

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Solvents and Petroleum Service, Inc.**
Facility Address: **SYRACUSE, NEW YORK**
Facility EPA ID #: **EPA ID # NYD013277-454** Facility Name:

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

2. Is **groundwater** known or reasonably suspected to be “contaminated”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”

If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

Site Background

The SPS facility is located at 1405 Brewerton Road in Syracuse, NY. The facility is located adjacent to a slowly flowing backwater segment of Ley Creek, a small stream that discharges into Onondaga Lake, (see Figure 1, Figure 2).

Prior to ownership of the facility by SPS for use as a virgin solvents distributor in 1977, the site was occupied by several commercial enterprises which may have released hazardous constituents to the groundwater at the facility. In the 1940s, the site was occupied by a gas station, a car repair shop and a car wash which occupied Building 2. In 1954, M.V. Whitaker, a Syracuse businessman who delivered virgin solvents to local clients relocated his business to the site and constructed Building 1. These two companies coexisted at the site until the early 1970s, at which time the gas station closed and the underground storage tanks (USTS) were removed. M.V. Whitaker expanded its operation to include Building 2 for solvent storage. In 1980, SPS applied for, and was granted status as a Treatment, Storage and Disposal Facility (TSDF) and as a transporter of hazardous waste.

The current owner, SPS, is a distributor of organic and chlorinated solvents to industries in the Central New York region. Solvents are stored in above-ground steel or stainless steel tanks, either in buildings or in open sided pavilions. In 1979, operations were expanded to include the collection and storage of drummed spent solvents from existing customers. SPS is strictly a storage facility for hazardous wastes with no on-site processing other than aggregation of spent solvents for off-site transport. SPS has a NYS Waste Haulers Permit.

In 1981, SPS applied for and received a Permit to Operate a Solid Waste Management Facility from NYSDEC. SPS also has a USEPA RCRA Part B Permit, identification number NYD013277-454.

Hazardous wastes are collected from clients and temporarily stored on-site prior to off-site disposal. Hazardous wastes are stored in three areas: a storage area for non-ignitable containerized wastes (Building 2), a storage area for ignitable containerized wastes (Building 1), and four 5,000 gallon transfer tanks. The four 5,000 gallon tanks are used to store the following hazardous wastes: flammable waste liquid, waste trichloroethene (TCE), waste 1,1,1-trichloroethane, and the fourth tank is held in reserve for emergencies. The non-ignitable storage area has a capacity of 40 55-gallon drums. The ignitable storage area (Building 1) has a capacity of 20 55-gallon drums. All wastes are received by SPS in drums. SPS personnel manually transfer liquids from the drums to the four 5,000 gallon waste storage tanks. SPS has specific written procedures which are used when commingling wastes from various clients.

In addition, SPS has several trailers staged at the north end of the property for container storage. The areas of the site not occupied by buildings or storage tanks have been covered with asphalt or concrete. The western portion of the site consists of a large concrete slab on grade that serves as a secondary containment pad. The containment pad drains to a sump along the north side of the property. A chain-link fence to control site access surrounds the facility.

When sufficient quantities of waste have accumulated, the material is shipped via a registered waste hauler to a USEPA and NYSDEC permitted recycler. At this point SPS becomes a hazardous waste generator. All wastes shipped off-site are sent to reclamation facilities or fuel blending operations.

Since 1985, two minor spills of solvents have been reported on the SPS property. The spills involved less than 100 gallons of solvents and SPS made efforts to contain and cleanup the spills. Because of these reported spills and the historical uses of the property, the impact to groundwater quality has been under investigation since the early 1990's. Investigations conducted at the site include:

- *Hydrogeologic Investigation*, 1993, O'Brien & Gere Engineers
- *Groundwater Monitoring Program*, 1993-present, Various Consultants
- *Comprehensive Groundwater Monitoring Evaluation*, NYSDEC 1997
- *Feasibility Study Report*, 1999, Environmental Products & Services, Inc.
- *RCRA Facility Investigation Report*, 1999, CHA.
- *Corrective Measures Study Report*, 2001, CHA
- *2002 First Quarter Environmental Monitoring Summary*, CHA
- *2002 Second Quarter Environmental Monitoring Summary*, CHA

Additionally, Clough, Harbour & Associates LLP (CHA) has conducted a Remedial Investigation (RI) of the former Town of Salina Landfill, which has been listed as a Class 2 Inactive Hazardous Waste Site. The Town of Salina Landfill is located along the north side of the property, immediately adjacent to Ley Creek. Information (publicly available) from the landfill site investigation that is pertinent to the SPS site has been reviewed in considering potential environmental impacts to Ley Creek.

SITE INFORMATION (see Corrective Measures Study, CHA 2001)

The subsurface of the SPS site has been characterized from the drilling and installation of a number of monitoring wells and piezometers. O'Brien & Gere Engineers installed four (4) monitoring wells in 1993 (MW-1S, MW-2S, MW-3S, and MW-4S) and Environmental Products and Services installed a recovery well (RW-1) and a piezometer (P-1) in 1998. The boring logs from these wells and piezometers indicate that portions of the site are underlain by fill. Where fill materials are absent, the subsurface deposits consist of silts and fine sands to a depth of approximately 20 feet below grade at the southern portion of the site (MW-1S) and up to 30 feet below grade at the northern end of the site (P-1). A dense glacial till underlies the silt and sand deposits encountered at that depth.

Based on information from borings drilled on the adjacent Town of Salina Landfill site, the uppermost sand unit encountered beneath the SPS site appears to be of uniform thickness and somewhat continuous in nature. The lower sand unit, encountered only in piezometer P-1 on the SPS site, is discontinuous in nature. This unit does appear to thicken to the southwest, toward Onondaga Lake, in the vicinity of the landfill (See Figure 3 for location of borings/wells and Figure 4 for a representative cross-section.)

The depth to groundwater on the SPS site has been measured at approximately 4 to 5 feet below grade during sampling events. Given the depth to till of approximately 20 to 30 feet below grade, this would indicate that the saturated thickness of the water table aquifer is a maximum of 25 feet. Groundwater on the site flows to the north apparently discharging to the backwater tributary to Ley Creek (See Figure 5). The hydraulic gradient across the site is approximately 0.03 ft./ft. A groundwater contour map prepared for the Town of Salina Landfill site shows that the main stem of Ley Creek is the apparent discharge point for groundwater beneath the landfill; with groundwater flowing to the south on the north side of Ley Creek and groundwater flowing to the north on the south side of Ley Creek.

The following table summarizes the hydraulic characteristics for the site discussed in the RCRA Facility Investigation Report (prepared by CHA in 1999):

Site Hydrological Characteristics.

Hydrological Characteristic	Value
Apparent Groundwater Flow Direction	North
Approximate Depth to Groundwater	4-5 ft.
Depth to Till/Aquitard	20-30 ft.
Assumed Saturated Aquifer Thickness	25 ft. (maximum)
Assumed Porosity	0.15 or 15%
Hydraulic Gradient	0.03 ft./ft.
Hydraulic Conductivity	0.48 ft./day or 3.3×10^{-4} ft./min.
Transmissivity	12 ft. ² /day
Average Linear Velocity of Groundwater	9.6×10^{-2} ft./day or 35 ft./year

Groundwater Quality

Groundwater samples from the facility have been collected and analyzed since 1993. A copy of an analytical summary data table is included as Table 1. In general, the analytical results for each of the sampling years are similar. It should be noted, however, that the concentration of VOC's in replacement well 4R (1997,1999) were markedly higher than the concentrations of contaminants in the historical database from the other wells.

The highest levels of aromatic hydrocarbons are present at background monitoring well MW-IS. MW-IS is located in the vicinity of the former gasoline station USTs. Benzene has been reported at concentrations ranging from 1,800 micrograms per liter (ppb) to 2,700 /ppb. Toluene has been reported at concentrations ranging from 140 ppb to 350 ppb. Ethylbenzene has been reported at concentrations ranging from < 100 ppb to 780 ppb. Xylenes have been reported at concentrations ranging from 1,300 ppb to 3,800 ppb. The NY State groundwater standards for each of these parameters are 5 /ppb or less. It should be noted that chlorinated volatile organic compounds (vinyl chloride, 1,2-DCE, 1,1-DCA, and TCE) were not detected at this monitoring well from 1993 through 1999.

The historical analytical results from monitoring well MW-2S indicate minor exceedances of VOCS, which for the most part appear to be decreasing in concentration. Benzene has been reported at concentrations of < 1 ppb to 10 ppb (0.7 ppb standard). Vinyl chloride has been reported at concentrations ranging from < 1 ppb to 20 ppb (2 ppb standard), and appears to be decreasing in concentration with time. 1,2-DCE and 1,1-DCA were reported slightly above the NY State groundwater standards (5 ppb) in 1993 and 1994 but were reported below the standards since 1995.

Analytical results from monitoring well MW-3S reported VOCs below the method detection limits for groundwater samples collected during 1993. The 1994 analytical results reported a minor exceedance of benzene. Results from 1995 groundwater samples reported trace amounts of 1,2-DCE. The 1996 analytical results reported a minor exceedance of benzene and a significant increase in the concentration of 1,2-DCE. Since then, the concentrations of those compounds have diminished.

Monitoring well MW-4S is located in a position most directly downgradient of the solvents management area. Historical analytical results reported minor exceedances of benzene, xylene, chloroethane and trichloroethene. When MW-4S was deepened and renamed MW-4R in 1997, the concentrations of vinyl chloride and 1,2-DCE increased by over 100 times. Since that time the measured concentrations of VOC have decreased considerably.

P-1 is approximately 20 feet up gradient of MW-4S. The concentration of 1,2-DCE was 6 µg/L and the concentration of vinyl chloride was 11 µg/L in the March 2001 sampling event; significantly lower than the concentrations in MW-4S. No BTEX compounds have been detected in P-1 in excess of NYS groundwater standards.

RW-1: Benzene has been detected in this recovery well located between well MW-4S and piezometer P-1, but the concentration has remained fairly uniform, between 4 µg/L and 5 µg/L. The concentration of TCE daughter products has increased through time, but remains below ppm levels.

In order to better define the extent of the contaminant plume, temporary well point WP-3.5 was installed midway between wells MW-3S and MW-4S and temporary well point WP-4.5 was installed to the east of MW-4S. These well points were sampled for 1,2-DCE and vinyl chloride only. The results indicate that these compounds were not detected or detected at low levels, suggesting that well MW-4S is located in the middle of the plume of groundwater contaminated with VOCs (See Figure 6).

SPS has attributed the presence of chlorinated compounds such as vinyl chloride, 1,2-DCE and 1,1-DCA reported in monitoring wells MW-2S, MW-3S, MW-4S and MW-4R to TCE biodegradation and dispersion processes. However, they do not specify the source or location of these contaminants.

It is significant to note that these chlorinated compounds were not detected in monitoring well MW-1S. Therefore, it is unlikely that the former gasoline USTs are the source of these chlorinated compounds. It appears that the source of these chlorinated compounds is from a location downgradient of MW-1S that would allow it to disperse to the other three monitoring wells. A likely source of these chlorinated compounds would be past leaks and/or spills of the virgin and spent solvents that have been historically handled at the site.

Footnotes:

¹“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

**Migration of Contaminated Groundwater Under Control
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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”² as defined by the monitoring locations designated at the time of this determination)?

 X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the “existing area of groundwater contamination”²).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

As can be seen from the trends in analytical data depicted in Table 1 and Table 2, the observed concentrations of volatile organic constituents in the groundwater has diminished through time. The nature and distribution of contaminants suggests that there are no active sources of contaminants such as leaking tanks or recent spills. Furthermore, contaminant trends from the well with the highest observed contaminant concentrations indicate that there has been an 85 % decrease in the concentration of contaminants in that well since 1997 (See Figure 7).

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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4. Does "contaminated" groundwater discharge into surface water bodies?

If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s) Discharges to backwater of Ley Creek (See Figure 6).

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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

X If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

If unknown - enter “IN” status code in #8.

Rationale and Reference(s)

See Table 1 and Table 2 for concentration trends. Note that sediment and surface water samples collected in 1999 and 2002 indicate that the discharge of contaminated groundwater is not having a detectable impact on sediment or water quality of the Ley Creek backwater. Although the concentration of constituents in well MW-4R is relatively high when compared with groundwater and surface water criteria, the size of the groundwater plume is relatively small (approximately 100 X 100 X 25 feet). An estimated maximum of 225 gallons of contaminated groundwater enter the stream on a daily basis; the estimated maximum contaminant load is 707 grams/day.

Migration of the BTX plume associated with the former gas station has also stabilized. Natural attenuation of the plumes appears to be reducing the overall mass of contaminated groundwater.

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) RCRIS code (CA750)

6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed

to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR

2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s): _____

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

**Migration of Contaminated Groundwater Under Control
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7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the “existing area of contaminated groundwater?”

X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the “existing area of groundwater contamination.”

If no - enter “NO” status code in #8.

If unknown - enter “IN” status code in #8.

Rationale and Reference(s):

Key groundwater monitoring wells are sampled on a quarterly basis. (See Table 1 for the most recent data).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

X YE - Yes, “Migration of Contaminated Groundwater Under Control” has been verified. Based on a review of the information contained in this EI determination, it has been determined that the “Migration of Contaminated Groundwater” is “Under Control” at the **Solvents and Petroleum Services** facility, EPA ID ## **NYD013277-454**, located at Syracuse, NY under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

Specifically, this determination indicates that the migration of “contaminated” groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the “existing area of contaminated groundwater” This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

NO - Unacceptable migration of contaminated groundwater is observed or expected.

IN - More information is needed to make a determination.

Completed by (signature) William E. Wertz, Ph.D. Date September 10, 2002
(print) William E. Wertz, Ph.D.
(title) Senior Engineering Geologist

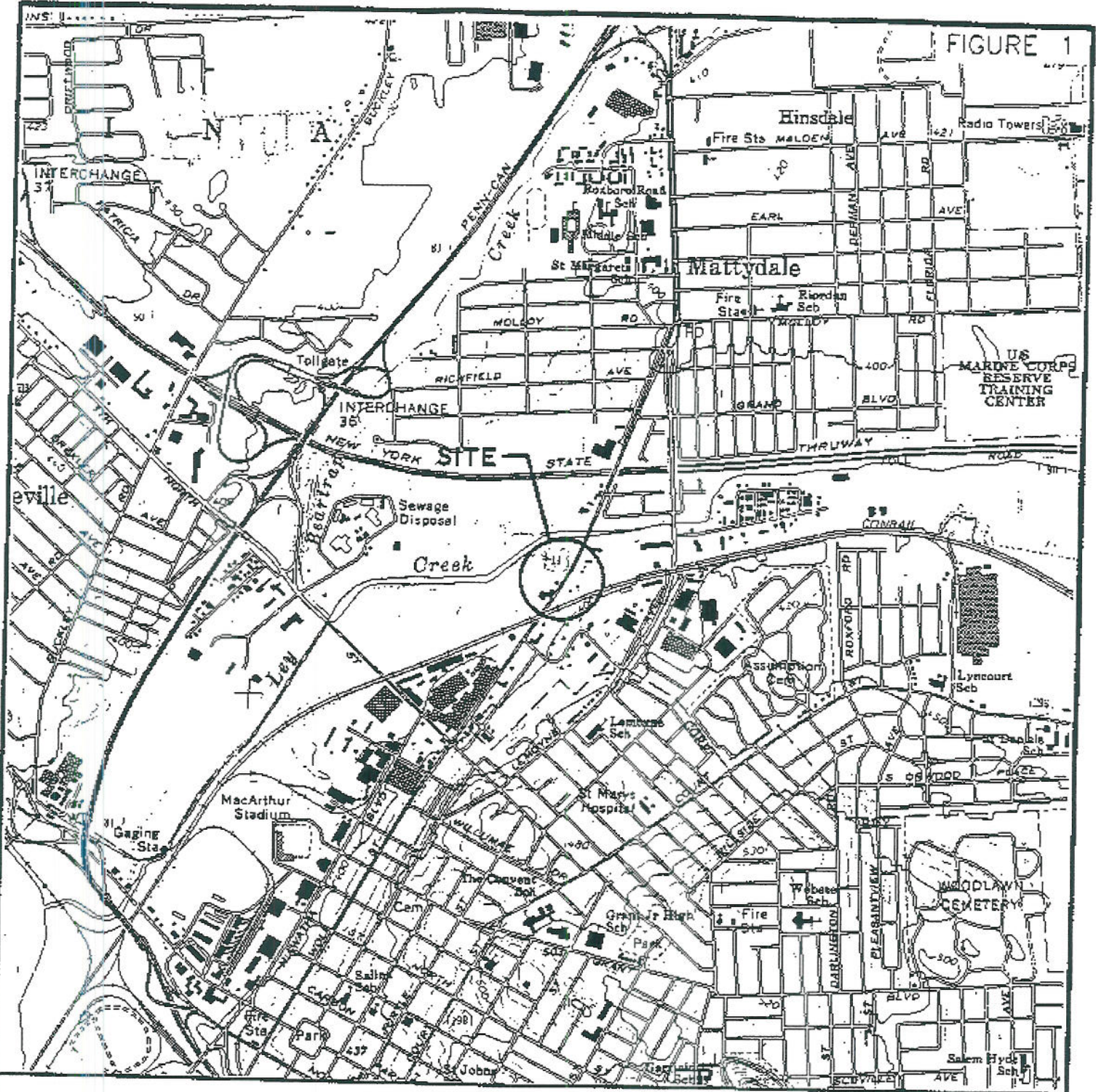
Supervisor (signature) _____ Date _____
(print) Edwin Dassatti
(title) Director, Bureau of Solid Waste and Corrective Action

Locations where References may be found:

NYSDEC
Division of Solid and Hazardous Materials
625 Broadway
Albany NY 12233-7252

Contact telephone and e-mail numbers

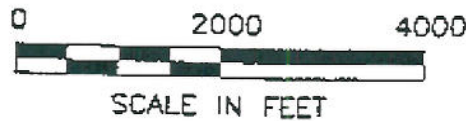
William E. Wertz, Ph.D.
(518) 402-8594
wewertz@gw.dec.state.ny.us



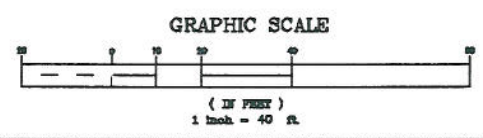
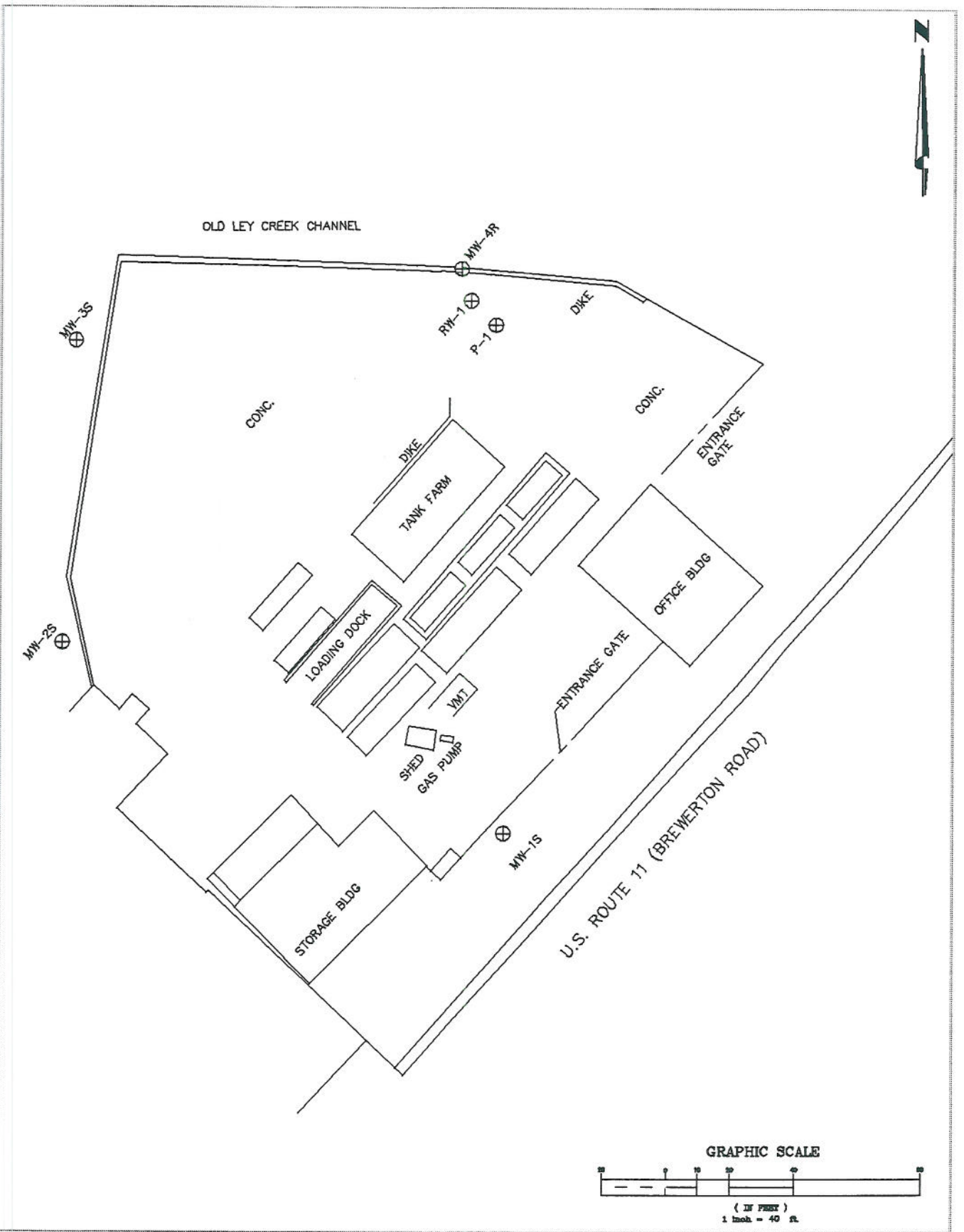
SOLVENTS AND PETROLEUM
 SERVICE INC.
 SYRACUSE, NEW YORK



SITE LOCATION MAP



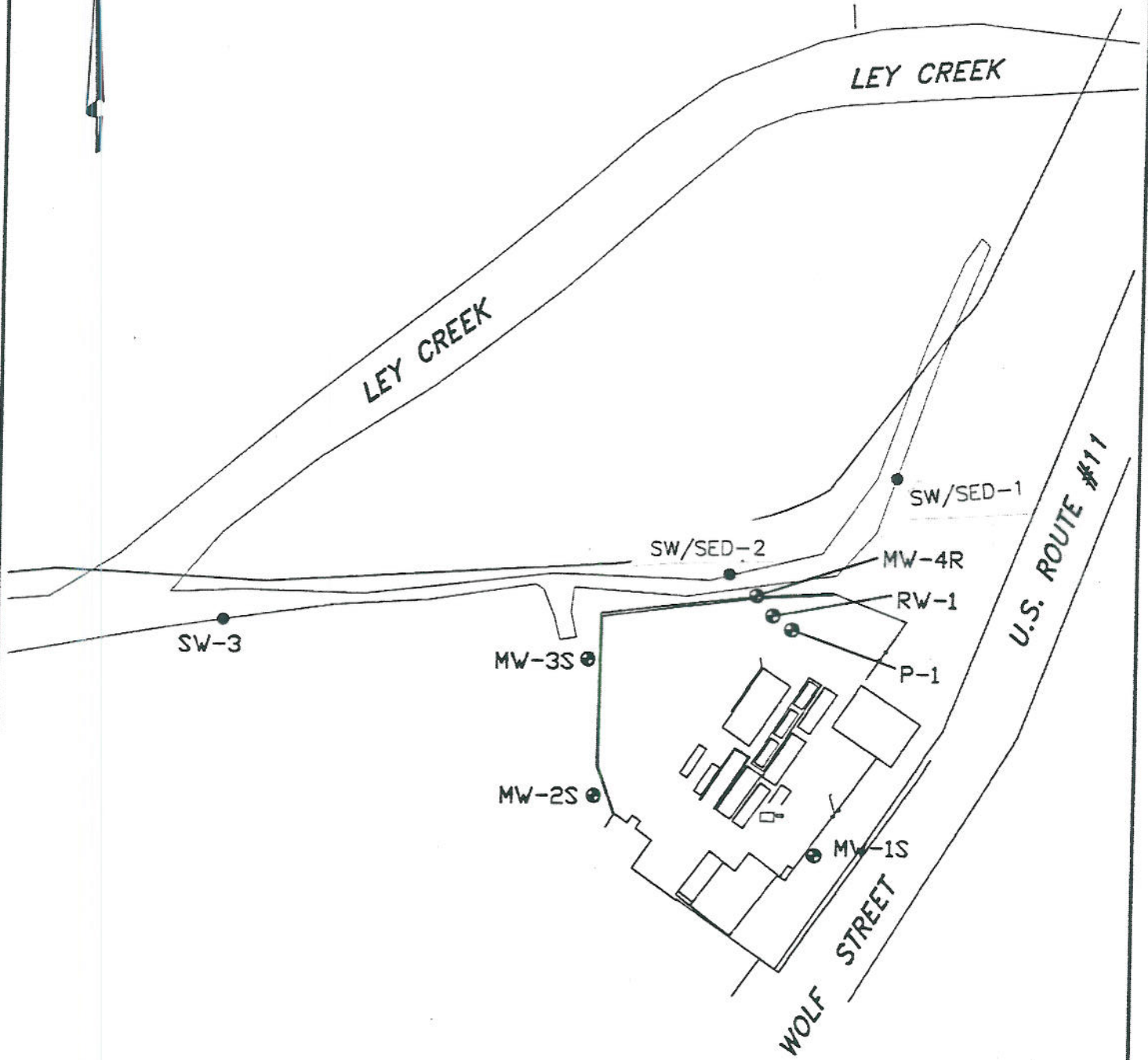
1:1323 REPORTS/CONCRETE MEASURES STUDY/PLANNING FIGURE 2.DWG 07/10/01 08:28:45 PLOT 1 TO 1



ENGINEERS SURVEYORS PLANNERS
 & LANDSCAPE ARCHITECTS
 441 SOUTH SALINA ST. SYRACUSE, NEW YORK 13202

SCALE: 1"=40'
 DATE: JULY 2001

FIGURE 2
 SITE MAP
 SOLVENTS & PETROLEUM SERVICES INC.
 TOWN OF SALINA, NEW YORK



LEGEND

- B-13 WELL OR BORING
- SURFACE WATER SAMPLE

NOT TO SCALE



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 & LANDSCAPE ARCHITECTS

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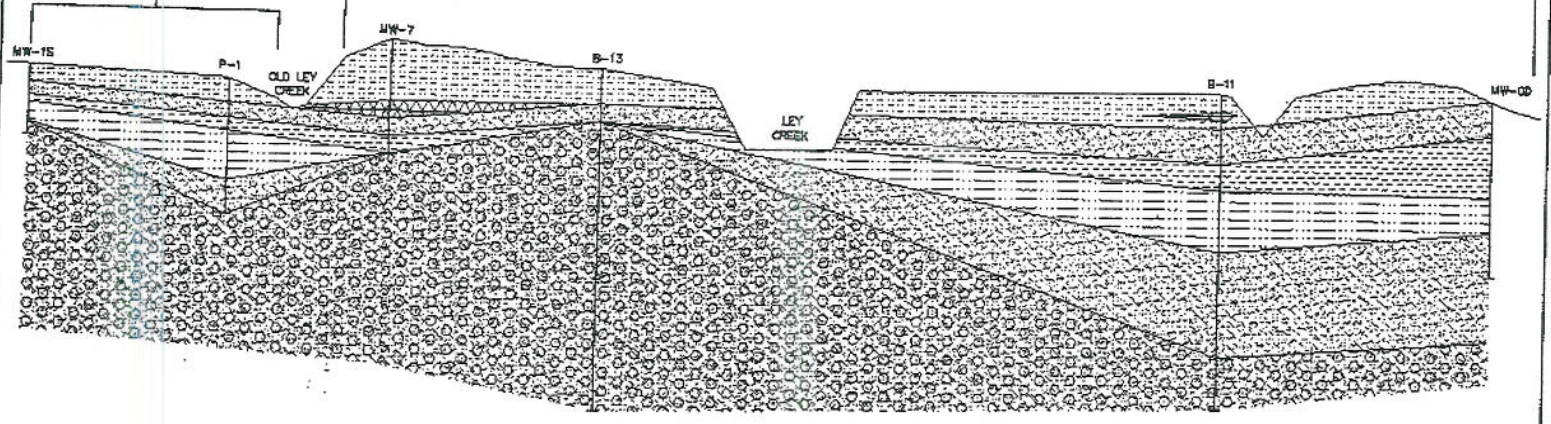
NOT TO SCALE

DATE: JULY 2001

FIGURE 3
SITE & ADJACENT SALINA LANDFILL
SAMPLE LOCATION MAP
 SOLVENTS & PETROLEUM SERVICES INC.
 TOWN OF SALINA, NEW YORK

SOLVENTS & PETROLEUM

FORMER TOWN OF SALINA LANDFILL



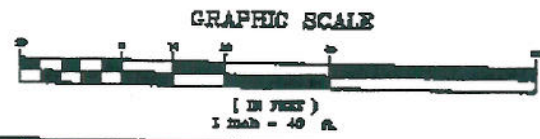
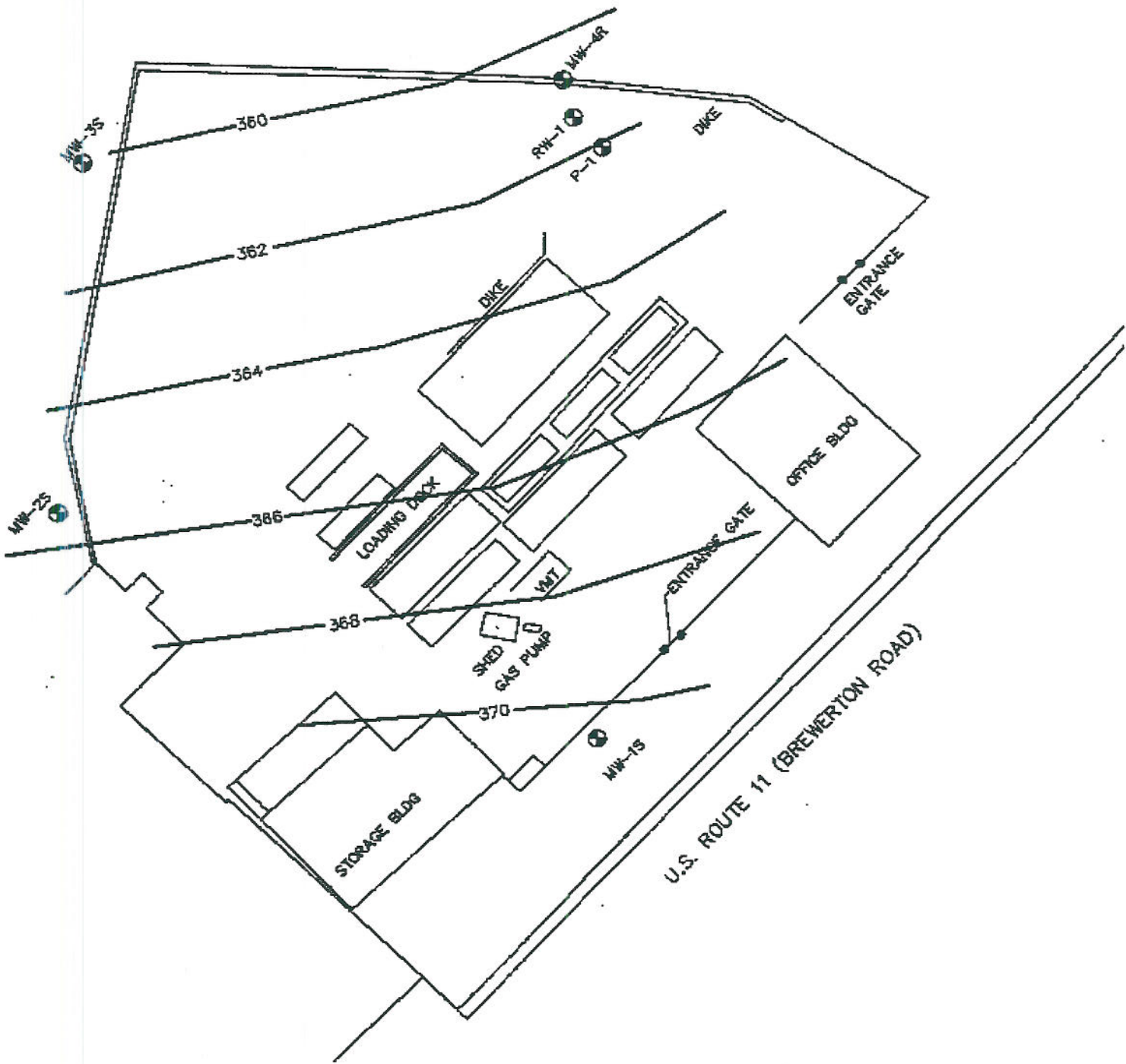
SCALE

HORIZONTAL: 1"=80'
VERTICAL: 1"=20'

LEGEND

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 ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS
 441 SOUTH SALINA ST. SYRACUSE, NEW YORK 13204
 SCALE: AS SHOWN DATE: JULY 2001

FIGURE 4
GEOLOGICAL CROSS-SECTION
SOLVENTS & PETROLEUM SERVICES INC.
TOWN OF SALINA, NEW YORK

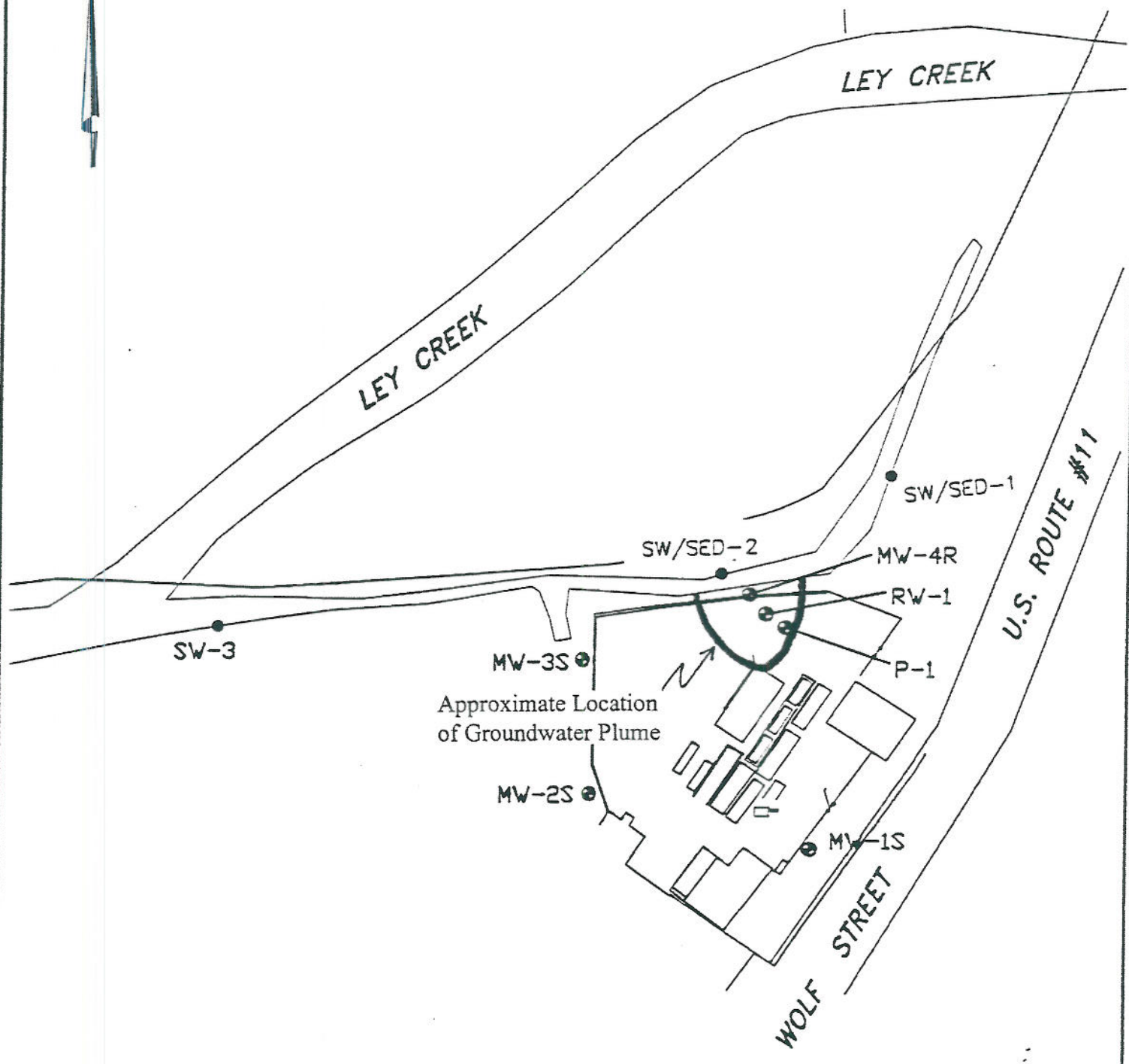


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FIGURE 5
GROUNDWATER FLOW MAP - SPS
 SOLVENTS & PETROLEUM SERVICES INC.
 TOWN OF SALINA, NEW YORK

SCALE: 1"=40'

DATE: JULY 2001



LEGEND

- B-13 WELL OR BORING
- SURFACE WATER SAMPLE

NOT TO SCALE

Modified from



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FIGURE 6
Approximate Location of Groundwater Plume
 SOLVENTS & PETROLEUM SERVICES INC.
 TOWN OF SALINA, NEW YORK

NOT TO SCALE

DATE: JULY 2001

S:\02\REPORTS\CONNECTIVE\MEASURES\STUDY\DRAWINGS\FIGURE 3\NEW.DWG 07/24/01 10:35 AM PLOT 1 TO 1

Figure 7

MW 4R Concentration Trend

