

1.4 Remedial System Status

The Record of Decision (ROD) (NYSDEC, March 1994) identified a remediation plan after evaluating and approving the Remedial Investigation/Feasibility Study (RI/FS). NYSDEC selected enhancements and modifications (Alternative 5 in the ROD) to the Interim Remedial Measures (IRM) GW/SVE system. In cooperation with NYSDEC, Unisys presented the Remedial Design (RD) in response to the ROD (Unisys, March 1995).

The selected remedial alternative included continued operation of the IRM with documented modifications that included installation of five additional GW/SVE wells, and enhancements that included cycling, evaluation of pulsing, and evaluation of passive air or active water injection to assist fluid migration. The wells (SV-41 through SV-45) shown on Figure 2, were added to the existing network on May 16, 1995, and the system was restarted on May 30th. After being restarted, the system operated on a cycling and pulsing schedule designed to enhance the remediation of previously identified areas impacted by VOCs. The GW/SVE treatment system was shut-down on March 25, 1997. In the fall of 1998, the GW/SVE treatment system was decommissioned under the supervision of Day Environmental, Inc. (DAY) of Rochester, New York. Staff at DAY served as the on-site GW/SVE treatment system operators between November 1990 and March 1997. The decommissioning was supervised by DAY and the demolition report is included as Appendix D to this report.

1.4.1 Remedial Action Objectives

The soil RAOs which are stated in the ROD reflect the NYSDEC-TAGM-4046 *Determination of Soil Clean Up Objectives and Clean Up Level*. The groundwater RAOs reflect SCGs, 10NYCRR Part 5 and 6NYCRR Part 700. For the SSICs they are as follows:

SSIC	Soil RAO (ppm)	Groundwater RAO (ppb)
Acetone	0.11	50
Isopropyl Alcohol	0.11	50
Methanol	0.11	50
Methyl Ethyl Ketone	0.23	50
Toluene	1.5	5

Remedial Action Objective Soil Concentrations using TAGM 4046

Site-specific, risk-based soil cleanup numbers were established by Environmental Standards, Inc. (ESI), and presented in the *Feasibility Study* (IES, August 1993). Three scenarios were presented for soil concentrations. The most conservative of these was calculated using the Trench Utility Worker Scenario

and 1/2 the threshold limit value (TLV) as the maximum allowable air concentration in the trench. The criteria used to establish the action level was a health index (HI) of 1, which is the level of exposure to a specific compound from all significant pathways below which it is unlikely for even a sensitive population to experience adverse health affects.

In the same document, site-specific, risk-based groundwater concentrations were determined for the facility, and it was determined the compound-specific cleanup concentrations for groundwater by setting a HI of 1 (IES, August 1993). The risk-based assessment included ingestion, dermal contact and inhalation of volatile organics from water use in the home as potential exposure pathways by using the very conservative assumption that the shallow groundwater could be used as a potable drinking water source. This is very unlikely because of the very low yield of the aquifer (see the Record of Decision, NYSDEC, March 1994).

The following table presents the risk-based concentrations for the most conservative soil scenario and the overburden groundwater. Although NYSDEC, in the Record of Decision, did not adopt the conservative risk-based standards as the site RAOs, they are presented here as a reference for determining the risk to human health posed by residual concentrations of SSICs. All of the compounds of interest have very low toxicity characteristics and, as a result, have high exposure tolerance levels.

SSICs	Soil (ppm)	Overburden Groundwater (ppb)
Acetone	170	8,900
Isopropyl Alcohol	140	2,500
Methanol	44	10,000
Methyl Ethyl Ketone	180	3,300
Toluene	600	1,900

Risk-Based Action Levels for Soil and Groundwater

2.0 1998 Activities

As mandated by Section 27-1305 of the Environmental Conservation Law (ECL), NYSDEC maintains a Registry of all Inactive Hazardous Waste Disposal Sites. Effective January 8, 1999, the Classification for this release has been changed from Class II to Class IV site. The reason for the re-classification is the site soil has been successfully remediated by the GW/SVE system, and one small are of groundwater contamination on-site persists downgradient of the former UST area. A long-term monitoring program has been implemented. The objective of the post-remediation groundwater monitoring program is to collect the appropriate data concerning the groundwater conditions at and downgradient of the former UST basin which served as the source for the groundwater plume in the overburden and bedrock formations at the site. The goal of the post-remediation groundwater monitoring program is to demonstrate the remedial actions and water quality conditions are protective of the soil and groundwater conditions of the state of New York.

2.1 Well Abandonment Program

The well abandonment program removed the wells not in the long-term monitoring program (all of the groundwater monitoring, soil vapor extraction, and other wells in the table below) located on-site. These wells were abandoned in November 1998, as identified in the table below, and summarized in Appendix D, Section 7.

Location	Date Abandoned	Location	Date Abandoned	Location	Date Abandoned	Location	Date Abandoned
GM-1	18-Nov-98	SVE-1	18-Nov-98	SVE-15	20-Nov-98	SVE-33	24-Nov-98
GM-1D	18-Nov-98	SVE-2	18-Nov-98	SVE-16	20-Nov-98	SVE-34	25-Nov-98
GM-2	17-Nov-98	SVE-3	18-Nov-98	SVE-17	25-Nov-98	SVE-35	24-Nov-98
GM-2D	17-Nov-98	SVE-3A	18-Nov-98	SVE-18	25-Nov-98	SVE-36	25-Nov-98
GM-3DD	20-Nov-98	SVE-4	18-Nov-98	SVE-19	25-Nov-98	SVE-37	25-Nov-98
GM-4	17-Nov-98	SVE-5	18-Nov-98	SVE-20	25-Nov-98	SVE-38	25-Nov-98
GM-4D	17-Nov-98	SVE-5A	18-Nov-98	SVE-22	24-Nov-98	SVE-39	25-Nov-98
GM-6	19-Nov-98	SVE-6	18-Nov-98	SVE-23	24-Nov-98	SVE-40	25-Nov-98
GM-6D	19-Nov-98	SVE-6A	18-Nov-98	SVE-24	24-Nov-98	SVE-41	25-Nov-98
GM-7	18-Nov-98	SVE-7	18-Nov-98	SVE-25	24-Nov-98	SVE-42	25-Nov-98
GM-7D	18-Nov-98	SVE-8	19-Nov-98	SVE-27	24-Nov-98	SVE-43	25-Nov-98
GM-9	23-Nov-98	SVE-9	20-Nov-98	SVE-28	24-Nov-98	SVE-44	25-Nov-98
GM-10D	23-Nov-98	SVE-10	20-Nov-98	SVE-29	24-Nov-98	SVE-45	20-Nov-98
GM-11D	20-Nov-98	SVE-11	20-Nov-98	SVE-30	24-Nov-98	X	25-Nov-98
MW-16	19-Nov-98	SVE-12	20-Nov-98	SVE-31	24-Nov-98	C-1	23-Nov-98
MW-16D	19-Nov-98	SVE-14	20-Nov-98	SVE-32	24-Nov-98	C-2	23-Nov-98

2.2 Site Geology

Pleistocene-age glacial lake sediments composed predominantly of brown-to-tan clayey silt with occasional fine sand overlie shale and limestone bedrock. These sediments generally range in thickness from approximately 10 to 20 feet. The Irondequoit Limestone Formation underlies the overburden and consists of interbedded dark gray-to-black calcareous shale, and gray-to-light gray dolomite and crystalline limestone. A thin weathered portion of the Rochester Shale Formation was identified above the limestone. The shale appears to be present across most of the site with a maximum thickness of approximately five feet. Bedrock is reported to have a slight regional dip to the south. On-site, the bedrock surface slopes to the east with bedrock highs to the north and west.

2.3 Site Hydrogeology

Two hydrogeologic units have been identified and monitored at the site for 12 years. These include a water bearing zone in the overburden clay and silt, and bedrock aquifer comprising of the Irondequoit Formation. Eight (8) monitoring wells are currently used for monitoring groundwater quality and water level measurements. The wells are shown on Figure 3. Wells have been designated as "shallow" for those screened in overburden and "deep" for those in bedrock. Historical groundwater elevation data are presented in Appendix A.

Historical and recent water level monitoring have shown that the saturated thickness is greater in the southern portion of the property than in the north. Hydraulic conductivities in the overburden in the southern half of the site are approximately 50 feet per day (ft/day) based on pumping tests at GM-1. Conductivities in the northern portion of the site are significantly lower, ranging from 0.007 to 2.8 ft/day based on slug tests (Geraghty & Miller, 1988).

The bedrock aquifer is monitored by wells with screened intervals ranging from 25 to 60 feet bgs. Groundwater depths range from 5 feet bgs in the southern portion of the property to 25 feet bgs in the north. Deeper bedrock wells (MW-13DD) have screened intervals from 50 to 60 feet with groundwater depths ranging from 25 to 40 feet bgs indicating a strong downward gradient in the bedrock aquifer. The hydraulic gradient varies from approximately 0.005 in the south and western portions of the site to 0.05 to the northeast. The implementation of the well abandonment program has resulted in the observation network which now only monitors this lower permeability, thinner hydrogeologic zone.

2.4 Groundwater Sampling

Figure 3 presents the post-remediation groundwater monitoring network. As part of the GW/SVE system demolition and disposal of the treatment plant components, 67 extraction and monitoring wells were abandoned. Well nests MW-14 and MW-15 were conveyed to Kodak. The wellheads of monitoring wells GM-3, GM-8, and GM-10 were modified (cut-off below grade and equipped with at-grade curb boxes) to allow their use as groundwater monitoring locations along with wells GM-3D, GM-5, MW-13, MW-13D, and MW-13DD, which constitutes the long-term groundwater monitoring network. A summary of the wells abandoned is found in Appendix D, Section 7 of this report.

The post-remediation water quality monitoring locations are listed below:

	1998		1999				2000				2001			
Location	**Monthly**	**4Q**	**1Q**	**2Q**	**3Q**	**4Q**	**1Q**	**2Q**	**3Q**	**4Q**	**1Q**	**2Q**	**3Q**	**4Q**
GM-3	X	X	X	X	X	X		X		X			X	
GM-3D		X	X	X	X	X		X		X			X	
GM-5	X	X	X	X	X	X		X		X			X	
GM-8	X	X	X	X	X	X		X		X			X	
GW-10	X	X	X	X	X	X		X		X			X	
MW-13	X	X	X	X	X	X		X		X			X	
MW-13D	X	X	X	X	X	X		X		X			X	
MW-13DD		X	X	X	X	X		X		X			X	

The 1998 water quality monitoring dates are listed below:

26-January-98
25-February-98
24-March-98
28-April-98
27-May-98
23-June-98
30-July-98
31-August-98
30-September-98
29-December-98

Appendix A presents the historical groundwater elevation summary. The observation network for the long-term groundwater monitoring program is depicted on Figure 3. Figure 4 presents the potentiometric contour map for water levels measured in January 1998, and Figure 5 depicts the potentiometric contour map for water levels measured in February 1998.

Review of potentiometric surface maps generated from 1987 through 1998 show flow in overburden is consistently to the northeast with an approximate hydraulic gradient of 0.005. Well hydrographs, representative of groundwater fluctuations at the site are presented in Appendix B. Head levels in overburden (GM-3) and bedrock (GM-3D) indicates the bedrock and overburden are not as strongly connected hydraulically in the area (Appendix B) downgradient of the former UST area.

2.5 Volatile Organic Compounds in Groundwater

Historical groundwater quality results are summarized in Appendix C for all monitoring wells in the long-term groundwater monitoring program at the site. Groundwater samples have been analyzed for the SSICs beginning in 1987 through December 1998.

Figure 6 presents the January 1998 groundwater quality sampling for the long-term monitoring wells. This report does not graphically depict the results of each groundwater sampling event, as generally the analytical results depicted positive detections only at monitoring well GM-5 for each sampling event, and at well GM-10 during the February 1998 sampling event (Figure 7). Figure 8 provides the results of the April 1998 sampling event, and Figure 9, Figure 10, and Figure 11 present the results of the June 1998, August 1998, and December 1998, groundwater sampling, respectively.

Toluene was detected during each sampling event at GM-5 throughout 1998, and the only other compound detected at GM-5 was acetone in August 1998.

Location	Date	2- Butanone	Acetone	Isopropanol	Methanol	Toluene	Total VOCs
GM-5	26-Jan-98	< 50	< 50	< 100	< 1000	24	24
GM-5	25-Feb-98	< 50	< 50	< 100	< 1000	79	79
GM-5	24-Mar-98	< 50	< 50	< 100	< 1000	270	270
GM-5	28-Apr-98	< 20	< 20	< 180	< 110	100	100
GM-5	27-May-98	< 20	< 20	< 98	< 110	35	35
GM-5	23-Jun-98	< 67	< 67	< 98	< 110	430	430
GM-5	30-Jul-98	< 40	< 40	< 98	< 110	380	380
GM-5	31-Aug-98	< 40	73	< 100	< 100	290	363
GM-5	30-Sep-98	< 400	< 400	< 100	< 100	600	600
GM-5	29-Dec-98	<100	< 40	< 100	< 100	300	300

VOC concentration versus time graphs for well GM-5 are shown on Figure 12 for Total VOCs (summary of SSIC). Sampling does not indicate a significant increase in VOCs at GM-5 since the GW/SVE system was turned-off (Figure 13). Figure 14 also indicates that VOC levels have not significantly increased with the increase (rebound) in the water table at GM-5. In general, the water table rebound is approximately 5-feet in the center of the cone-of-depression at the former GW/SVE extraction area.

3.0 Summary and Conclusions

Based on extensive groundwater monitoring data (collected from 1987 through 1998), and the monitoring of the VOC plume pre- and post-remediation it does not appear that VOCs have migrated from the former UST basin. This result was predicted in the groundwater flow model (Unisys, October, 1997), and the model will be updated in 1999 to reflect current conditions.

Accordingly, the monitoring program will continue on the schedule identified below:

	1999				2000				2001			
Location	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
GM-3	X	X	X	X		X		X			X	
GM-3D	X	X	X	X		X		X			X	
GM-5	X	X	X	X		X		X			X	
GM-8	X	X	X	X		X		X			X	
MW-10	X	X	X	X		X		X			X	
MW-13	X	X	X	X		X		X			X	
MW-13D	X	X	X	X		X		X			X	
MW-13DD	X	X	X	X		X		X			X	

with the scheduled reporting of annual results as listed below:

1999 Annual Monitoring Report –	May 1, 2000
2000 Annual Monitoring Report –	April 15, 2001
2001 Annual Monitoring Report –	February 15, 2002

4.0 References

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