915168

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

CMS Associates Site
Town of Cheektowaga, Erie County
Site Number 9-15-168

March 2000

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

CMS Associates Inactive Hazardous Waste Site
Town of Cheektowaga, Erie County, New York
Site No. 9-15-168

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the CMS Associates class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. 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 on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the CMS Associates inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing 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this site have been addressed by implementing the interim remedial measures identified in this ROD, therefore the site no longer represents a current or potential significant threat to public health and the environment.

Description of Selected Remedy

Based on the results of the investigation of the CMS Associates site and the success of the interim remedial measures, the NYSDEC has selected a no further remedial action remedy with continued operation and maintenance of the groundwater recovery system and monitoring. The components of the remedy are as follows:

- continued operation of the existing groundwater recovery and treatment system,
- deed restrictions to preclude the use of the groundwater for drinking or manufacturing and to restrict the property to commercial or industrial use,
- long-term sampling of the site groundwater monitoring wells; and
- annual evaluation of the operation and monitoring data for trends in contaminant concentrations.

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

3/30/2000
Date

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

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RECORD OF DECISION

CMS Associates Site
Town of Cheektowaga, Erie County
Site No. 9-15-168
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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected no further remedial action for the CMS Associates site, a class 2 inactive hazardous waste disposal site. As more fully described in Sections 3 and 4 of this document, a leaking underground storage tank resulted in the disposal of a number of hazardous wastes, including: trichloroethene; 1,1,1-trichloroethane; cis-1,2 dichloroethene; and 1,1-dichloroethane, some of which were likely released or migrated from the site to surrounding areas of the industrial park in which the site is located. These disposal activities resulted in a significant environmental threat associated with the impacts of contaminants to the groundwater resources beneath the site.

During the course of the investigation certain actions, known as Interim Remedial Measures (IRMs), were undertaken at the CMS Associates site in response to the threat identified above. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the site investigation. The IRMs undertaken at this site included:

- Removal and off-site disposal of the leaking underground storage tank and its contents;
- Excavation of the contaminated soils surrounding the tank, on-site treatment of the soils, and the placement of the treated soils over the surface of the site;
- Installation and operation of a vacuum-enhanced groundwater recovery and treatment system, pumping contaminated groundwater from the immediate vicinity of the tank's location.

Based upon the success of the above IRMs, the findings of the investigation of this site indicate that the site no longer poses a threat to human health or the environment, therefore continued management of the current groundwater collection and treatment system was selected as the remedy for this site. The Department will also reclassify the site to a Class 4 on the New York State Registry of Inactive Hazardous Waste Disposal Sites, signifying that the site is properly closed but will require continued management.

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located at 210 French Road, approximately 2,000 feet east of Union Road, in the Town of Cheektowaga. The site is located on the north side of French Road, between Boxwood

Lane and Azalea Drive. The properties to the north, west and east of the site are commercial and light industrial. A vacant, wooded lot is located opposite the site, on the south side of French Road. Apartment buildings and private residences are also located on the south side of French Road, approximately 300 feet to the southwest and southeast. Slate Bottom Creek, a class C stream, is located approximately 2,100 feet north of the site (see Figure 1).

A one-story concrete block structure, built on a slab foundation, is located on the 3.77 acre site. The building is presently used as an office, warehouse and manufacturing facility. A 2,000 gallon underground storage tank, removed from service, was located near the northwest corner of the building (see Figure 2).

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

In the mid- to late-1960s a 2,000 gallon underground gasoline storage tank was installed by one of the building tenants, near the northwest corner of the building. Sometime later, the tank was abandoned in place; the vents and connections were removed.

In March 1996, the site owner uncovered the underground tank and notified the NYSDEC that it would be removed. It was found that the abandoned tank still contained approximately 1,810 gallons of liquid. Chemical analysis revealed that the contents were a mixture of chlorinated solvents and gasoline. Leaks in the tank were also observed when it was removed. Subsequent investigations would find that the leaking tank, which rested on the top of bedrock, had contaminated the groundwater and surrounding soils.

3.2: Remedial History

In March 1996, the contents of the leaking underground storage tank were removed and disposed of at an off-site hazardous waste disposal facility. The empty tank was scrapped and also disposed off site.

Soil borings were advanced in close proximity to the location of the tank, to determine the extent of the soil contamination. Approximately 350 tons of contaminated soil were excavated. The walls of the excavation were sampled to confirm that all of the contaminated soils had been removed before the excavation was lined with plastic sheeting and backfilled with clean soils. The excavated, contaminated soils were stored on site.

In December 1996, the excavated soils were placed in bioventing treatment cells; wooden boxes fitted with vent pipes, built on site. Bacteria was added to the soils and air was forced through the soils to promote biodegradation and the removal of the volatile contaminants. The vapor was collected in the vents and passed through activated carbon treatment canisters before being released to the atmosphere. The treated soils were sampled and analyzed to confirm that treatment had achieved the NYSDEC's recommended cleanup objectives. The treated soil was then spread over an unpaved portion of the site near the location of the removed tank, covered with topsoil and seeded with grass.

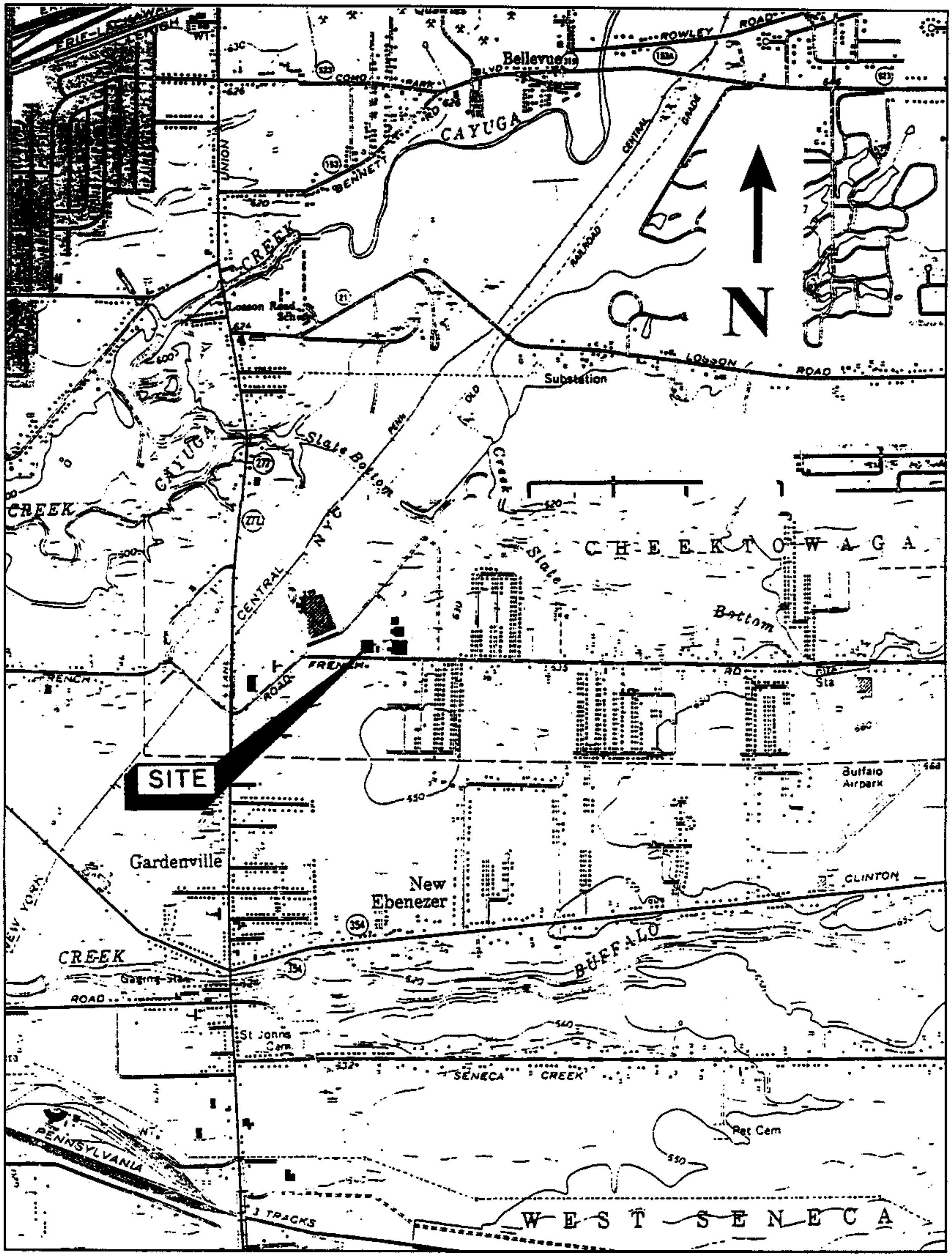

Figure 1 - Site Location
scale: 1" = approx. 2,400'

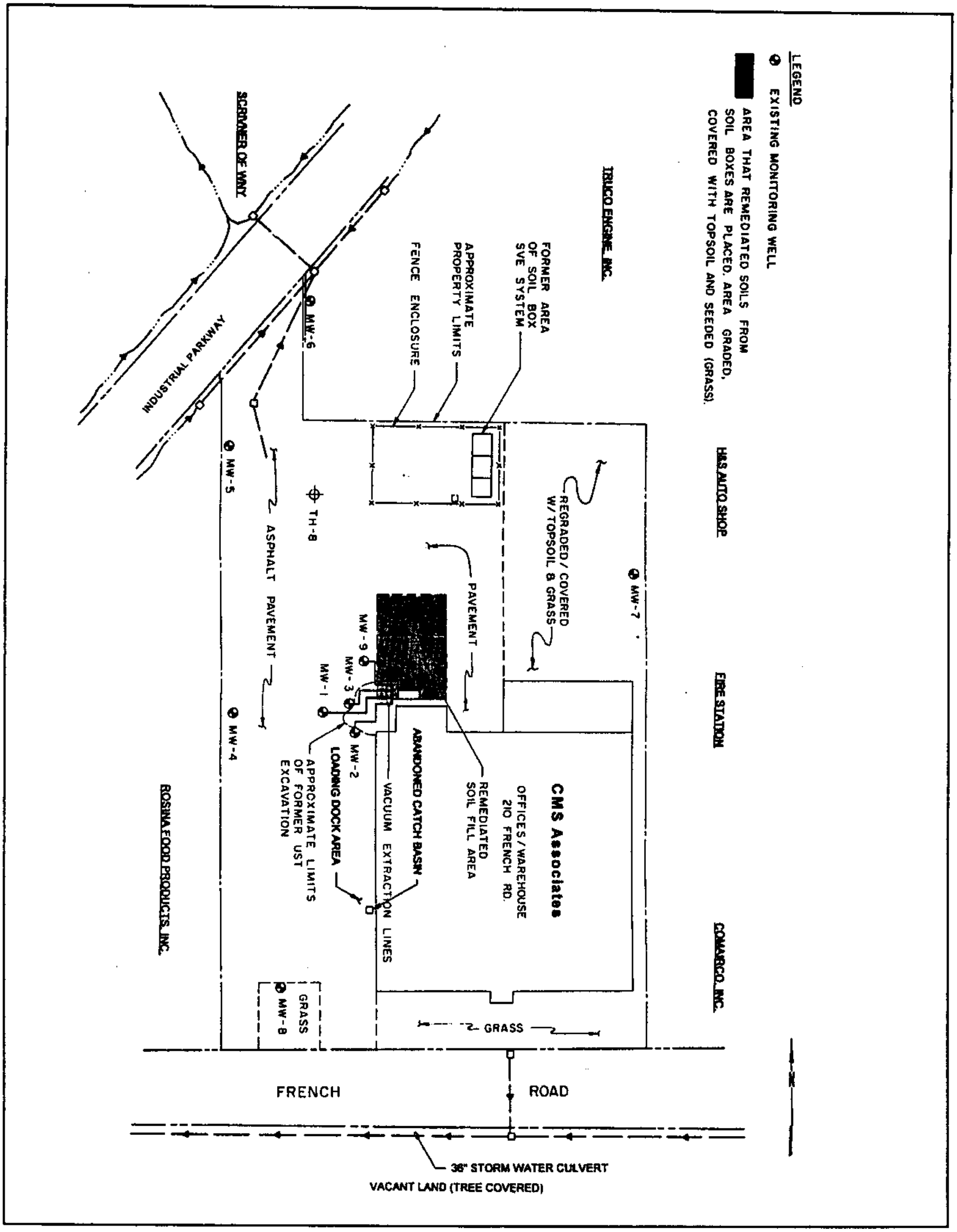

Figure 2 - Site Map
scale: 1" = approx. 123'

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and/or the environment posed by the presence of the hazardous waste, the site owner conducted a phased environmental investigation and focused feasibility study.

4.1: Summary of the Site Investigation

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

The investigation was conducted in essentially four phases. The first phase was conducted between March and June 1996, as part of the tank removal action. The second phase was conducted between August 1996 and October 1997 to better characterize the environmental conditions on site. The third phase of investigation was begun in January 1998, and included the resampling of the existing on-site groundwater monitoring wells and the installation and sampling of two off-site groundwater monitoring wells. The last phase of investigation consisted of a round of groundwater samples collected in June 1999, after a year of operating and monitoring the groundwater recovery and treatment system in the tank area, which is described later in this document.

A letter report dated June 4, 1996 describes the tank removal and the initial phase of site investigations. Reports entitled *Phase II Environmental Site Evaluation* (November 1996), *March 1997 Groundwater Sampling and Analytical Testing Event* (April 1997) and *Focused Feasibility Study* (October 1997) describe the field activities and findings of the second phase of the investigation in detail. The results of the off-site investigation are summarized in the report entitled *Interim Remediation Measure Report* (January 1999) and in correspondence dated January 28, 1999. The results of the last phase of the investigation were reported on July 6, 1999. Monitoring of the groundwater recovery system was also conducted and the findings reported quarterly.

The site investigation included the following activities:

- Installation of soil borings and monitoring wells for the analysis of groundwater and soil, and to determine the hydrogeologic conditions beneath the site.

- Analysis of storm sewer water, sediment and sewer bedding material.

To determine which media (soil, groundwater, etc.) contained contamination at levels of concern, the site investigation analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the CMS Associates site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of the NYS Sanitary Code. For soils, NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site-specific background concentration levels can be considered for certain classes of contaminants.

Based on the site investigation results, in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site required remediation. These are summarized below. More complete information can be found in the reports and correspondence cited earlier.

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

4.1.1 Site Geology and Hydrogeology:

Top soil and miscellaneous fill were encountered at the site extending from ground surface to depths of 2 to 2.5 feet. Beneath the fill materials were brown sandy silts and clayey silts.

The top of bedrock was located at depths ranging from about 6.4 feet below ground surface (location MW-8) at the south end of the site to 2.5 feet below ground surface (MW-11) north of the site. The bedrock consisted of a dark gray limestone with occasional, weathered dark gray shale partings, overlying a dense dark gray to black shale. The limestone layer averaged approximately 8.5 feet in thickness. Based on the test borings completed, the top of the limestone and the top of the underlying shale formation slope downward slightly from east to west and from north to south.

As part of the second phase of site investigations, a monitoring well (MW-9) and test hole (TH-8) were installed in the bedrock, for the purpose of testing the hydrogeological characteristics of the bedrock. Pressure testing of a 6.5 foot interval in MW-9, spanning the limestone and the upper portion of the shale layer, initially indicated a near-zero hydraulic conductivity; the bedrock did not accept any of the injected water. However, after increasing the water pressure, and possibly opening joints and bedding planes in the bedrock, the hydraulic conductivity was estimated to be approximately 1.45×10^{-3} cm/sec. When a deeper interval in MW-9 was tested, spanning only the shale formation, again the bedrock did not accept any of the injected water (near-zero hydraulic conductivity). Similar testing on TH-8 found that the hydraulic conductivity of the limestone and upper shale was approximately 1.6×10^{-4} cm/sec. However, unlike MW-9, the shale formation in TH-8 had a hydraulic conductivity of approximately 1.2×10^{-3} cm/sec.

Hydraulic conductivities greater than 10^{-2} cm/sec are considered high, whereas conductivities of less than 10^{-4} cm/sec are generally considered to be low. The hydraulic conductivity of the bedrock beneath the site might therefore be categorized as low to moderate. This is consistent with observations made during sampling; most of the wells were either pumped dry or were slow to recover. The results of the pressure tests at MW-9 and TH-8 also indicated that there may be some variability in the bedrock characteristics from one location to another.

The principal water-bearing features in the bedrock are joints and fractures. Thin, widely-spaced vertical and bedding-plane (horizontal) joints were found in the bedrock beneath the site. The surface of the limestone appeared to be slightly to moderately weathered. Rock cores from most of the monitoring wells installed on site were examined and Rock Quality Designations (RQDs) were assigned to each length of core. The RQD is a measurement of the degree of natural fracturing; the higher the RQD the greater the number of joints or fractures in the bedrock. On the average, the RQD of the limestone beneath the site was fair to good, ranging from 55 to 98%; whereas the RQD of the shale was poor to fair, ranging from 13 to 84%. While the shale might have more joints than the limestone, the joints are expected to be generally smaller. At greater depths the soil and rock above is likely to compress these joints, so the deeper shale is expected to conduct even less groundwater than the upper shale and limestone.

Before the groundwater recovery and treatment system was put into operation, the groundwater elevation near the location of the removed underground storage tank was higher than most of the site; the groundwater here was "mounded" several feet higher than at the perimeter of the site. Near the tank the groundwater was as much as 2.6 feet above the top of bedrock. Off site and at the site perimeter, groundwater was generally found 1 to 3 feet below the top of bedrock. Exceptions were found in monitoring wells MW-4 and -6. Unlike the other site monitoring wells, where groundwater elevations varied only a few feet over time, the groundwater elevation in MW-4 fluctuated by as much as 18 feet over the course of the site investigation; on occasions the groundwater was less than one foot below ground surface and well above the bedrock surface. The groundwater elevations in MW-6 changed by as much as 11 feet, and were frequently lower than the elevations measured in MW-11, located north of MW-6. On these occasions, there was an apparent reversal in the expected direction of groundwater flow, i.e., groundwater appeared to flow southward from MW-11 to MW-6 instead of northward to Slate Bottom Creek. As discussed below, groundwater flow from the site is generally to the north, however groundwater flow is dominated by bedrock fractures and precipitation/recharge events.

It is assumed that the groundwater is recharged or supplemented with precipitation passing through the thin cover of soil to the weathered, fractured surface of the bedrock, entering the deeper bedrock through the widely-spaced vertical fractures. Studies of the regional geology suggest that the weathered, fracture zone of the upper bedrock is discontinuous. Because the depth to bedrock is so shallow, it is likely that the site drainage ditches, and the underground utilities and building foundations which may have been built into the top of bedrock, have a pronounced effect on the degree of groundwater recharge and pattern of groundwater flow.

Figure 3 depicts the groundwater contours measured in March 1997, a year after the underground storage tank had been removed, and more than a year before the groundwater recovery system was put into operation. As indicated in Figure 3, groundwater beneath the site generally flowed north and northeast towards Slate Bottom Creek, but from the groundwater mound at the tank location there were also components of groundwater flow to the west and northwest. However, as will be discussed later in this document, the degree of groundwater contamination west of the tank location, at monitoring well MW-4, was actually much less than at other monitoring wells located further from the tank. With the groundwater recovery system in operation, it is believed that the groundwater mound at the tank location has been reduced or eliminated. Based on the March 1997 groundwater elevations, the horizontal rate of groundwater flow off site to the north and northeast from monitoring wells MW-6 and -7 has been estimated to be 22 and 17 feet per year respectively.

4.1.2 Nature of Contamination:

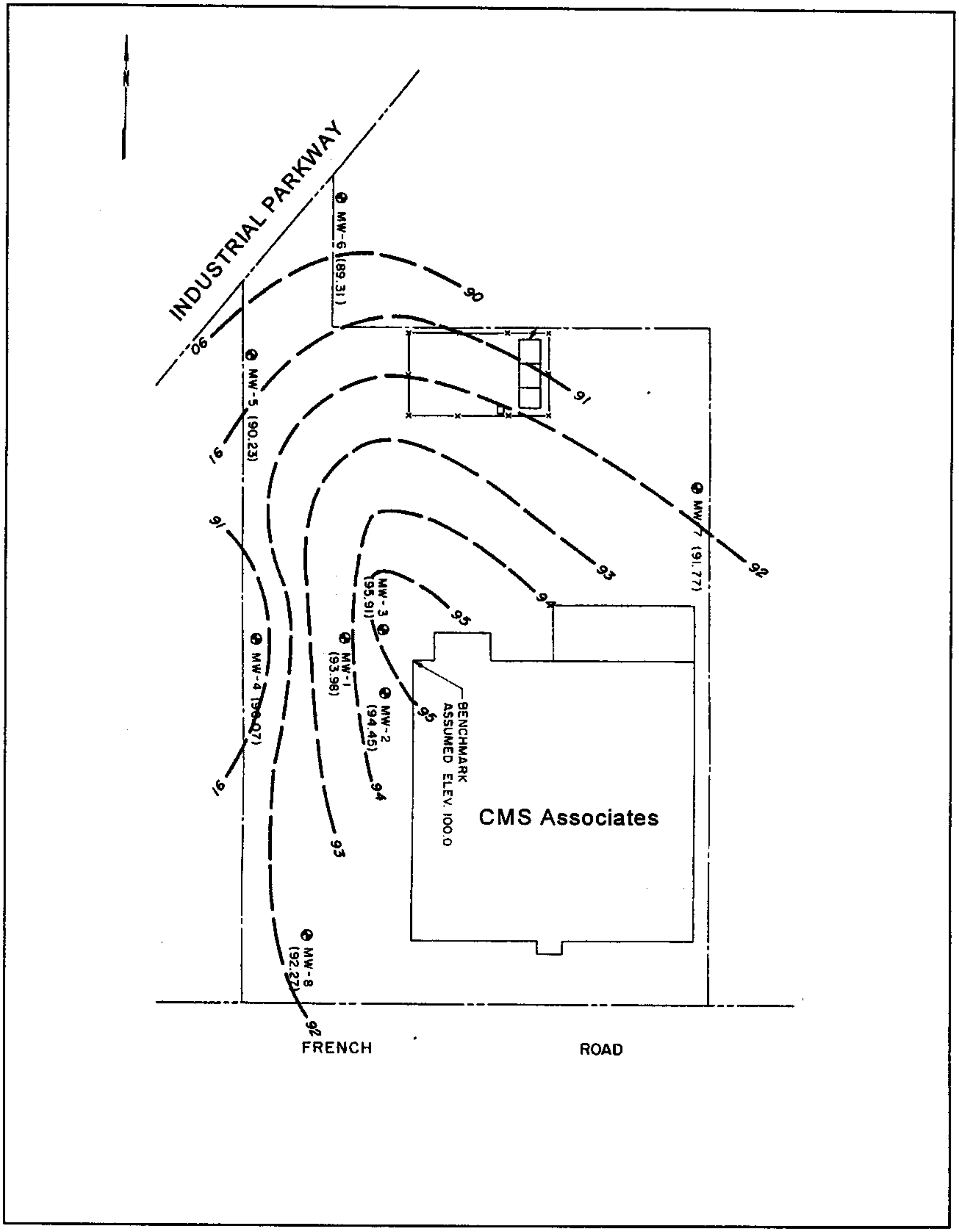

Figure 3 - Groundwater Contour
March 1997 scale: 1" = approx. 105'

The leaking underground storage tank rested directly on top of bedrock. The site investigations therefore focused primarily on the bedrock and the groundwater within it. As described in the site investigation reports, many groundwater samples and a limited number of soil, sediment and surface water samples were collected at the site to characterize the nature and extent of contamination.

Soil and water samples were analyzed primarily for volatile organic compounds (VOCs). The VOCs found most frequently and in the highest concentrations included: trichloroethene (TCE); 1,1,1 trichloroethane (1,1,1 TCA); cis-1,2 dichloroethene (cis-1,2 DCE); 1,1 dichloroethane (1,1 DCA) and tetrachloroethene. These chlorinated VOCs are solvents often used for cleaning and degreasing. Lower concentrations of benzene, toluene, ethylbenzene and xylene were also found in the groundwater from monitoring wells located nearest the underground tank. These unchlorinated VOCs are believed to be the remains of the gasoline that was once stored in the tank.

4.1.3 <u>Extent of Contamination</u>

Tables 1, 2 and 3 summarize the extent of contamination for the contaminants of concern in groundwater and soil and compare the data with the SCGs for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

<u>Groundwater</u>

A network of six groundwater monitoring wells was installed on site at the time that the underground storage tank was removed, in an effort to determine the extent of contaminant migration from the release. The first three monitoring wells were installed at the perimeter of the tank excavation, and three more were subsequently installed in the vicinities of the western and northern property boundaries (see Figure 2). The first groundwater samples collected contained several chlorinated VOCs and gasoline-related compounds, at concentrations exceeding SCGs by factors of several hundred to a few thousand. The total concentration of VOCs found in the monitoring wells nearest the tank (MW-1, -2 and -3) ranged from approximately 19,000 to 95,000 ppb. Similar results were found in monitoring wells MW-4 and -5 at the western perimeter of the site. At the site's northern perimeter, in monitoring well MW-6, the total VOC concentration was only 86 ppb.

Subsequent sampling in the first phase of the investigation confirmed the concentrations of contaminants in the monitoring wells MW-1, -2 , -3, -5, and -6 (see Table 2).However, the contaminant concentrations in monitoring well MW-4 dropped substantially; the total VOC concentration ranged from only 138 to 620 ppb. After the groundwater recovery system was put into operation, the total VOC concentration in monitoring well MW-4 dropped further to 16 ppb.

In the second phase of the site investigation, three additional monitoring wells (MW-7, -8, and -9) were installed and added to the groundwater monitoring program. Monitoring wells MW-7 and -8 were placed at the eastern and southern perimeters of the site respectively, to further define the areal extent of the groundwater contamination. Monitoring well MW-9 was installed a short distance from the tank location, to examine the hydrogeological characteristics of the bedrock beneath the site.

Table 1
Nature and Extent of Contamination
Groundwater

CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY EXCEEDING SCGs	SCG (ppb)
Volatile Organic Compounds (VOCs)	1,1 dichloroethane	ND - 32,000	59 of 68	5
	1,1,1 trichloroethane	ND - 84,000	25 of 68	5
	trichloroethene	ND - 12,000	37 of 68	5
	cis - 1,2 dichloroethene	ND - 6,700	37 of 68	5
	tetrachloroethene	ND - 14,000	18 of 68	5
	1,2 dichloroethane	ND - 650	13 of 68	0.6
	vinyl chloride	ND - 930	16 of 68	2
	1,1 dichloroethene	ND - 1,200	12 of 68	5
	toluene	ND - 290	14 of 42	5
	benzene	ND- 120	11 of 42	1
	ethylbenzene	ND - 81	9 of 42	5
	total xylenes	ND - 247	9 of 21	5*
TAL Inorganics	iron	53,000	1 of 1	300
	magnesium	53,000	1 of 1	35,000
	manganese	960	1 of 1	300
	sodium	76,000	1 of 1	20,000

ND - Non Detect

SCG - Standards, Criteria and Guidance values, from TOGS 1.1.1 - *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (June 1998)

* - Applies to each individual isomer; ortho-, meta-, and para-xylene

Table 2
Groundwater
Total VOC Concentration
(parts per billion)

Monitoring Well MW -		1	2	3	9	4	5	6	7	8	10	11
SAMPLE DATE		RECOVERY WELLS				PERIMETER WELLS					OFF-SITE WELLS	
5/15/96	PHASE I	27,440	95,010	19,130								
5/29/96						20,970	12,990	86				
6/5/96						138	4,038					
6/15/96		42,180	130,070	49,387		442	3,717	147				
10/9/96	PHASE II		130,600	55,700		620	5,230	277	1,500	249		
10/12/96		27,400										
10/30/96			149,000									
3/20/97			117,861	29,134		600	5,800	100	2,000	72		
1/7/98	PHASE III		7,770									
2/10/98		5,240	457				6,700	111	2,000			
8/12/98			3,740*				4,080		751			
10/12/98			30,100*	10,600*	29,800*							
1/13/99											ND	ND
2/10/99			8,920*	6,300*								
5/28/99		8,500*	12,270*	10,600*	3,210*							
6/25/99	PHASE IV		33,000*			16	5,040	103	1,100	282	ND	2**
10/22/99		40,990*	28,400*	28,400*	10,490*							

* - Pulse-pumping of the groundwater recovery wells began on 6/4/98; the concentrations reported do not accurately reflect static groundwater conditions
ND - Non detect
** - Detected 2 ppb of total xylenes in the NYSDEC split sample

Table 3
Post-IRM, Residual Contamination
Soil

CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY EXCEEDING SCGs	SCG (ppm)
Volatile Organic Compounds (VOCs)	tetrachloroethene	0.029 - 0.74	0 of 4	1.4
	1,1,1 trichloroethane	ND - 0.026	0 of 5	0.8
	2-butanone	ND - 0.067	0 of 4	0.3
	trichloroethene	ND - 0.016	0 of 5	0.7
	cis 1,2 dichloroethene	ND - 0.018	0 of 5	NA
	methylene chloride	0.007 - 0.079	0 of 5	0.1
	vinyl chloride	ND - 0.002	0 of 5	0.2
	acetone	ND - 0.038	0 of 4	0.2
TAL Inorganics	cobalt	29 - 320	1 of 2	30 or SB
	iron	14,000 - 16,000	2 of 2	2,000 or SB
	nickel	17 - 20	2 of 2	13 or SB
	zinc	80 - 140	2 of 2	20 or SB
	beryllium	ND - 0.66	1 of 2	0.16 or SB
	copper	29 - 40	2 of 2	25 or SB
	mercury	ND - 0.22	1 of 2	0.1

Note: Table 3 summarizes the extent of residual contamination in the soil following the completion of the IRMs, and includes only the analyses of the treated excavated soils, the confirmatory sample from the tank excavation side walls and the soils in the bedding of the on-site storm sewer. Only those **VOCs** which were detected, and only those **TAL Inorganics** which exceeded SCGs in one or more sample, are included here.
ND - non detect
NA - not available
SCG - Standards, Criteria and Guidance values, from TAGM 4046 - *Determination of Soil Cleanup Objectives and Cleanup Levels* (January 1994)
SB - Site Background levels for the CMS site were never determined, the default values provided by TAGM 4046 were used for comparison instead
TAL - Target Analyte List

The total VOC concentrations found in MW-7 ranged from over 700 ppb to approximately 2,600 ppb. Unlike the earlier wells, none of the gasoline-related compounds (benzene, toluene, ethylbenzene or xylenes) were found in MW-7, only chlorinated VOCs were detected. Located presumably upgradient of the tank location, MW-8 also did not find evidence of gasoline contamination. However, chlorinated VOCs were found, at concentrations exceeding SCGs; the total concentration of VOCs in MW-8 ranged from 72 to 282 ppb.

In January and February 1998, as part of the third phase of the site investigation, monitoring wells MW-2, -5, -6, and -7 were resampled. The purpose of the sampling was to determine if there were any substantial changes in the groundwater contamination, nearly two years after the leaking tank had been removed. Contaminant concentrations in MW-2 did in fact drop from an earlier maximum of 149,000 ppb total VOCs to 7,700 and 457 ppb total VOCs in January and February 1998 respectively. However, the total VOC concentrations at the site perimeters (MW-5, -6, and -7) showed no significant change. Given the estimated rate of groundwater flow (17 to 22 feet/year), significant changes in the groundwater quality at the site perimeter, 200 or more feet from the tank location, most likely would not be observed in the first few years following the removal of the leaking tank.

In June 1998, the groundwater recovery and treatment system was put into operation, pumping water from monitoring wells MW-1, -2, -3, and -9. Quarterly monitoring of the system has included the sampling and analysis of the groundwater from each of the four monitoring wells. Before the pumping began, the total VOC concentration in monitoring well MW-2 had fallen to 457 ppb. After the recovery system started, the total VOC concentration in monitoring well MW-2 increased to 3,740 ppb in October 1998 and 33,000 ppb in June 1999. Monitoring wells MW-1 and -9 have shown a moderate decrease in total VOC concentrations since pumping began while the level of contamination in monitoring well MW-3 has remained relatively constant. The increased concentrations during pumping may indicate that part of the contaminant plume which had migrated from the vicinity of the monitoring wells is being drawn back.

In the latest phase of the site investigation, monitoring wells MW-10 and -11 were installed off site, to the north and northeast, to determine the extent of the groundwater contamination (see Figure 4). Sampled in January and June of 1999, these two off-site monitoring wells have thus far shown no evidence of site-related contamination.

A summary of the extent of the groundwater contamination is provided in Table 1. Table 2 provides a summary of the total VOC concentrations found in the various site monitoring wells during the course of the investigation.

Soil

When the underground storage tank was removed it was discovered that it had leaked into the top of the bedrock and surrounding soils. Soils which appeared to be stained or otherwise heavily contaminated were excavated and stored on site to await treatment and disposal. Seven soil borings were then advanced around the excavation to define the limits of contamination. Samples from each boring were examined with field instruments for evidence of VOCs and the excavation was then expanded where needed. A composite soil sample was then collected from the walls of the excavation, verifying that TAGM 4046 cleanup objectives had been reached.

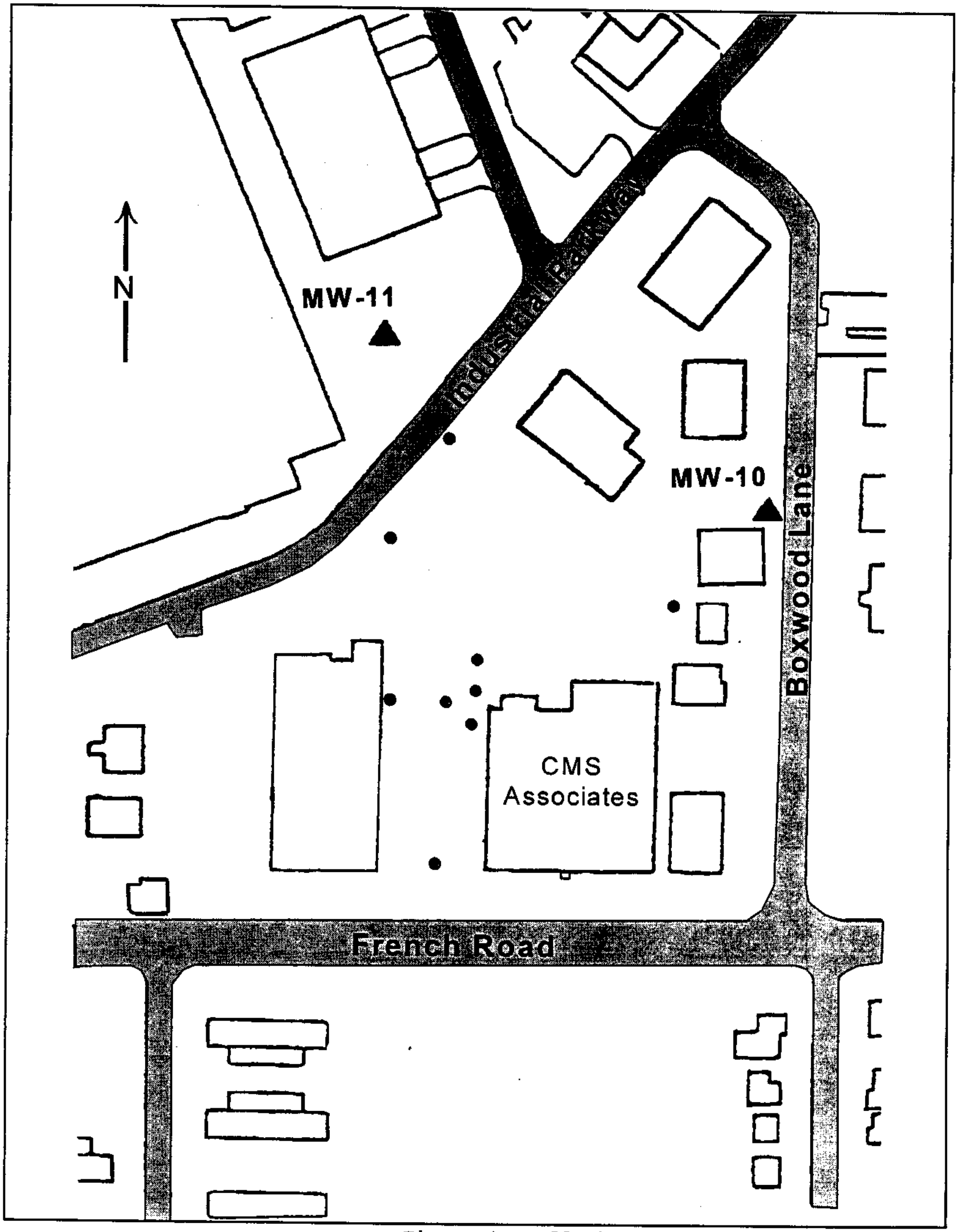

Figure 4 - Off-site Monitoring Well Locations
scale: 1" = approx. 190'

Initial composite samples of the contaminated soil excavated from around the tank contained more than 28 ppm of tetrachloroethene, 14 ppm of 1,1,1 trichloroethane, and 1.7 ppm of xylene; the total VOC concentration was as high as 45 ppm. The cleanup guidance levels for these three compounds are 1.4, 0.8, and 1.2 ppm respectively. As described earlier in Section 3.2 of this PRAP, the excavated soil was later treated, reducing the concentrations of VOCs to below TAGM 4046 cleanup objectives, and the treated soil placed on the site.

The contaminated soil excavated from around the tank was also analyzed for the Target Analyte List (TAL) of inorganic substances. The concentrations of TAL inorganics that were found are be considered typical of an industrial site. Since the same inorganic had not been found in the groundwater at levels of concern and were considered to pose no significant environmental threat; further treatment of the soil was deemed unnecessary. The analytical results for the three samples of treated soil and the composite sample collected from the walls of the completed tank excavation are included in Table 3.

As part of the second phase of the site investigation, soil from beneath an on-site storm sewer catch basin was sampled. The underground sewer flowed from a loading dock near the southwest corner of the building, northwards to the catch basin near Industrial Parkway (see Figure 2). Since the sewer passed near the underground storage tank, it was believed that the bedding or loose soil backfilled around the outside of the sewer might have been acting as a migration pathway for contaminants. While the same VOCs detected in the tank and surrounding soils were also detected in the soil beneath the sewer catch basin, the concentrations found ranged from only 4 to 310 parts per billion, well below the parts per million range of the TAGM 4046 cleanup objectives. Remediation of the sewer bedding was deemed unnecessary. The analytical results for this soil sample are also incorporated into Table 3.

Storm Water and Sewer Sediment

The storm sewer catch basin, located in the loading dock area at the southwest corner of the facility, had been sealed and abandoned shortly after the underground tank was removed. To determine if contaminated groundwater may have also traveled inside this storm sewer , a sample of water was collected from the sewer's downstream catch basin, located near Industrial Parkway. The sample was "standing" water, collected during a dry weather period.

The catch basin water sample was analyzed for VOCs only. Three such compounds were found at low concentrations: 6 ppb of 1,1 dichloroethene, 6 ppb of tetrachloroethene and 30 ppb of 1,1,1 trichloroethene. The groundwater quality standard (SCG) for each of these VOCs is 5 ppb.

The catch basin empties into an open drainage ditch which flows north through the industrial park to Slate Bottom Creek. Except during storm events, the drainage ditch is usually dry. Given the relatively low concentrations detected, it was determined that the contaminants found in the catch basin water did not require remediation.

The on-site storm sewer was installed above the top of bedrock. It is believed that the groundwater recovery system has lowered the groundwater mound in the vicinity of the tank location and has thereby eliminated or reduced the flow of contaminated groundwater to the sewer bedding.

A composite sample of sewer sediment within two of the on-site catch basins was also collected and analyzed for VOCs and TAL inorganic substances. Several VOCs were found, typically in concentrations of parts per billion (ppb); 100 ppb of 1,1,1 trichloroethane was the highest concentration of any VOC detected. Unlike a creek or stream, the storm sewer is not considered a viable aquatic habitat; stream sediment SCGs are not applicable or appropriate criteria for sewer sediments. The sewer sediment sample results were instead compared to the soil cleanup objectives of TAGM 4046, and found to be well below the cleanup levels. Since all of the TAL inorganic found were also below the TAGM 4046 cleanup levels, cleanup of the sewer sediments was deemed unnecessary.

Waste Materials

Other than the contents of the underground storage tank, no discrete waste materials were found at the site. Groundwater and soil contamination were the issues of concern. The tank contained a mixture of waste chlorinated solvents with some components of gasoline present. The mixture included 110,000 ppm of tetrachloroethene; 200,000 ppm of 1,1,1 trichloroethane and 10,000 ppm of 1,2,4 trimethylbenzene. The tank contents were removed and disposed at an off-site hazardous waste disposal facility. After the tank and surrounding soils had been removed, the first few groundwater samples from the nearby monitoring wells MW-2 and -3 exhibited a slight oily sheen. However, there has been no other direct evidence of non-aqueous phase liquids found.

As described in Section 4.2 of this proposal, wastewater, consisting of contaminated groundwater recovered from beneath the site, is currently being treated on site. The treated water is discharged under permit to an Erie County Sewer District (ECSD) sanitary sewer located beneath French Road, and transported to the Buffalo Sewer Authority (BSA) wastewater treatment facility. As required by the ECSD/BSA permit, the treated wastewater is sampled monthly and has been found in compliance with discharge limits for site-related contaminants. As of the end of the last reporting period (August 1999) it is estimated that over 74,000 gallons of groundwater has been extracted and treated at average rates ranging from 60 to 570 gallons per day.

Air

Air monitoring was conducted using field instruments during site investigation activities. No site impacts on air quality were observed. The discharge from the groundwater treatment system has also been monitored and found to be in compliance with NYSDEC permits for air emission sources.

4.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed without extensive investigation and evaluation, to prevent, mitigate, or remedy an environmental or public health threat.

As previously discussed, the first IRM completed at this site, was the removal of the leaking underground tank. The second IRM completed was the excavation and treatment of the contaminated soils from around the leaking tank.

The initial phase of the site investigation had indicated that groundwater in the immediate vicinity of the underground storage tank was significantly contaminated. Two remedial alternatives were examined in a focused feasibility study; 1.) take no active response and allow natural attenuation processes to reduce the level of groundwater contamination, or 2.) pump and treat the contaminated groundwater. Pumping and treating groundwater from the "hot spot" of contamination, in the vicinity of the tank, would reduce the total mass of contaminants, mitigating the spread of groundwater contamination. Since this pump and treat alternative would also reduce the time required for natural attenuation processes to restore the groundwater to its beneficial use, it was selected as an IRM.

On June 4, 1998, a vacuum-enhanced groundwater recovery and treatment system was put into operation. The system consists of a vacuum pump connected to the monitoring wells MW-1, -2, -3 and -9, which are located nearest the location of the removed tank. These four recovery wells draw groundwater from an interval spanning both the limestone bedrock and the upper portion of the underlying shale formation. Monitoring well MW-9 is approximately 10 feet deeper than the other three recovery wells, penetrating that much deeper into the underlying shale . The bedrock beneath the site is slow to yield groundwater. To recover the optimum volume of groundwater, the pump is set to operate on a cycle; 1 hour on and 5 hours off. The groundwater is pumped from the wells to an air stripper to remove the VOCs, and the treated water is then discharged to the municipal sanitary sewer. It was found that the vapor from the air stripper contained VOCs at low enough concentrations that further treatment was unnecessary; the vapor is discharged directly to the atmosphere in accordance with NYSDEC guidelines. It is estimated that between October 1998 and August 1999, 6 pounds of VOCs were extracted from the 74,000 gallons of groundwater recovered. There is, however, no estimate of the total quantity of VOCs which leaked from the underground storage tank.

4.3 Summary of Human Exposure Pathways:

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.

Currently there are no completed pathways of human exposure at the site. The localized contaminated groundwater exists primarily within the bedrock and is not used for drinking or industrial processes; a survey of the buildings north, east and west of the site found no production wells or sumps.

A possible future exposure pathway might include the construction of building foundations or the installation or repair of subsurface utilities. Contaminated groundwater exists within several feet of the ground surface; future construction might extend to this depth and workers might come in direct contact with the contaminated groundwater or inhale the volatilized contaminants. However, such exposure would be infrequent; direct contact would likely be of short duration and the levels of contaminants volatilized from groundwater in the unconfined space of an open excavation would pose a minimal inhalation hazard.

4.4 Summary of Environmental Exposure Pathways:

Groundwater flows towards Slate Bottom Creek, but off-site monitoring wells showed no evidence that contamination has migrated to the creek. Having removed the leaking tank, the source of the groundwater contamination was also removed. By treating the more severely contaminated groundwater in the vicinity of the tank, the total mass of contaminants migrating off site will be reduced, mitigating any possible impact to Slate Bottom Creek and reducing the time that it would take for groundwater quality to reach standards via natural attenuation processes.

SECTION 5: 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. For this site, CMS Associates has been identified as the sole responsible party.

The NYSDEC and CMS Associates entered into a Consent Order on January 28, 1997. The order obligated CMS Associates to treat and dispose the contaminated soil previously excavated from around the leaking underground storage tank, and implement an interim remedial program to address the contaminated groundwater.

SECTION 6: SUMMARY OF THE SELECTED REMEDY

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at the site. The goal selected for this site is to mitigate the impacts of contaminated groundwater to the environment.

The NYSDEC believes that the interim remedial measures taken to date:

- removal of the leaking underground tank,
- excavation and ex situ treatment of the contaminated soils,
- recovery and treatment of the contaminated groundwater,

have accomplished this remedial objective. Provided that it continues to be operated and maintained in a manner consistent with the design, the groundwater recovery system will reduce the mass of contaminants in the groundwater and mitigate the spread of contamination off site.

The NYSDEC has selected no further remedial action beyond the continued operation and monitoring of the current groundwater recovery and treatment system. More specifically, the selected remedy will include:

- continued operation of the vacuum enhanced groundwater recovery and treatment, with periodic sampling of the groundwater recovered and the treated water discharged to the sanitary sewer,

- placement of deed restrictions on the site property to limit use of the property for commercial or industrial purposes only and preclude the use of the groundwater for drinking or manufacture processes,

- long-term sampling of the site groundwater monitoring wells and,

- annual evaluation of the operation and monitoring data for trends in contaminant concentrations.

This no further remedial action remedy is based on:

- The technical impracticability of restoring the groundwater to pre-release conditions, given the complexity of the site hydrogeology;
- The fact that the local groundwater currently has no beneficial use and is unlikely to be used in the foreseeable future;
- The present lack of completed pathways of human exposure and the absence of a significant threat to public health;
- The site's commercial/industrial setting and the absence of sensitive environmental receptors.

The interbedding of shale and limestone, the variable hydraulic conductivity of the bedrock and the fluctuating groundwater elevations noted in certain monitoring wells suggests a complex hydrogeology. Oily sheens observed on the surface of the earliest groundwater samples collected in the vicinity of the buried tank and the high concentrations of contaminants which remain in the groundwater following a year of treatment also suggest the possible presence of non- aqueous phase liquids (NAPL). The complexity of the hydrogeology and the possible presence of NAPL offer a situation for which there is no practical, effective means for returning the site to pre-release conditions.

As noted earlier, off-site properties downgradient of the site are commercial and industrial. A survey of the area found no active drinking water or production water wells, sumps or basements, i.e., the groundwater is currently not used and there are no completed pathways of human exposure. Given the availability of the existing municipal water supply system, it is also unlikely that groundwater would be used as a source of drinking or production water in the foreseeable future. However, as part of the remedy, a deed restriction will be placed on the site to preclude the installation of wells and use of the groundwater. The deed will also include a notice of the site contamination so that appropriate measures might be taken to ensure workers' safety in the event that future building or subsurface utility construction occurs. Owners of the adjacent properties have been notified of the potential impacts of the site contamination. The site would continue to be listed in the annual New York State Registry of Inactive Hazardous Waste Disposal Sites; however, its classification will be revised from class 2 (significant threat to the public health or environment) to class 4 (site properly closed, continued management required).

The potential for ultimately restoring the groundwater to its beneficial use is uncertain, given the complexity of the site geology (i.e., the vertical and horizontal fracturing of the bedrock) and mobility of the contaminants. Because of this, a phased approach has been taken in characterizing the site, with each phase designed to provide information necessary for the next phase. Likewise, a phased approach has been selected for the site remediation, to achieve interim goals at the outset, while developing a more accurate understanding of the restoration potential of the contaminated groundwater.

The selected remedy will include the continued operation of the groundwater collection and treatment system, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected. Modifications might include installation of additional recovery wells, alternating pumping at wells to eliminate stagnation points or changing the pump cycle period.

The continued management of the site will also include a long-term groundwater monitoring program, including the sampling and analysis of groundwater from areas beyond the tank location, at the site perimeter and off-site locations. The data gathered will be evaluated annually for trends in changing contaminant concentrations and a determination made for more extensive investigation and/or additional remedial measures if warranted.

SECTION 7: 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 public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- In March 2000 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

CMS Associates
Proposed Remedial Action Plan
Cheektowaga (T), Erie County
Site No. 9-15-168

The Proposed Remedial Action Plan (PRAP) for the CMS Associates site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 18, 2000. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the CMS Associates site. The selected remedy is no additional action beyond the continued operation and monitoring of the current groundwater recovery and treatment system. More specifically, the selected remedy includes:

- continued operation of the vacuum-enhanced groundwater recovery and treatment system, with periodic sampling of the groundwater recovered and the treated water discharged to the local sanitary sewer,
- placement of deed restrictions on the site property to preclude the use of that water for drinking or manufacture processes,
- long-term sampling of the site groundwater monitoring wells and
- annual evaluation of the operation and monitoring data for trends in contaminant concentrations.

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 February 29, 2000 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from Mr. Ken Kloeber. The public comment period for the PRAP ended on March 22, 2000.

This Responsiveness Summary responds to all questions and comments raised at the February 29, 2000 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: What will be the restrictions on the future use of the property?

RESPONSE 1: The owner will place a deed restriction on the property to preclude the use of groundwater for drinking or manufacturing, and to restrict the property to commercial or industrial use.

COMMENT 2: The Town of Cheektowaga would like a formal notification when the ROD is executed. The Town would also like an update on the remaining hazardous waste sites in the Town.

RESPONSE 2: The NYSDEC will formally notify the Town by issuing a copy of the ROD to the Town Clerk as well as copying Councilman Johnson. An update on the remaining hazardous waste sites was issued to the Councilman and Building Inspector in March 2000.

A letter dated March 2, 2000 was received from Mr. Ken Kloeber of Ken W. Kloeber Consulting Engineers, environmental consultant to CMS Associates, which included the following comment:

COMMENT: The PRAP should state "No Additional Action Required" instead of "No Further Action Required". This revised wording communicates to the public that much work has been accomplished at the site.

RESPONSE: Based on the success of the IRMs taken, the selected remedy for the site is one of no additional remedial action beyond the continued operation and maintenance of the existing groundwater treatment system and periodic evaluations of the effectiveness of the remedy. To be consistent with our documents used throughout the State, the Record of Decision refers to the selected remedy as "no further remedial action."

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

CMS Associates
Proposed Remedial Action Plan
Cheektowaga (T), Erie County
Site No. 9-15-168

UST Removal at 210 French Road, **Bio Utilization Group, June 1996**

Phase II Environmental Site Evaluation, **Hazard Evaluations Inc., November 1996**

March 1997 Groundwater Sampling and Analytical Testing Event, **Hazard Evaluations Inc., April 1997**

Focused Feasibility Study, **Hazard Evaluations Inc., October 1997**

Periodic Discharge Monitoring Report, **Ken W. Kloeber Consulting Engineers, December 1998**

Interim Remediation Measure Report, **Ken W. Kloeber Consulting Engineers, January 1999**

Periodic Discharge Monitoring Report, **Ken W. Kloeber Consulting Engineers, January 1999**

210 French Road Quarterly Monitoring Report, **Ken W. Kloeber Consulting Engineers, March 1999**

210 French Road Quarterly Monitoring Report, **Ken W. Kloeber Consulting Engineers, July 1999**

210 French Road Quarterly Monitoring Report, **Ken W. Kloeber Consulting Engineers, December 1999**

Proposed Remedial Action Plan - CMS Associates - Site No. 915168, **NYSDEC, February 2000**