Five-Year Review Report

for
Circuitron Corporation Superfund Site

East Farmingdale

Suffolk County, New York

August 2005

PREPARED BY:

U.S. Environmental Protection Agency
Region II
New York, New York

Five-Year Review Report
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List of Acronyms

ACM	Asbestos Containing Materials
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
FFS	Focused Feasibility Study
gpm	Gallons Per Minute
IAG	Interagency Agreement
LTRA	Long-Term Response Action
MCLs	Maximum Contaminant Levels
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PPA	Prospective Purchaser Agreement
ppb	Parts Per Billion
ppm	Parts Per Million
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSE	Remediation System Evaluation
SCDHS	Suffolk County Department of Health Services
SPDES	State Pollutant Discharge Elimination System
URS	URS Corporation
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

A five-year review for the Circuitron Corporation Superfund site, located in the East Farmingdale, Suffolk County, New York, was completed. The remedies for the site included the demolition and removal of the Circuitron building, the excavation and off-site disposal of contaminated sediments and soils, and the treatment of contaminated groundwater via air stripping. Remedial Action Reports were signed on September 30, 1996 and March 31, 1997 for the remedial action completions of the removal of the Circuitron building and the contaminated sediments and soils, respectively. The site achieved construction completion status with the signing of the Preliminary Close-Out Report for the construction of the groundwater treatment facility on September 22, 2000. Because the remedial action for groundwater will require more than five years to complete, this five-year review is being conducted as a matter of EPA policy. The triggering action for this policy review is the completion of the Preliminary Close-Out Report.

Based upon a review of the Records of Decision, Remedial Action Reports, operation and maintenance reports, annual groundwater reports, Preliminary Site Close-Out Report, and an inspection of the site, it has been concluded that the remedies at the site function as intended by the decision documents and protect human health and the environment. Potential impacts of contaminated soil on groundwater were addressed through removal of the contaminated soil and sediment. The groundwater contamination is being addressed through pumping and treatment to reduce the levels of contamination to appropriate Federal and State standards. The community is serviced by public water that meets appropriate Federal and State drinking water standards, and the pathway of potential exposure if no public water supply were available has been interrupted. Site remedial action is ongoing and is expected to fully protect human health and the environment when it is completed.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Circuitron Corporation

EPA ID *(from WasteLAN)*: NYD981184229

Region: 2	**State: NY**	**City/County: East Farmingdale, Suffolk County**

SITE STATUS

NPL status: ■ Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ■ Operating ■ Complete

Multiple OUs?* ■ YES ☐ NO	**Construction completion date:** 09/22/2000

Has site been put into reuse? ☐ YES ■ NO

REVIEW STATUS

Lead agency: ■ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Sharon Trocher

Author title: Remedial Project Manager	**Author affiliation: USEPA**

Review period: 09/2000 to 08/2005

Date(s) of site inspection: 01/04/2005 and 07/13/2005

Type of review:
■ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
X Regional Discretion

Review number: ■ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:
☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
■ Construction Completion ☐ Previous Five-Year Review Report
☐ Other (specify) Completion of the Preliminary Close-Out Report

Triggering action date *(from WasteLAN)*: 09/22/2000

Due date *(five years after triggering action date)*: 09/22/2005

Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no
Is human exposure under control? ■ yes ☐ no
Is contaminated groundwater under control? ■ yes ☐ no ☐ not yet determined
Is the remedy protective of the environment? ■ yes ☐ no ☐ not yet determined

* ["OU" refers to operable unit.]

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

The remedial action for OU 2 needs to be continued. If a source is confirmed in the vicinity of monitoring well MW-4S and subsequently removed, monitoring only of the remaining groundwater contamination may be considered. This is part of the ongoing remedial action at this site.

This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the decision documents.

Protectiveness Statement

The remedy for the Circuitron Corporation Superfund Site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks and none expected as long as the engineered and institutional controls currently in place continue to be properly operated, monitored and maintained.

Circuitron Corporation Site
East Farmingdale, New York
First Five-Year Review

I. Introduction

This five-year review was conducted in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to assure that implemented remedies protect public health and the environment and function as intended by the decision documents. This document will become part of the site file.

The U.S. Environmental Protection Agency (EPA), Region II, conducted this five-year review of the remedies implemented at the Circuitron Corporation (Circuitron) Superfund site in East Farmingdale, New York. This review was conducted by the Remedial Project Manager (RPM) for the site. This is the first five-year review for the site. Upon completion of the remedial actions, contaminant levels will be reduced to levels that permit unlimited use and unrestricted exposure. Since the remedial actions require more than five years to complete, this five-year review is being conducted as a matter of EPA policy. The triggering action for this policy review is the completion of the Preliminary Close-Out Report for the site on September 22, 2000.

The site is being addressed in two phases or operable units (OUs). The first operable unit (OU-1), which addressed the source of the groundwater contamination, has been completed. The second operable unit (OU-2), which involves groundwater extraction and treatment, has been constructed and is currently operating. This five-year review will evaluate both operable units.

II. Site Chronology

See Table 1 for site chronology.

III. Background

Physical Characteristics

The Circuitron site is situated at 82 Milbar Boulevard in East Farmingdale, Suffolk County, Long Island, New York (see Figure 1-1 for site location), in central Long Island near the Nassau County-Suffolk County border. The site encompasses approximately one acre in an industrial/commercial area. Within a mile of the site is a mixture of industrial and commercial areas, cemeteries, Republic Airport and a State park. The closest residential community is located 1 mile southwest of the site.

The Circuitron site consisted of an abandoned 23,500 square foot building that was used between 1961 and 1986 for the manufacture of electric circuit boards. Circuitron vacated the premises between May and June of 1986. No manufacturing operations have taken place at the site since then.

The site is located on the outwash plain of Long Island and is generally flat and has a slight slope up to the southeast of less than 1 percent. The site elevation is approximately 85 to 90 feet above mean sea level. The

uppermost aquifer, the Upper Glacial, underlies the site. The depth to the water table is approximately 30 feet below grade. The saturated portion of the Upper Glacial aquifer, with a thickness of 50 feet, begins at the water table and extends down to 80 feet below grade. The Upper Glacial aquifer is underlain by the Magothy aquifer that is approximately 700 feet thick in the vicinity of the site. The groundwater flow direction is south-southeast for both the Upper Glacial and Magothy aquifers.

Land and Resource Use

East Farmingdale is predominantly an industrial and commercial area. It is one of the most heavily industrialized sections of Suffolk County, and has been characterized frequently by problems associated with industrial pollution. It is anticipated that the area will remain an industrial and commercial area into the future.

The groundwater pump and treat facility is currently the only permanent structure located on the Circuitron property. The Circuitron building was dismantled and demolished in the summer of 1996 after the building was determined to be structurally unsound. Suffolk County intends to bring about a transfer of the property's ownership because of the current owner's failure to pay real estate taxes, by auctioning the property at a public auction. The site will continue to be zoned for manufacturing use.

Approximately 15 public water supply wells, serving over 215,000 people, are located within three miles of the site. There are four public water supply wells of the East Farmingdale Water District located within a half-mile radius of the site. Of the four public water supply wells, two are located downgradient of the site, approximately 1,500 feet to the south. These two wells are completed within the Magothy aquifer at 191-268 and 524-585 feet below grade. The more shallow of the two wells has been closed since 1978 due to the presence of low concentrations of volatile organic compounds (VOCs); these VOCs are of an unknown origin and are distinct from the Circuitron site contamination. The deep well is sampled quarterly by the Water District.

History of Contamination

Circuitron Corporation began manufacturing circuit boards at the site in 1961. The manufacturing process included drilling, silk screening, plating and scrubbing processes, all which generated chemical wastes. Wastes resulting from the site operations were discharged to an underground leaching pool that was licensed under the State Pollutant Discharge Elimination System (SPDES) and to a number of unauthorized and unpermitted leaching pools, as well as into an on-site storm drain.

The facility had received numerous warnings from both the Suffolk County Department of Health Services (SCDHS) and New York State Department of Environmental Conservation (NYSDEC) concerning SPDES permit violations and unauthorized discharges. In 1984 and 1985, the SCDHS ordered Circuitron Corporation to clean up the toxic and hazardous materials from the site and to perform a groundwater study. The company ceased operations and vacated the site in 1986, leaving behind waste stored in underground and aboveground structures, chemical containers and 55-gallon drums.

Initial Response

In June 1987, EPA initiated a removal action and a preliminary assessment of the site. Subsequently, Circuitron Corporation removed a substantial number of the containers left onsite. In 1988, EPA continued the removal

action and sampled and removed remaining waste drums and three aboveground tanks, as well as the contents of seven underground storage tanks, two below-surface treatment basins, and several leaching basins. The action involved consolidating the various waste streams, removing the tanks located at the rear of the property, and removing contaminated debris inside the building. In total, 120 cubic yards of contaminated soil/sediments and debris, 56 drums of hazardous liquids, and an additional 1,400 gallons of tanked hazardous liquids were removed and properly disposed of off-site. The on-site removal activities were completed in September 1989.

EPA proposed to add the site to the National Priorities List on June 24, 1988 (53 FR 23988) and added it to the final list on March 31, 1989 (54 FR 13296).

Basis for Taking Action

The first Remedial Investigation and Feasibility Study (RI/FS) for the site was initiated in September 1988 and completed in January 1991. On March 29, 1991, a Record of Decision (ROD) was signed for OU-1, which addressed the contaminated soils and sediments at the site. A Focused Feasibility Study (FFS) for OU-2 was initiated in January 1992 and completed in the summer of 1994. Through the FFS, EPA obtained the additional data necessary to select a groundwater remedy for the site. The OU-2 ROD was signed on September 29, 1994. Through the site investigations, EPA determined that the contaminants of concern present in soils, sediments and in the groundwater included VOCs, copper, chromium and lead. The site-related VOC groundwater contaminant plume was determined to have a width of about 600 feet and to extend vertically into the shallow portion (upper 40 saturated feet) of the Upper Glacial aquifer. In addition, EPA determined from the risk assessment that the contaminants in the groundwater in the shallow portion of the Upper Glacial aquifer at the site, if not addressed, pose an elevated risk to human health. Groundwater contamination was also identified deeper in the groundwater beneath the site which was attributed to upgradient sources other than the Circuitron Corporation. The contamination from other sources is not a component of the remedial action at the site.

IV. REMEDIAL ACTIONS

Remedy Selection

As set forth above, the OU-1 ROD which addresses the contaminated soils and sediments at the site was signed on March 29, 1991, and the OU-2 ROD which addresses contaminated groundwater was signed on September 29, 1994. Remedial Action Objectives (RAOs) were developed as a result of data collected during the remedial investigations to aid in the development and screening of remedial alternatives considered in the RODs.

OU-1 - Source Control Remedy

The following is the RAO selected in the OU-1 ROD:

– Remove the site-related sources of contamination into the groundwater to expedite compliance with Federal and State groundwater standards.

The following are the major components of the source control remedy for the OU-1 ROD:

– In-situ vacuum extraction of the contaminated soil in the southwest corner of the property in the area of high VOC contamination.

– Excavation of contaminated sediments from leaching pits, cesspools and storm drains outside and inside the building.

– Off-site treatment and disposal of contaminated sediments.

– Building decontamination via vacuuming of dust containing elevated concentrations of inorganic elements and replacement of the concrete floor in the building.

OU-2 - Groundwater Remedy

The following are the RAOs selected in the OU-2 ROD:

– Prevent potential future ingestion of site-related contaminated groundwater.

– Restore the quality of the groundwater contaminated from the site-related activities to levels consistent with the Federal and State drinking water and groundwater quality standards.

– Mitigate the off-site migration of the site-related contaminated groundwater.

The following are the major components of the groundwater remedy for the OU-2 ROD:

– Extraction of the site-related groundwater contaminant plume present in the upper 40 feet of the saturated Upper Glacial aquifer.

– Treatment, via metal precipitation and air stripping, of contaminated groundwater to drinking water standards.

– Reinjection of the treated groundwater into the Upper Glacial aquifer via an infiltration gallery.

– Disposal of treatment residuals at a RCRA Subtitle C facility.

Remedy Implementation

EPA performed the Remedial Design and Remedial Action (RD/RA) for the site since no viable potentially responsible parties (PRPs) were located. Circuitron Corporation and the property owner had filed for bankruptcy in 1986 and 1987, respectively.

The Remedial Design of the remedy selected in the OU-1 ROD was performed by ICF Corporation on behalf of EPA. The Remedial Design of the remedy selected in the OU-2 ROD was performed by Ebasco Services Incorporated on behalf of EPA. EPA entered into an interagency agreement (IAG) with the U.S. Army Corps of Engineers (USACE) for the implementation of construction activities selected in the OU-1 and OU-2 RODs. USACE contracted with Sevenson Environmental Services, Inc. through its Preplaced Remedial Action Contract program to implement the remedial activities selected in the OU-1 ROD. ETG Environmental Inc. and

Stone & Webster Environmental Technology and Services were part of the Sevenson team. USACE contracted with URS Corporation (URS) to implement the remedial activities selected in the OU-2 ROD.

OU-1 - Source Control Remediations

In-Situ Soil Vapor Extraction System

The first action taken was to conduct a geoprobe soil sampling and analysis. The objective of the study was to characterize the magnitude and spatial extent of the subsurface VOCs. In June 1995, a total of 179 soil samples were collected from three different depths (5, 12 and 20 feet). Sampling results revealed that the VOCs were below the cleanup levels (1.0 part per million (ppm) for 1,1,1-trichloroethane and 1.5 ppm for tetrachloroethene) specified in the 1991 ROD and as such, soil treatment via the soil vapor extraction system was not warranted. The results of the study were also used to determine the extent of contaminated metals in the soils and sediments as well as the extent of excavation that was needed.

Building Demolition

The 1991 ROD required the Circuitron building to be decontaminated via vacuuming of dust containing elevated concentrations of inorganic elements and replacement of the concrete floor in the building. However, due to inclement weather during the 1992/1993 winter, the building had deteriorated markedly and a decision was made to demolish the building. EPA documented this change in the 1994 ROD.

ICF Corporation initiated the RD in June 1991 and completed it in September 1994. Sevenson initiated on-site remedial activities in May 1995.

Prior to the start of demolition work, a safety inspection of the building was conducted and no major problems were found regarding worker safety for the planned work. All drums left on-site containing waste derived from previous investigations were sampled and properly disposed of off-site. Asbestos and lead paint surveys were conducted to determine the extent of asbestos containing materials (ACM) and lead paint in the building. An asbestos survey conducted in 1995, indicated the presence of ACM including piping insulation, floor tiles, roofing and window glazing. All ACM was removed and disposed of appropriately.

The dust found in the plating room was vacuumed utilizing a HEPA filter. The dust was containerized, sampled, and disposed of off-site as nonhazardous waste.

Subsequent to the removal of all debris, drums, ACM and dust vacuumed from the plating room, building demolition was initiated. The building was demolished in the summer of 1996 by first removing the nonstructural walls (when the debris was removed), followed by the roof and then the structural walls. The demolition material was segregated and disposed of as nonhazardous material at a nearby landfill, except for cinder blocks which were recycled. The final inspection of these activities was conducted in August 1996, and it was determined that Sevenson completed all material decontamination, ACM abatement, building demolition and waste disposal in accordance with the USACE Scope of Work and the OU-1 and OU-2 RODs. A Remedial Action Report, documenting the completion of the remedial action was approved on September 30, 1996.

Contaminated Sediment and Soil Removal

ICF Corporation completed the RD for contaminated sediments and soils in September 1994. In 1995, a geoprobe study was used to determine the spatial extent of VOC and metal contamination and to define the cutlines for excavation activities. The remedial action work sequence was as follows: (1) removal of building flooring, (2) removal of sediments from underground structures, (3) removal of unusable underground structures, (4) removal of soil surrounding the underground structures as necessary, and (5) site grading and removal of rolloff containers. In total, approximately 50 tons of contaminated sediments and 1200 tons of contaminated soils were removed. In addition, nine 55-gallon drums and four 750-gallon polyethylene tanks left on-site containing waste derived from previous investigations were sampled for full RCRA Toxicity Characteristics Leaching Procedure, PCB and RCRA characteristics and properly disposed of off-site.

These activities were initiated on November 10, 1996 and completed on December 20, 1996. The final inspection was conducted in January 1997, and it was determined that the remedial activities were completed in accordance with the USACE Scope of Work and the OU-1 ROD as modified by the OU-2 ROD. A Remedial Action Report, documenting the completion of the remedial action, was approved by EPA on March 31, 1997.

OU-2 - Groundwater Remediation

Ebasco Services Incorporated initiated the RD for the OU-2 groundwater treatment system in February 1995 and completed it in September 1996. The groundwater remedy consists of pumping contaminated groundwater out of the aquifer, treating it through filtration, air stripping and carbon adsorption, and reinjecting it into the aquifer. The total flowrate through the treatment plant is generally on the order of 35 gpm, pumped from three extraction wells. The Remedial Action funding for this project was received in September 1997. URS was awarded the task order by USACE to perform the construction of the groundwater treatment system on September 30, 1998. Before beginning the RA, URS conducted groundwater sampling via test borings and new and existing groundwater monitoring wells in November 1998. The results of this sampling program were used to determine the final location of the groundwater extraction wells. URS initiated on-site construction activities in August 1999.

During construction activities in the northeastern portion of the site, URS uncovered seven dry wells approximately 10 feet in diameter and 15 feet deep. Approximately 340 tons of contaminated soils and sediments were removed from the seven dry wells. This amount included the removal of two of the drywell structures that were in the pathway of the groundwater reinjection trench. All materials were disposed of off-site as hazardous wastes at an appropriate RCRA facility. Other RA activities performed by URS included: (1) drilling three extraction wells and two monitoring wells, (2) trenching and installing the pipeline and electrical cables from the treatment facility to the extraction wells, (3) installing the reinjection trench, (4) constructing the building foundation and concrete slab, (5) erecting the pre-engineered metal building, (6) installing the process equipment, piping, electrical work and instrumentation, (7) grading the site and placing an approximate two-inch thickness of stone cover, and (8) testing and operation of the groundwater treatment facility.

On June 28, 2000, EPA, NYSDEC and USACE conducted a pre-final inspection, during which punch list items were identified. The punch list items were completed by URS in early September 2000. Completion of these items was verified during a September 19, 2000 final inspection. On September 22, 2000, the EPA issued a Preliminary Close-Out Report. On May 15, 2001, EPA approved a Remedial Action Report

signifying that the system was operational and functional. URS has been operating the groundwater treatment plant under contract to USACE since the plant's initial start-up in June 2000.

System Operation/Operation Maintenance

OU-1

Operation and maintenance (O&M) activities were not necessary for the source control remedy.

OU-2

EPA entered into an interagency agreement with USACE for implementation of the long-term response action (LTRA) activities for the groundwater pump and treat facility. USACE contracted with URS to conduct the LTRA activities in accordance with the September 2000 Operation and Maintenance Manual prepared by URS and approved by EPA. Annual O&M costs for OU-2 are shown in Table 2 and include the operation and maintenance of the air stripping facility by URS, sampling and monitoring efforts, utilities, repairs and USACE oversight costs. The primary activities associated with LTRA include the following:

- Conduct monthly sampling of plant influent and effluent and annual sampling of groundwater monitoring wells;
- Spray wash internals of air stripper twice a month;
- Inspect, maintain and lubricate motors and pumps and check blowers' air filters monthly;
- Clean-out all "Y" strainers on process pumps once a week;
- Periodically remove sludge manually from several key locations where the deposition of sludge impedes flow;
- Power wash plant floor and skids twice monthly;
- Test fire alarm system monthly;
- Inspect fire extinguishers, emergency lighting and eyewash station monthly;
- Inspect recovery well vaults once a week for accumulated water, and pump out water as needed;
- Verify daily that the high-level and low-level shut off switches for the reinjection trench are working properly;
- Verify daily that the motor control center and the alarm/control panel are working properly, and inspect and test audio dial-out system; and
- Change liquid and vapor carbons and filtration systems' filter bags as needed.

In 2004, EPA procured an independent contractor to conduct a remediation system evaluation (RSE) of the site to recommend improvements in the remedy effectiveness, to achieve reductions in O&M costs and to attain site closure. To decrease the time frame required to remediate the groundwater, the RSE contractor recommended conducting additional remedial activities in the southwest corner of the site near monitoring well MW-4S where moderate levels of VOCs have been detected in the groundwater. After the suspected contaminated area is delineated, treatment will be considered. Such activities could include installing an air sparging and soil vapor extraction system near this well, which would allow the groundwater pump and treat system to be shut down sooner.

The RSE contractor also recommended the following improvements to reduce O&M cost:

- Eliminate the liquid phase granular activated carbon given that VOCs are not detected after the air stripper;
- Eliminate pumping at RW-2 and RW-3 since these wells likely extract negligible mass; and
- Revise the bag filter configuration to use more bags in parallel to reduce the changeout frequency of the bags, allowing for system operation that does not require daily labor.

Institutional Controls

Institutional controls are not required for the site. The Agency is about to enter into a Prospective Purchaser Agreement (PPA) with Suffolk County, New York in an effort to return the site property to productive use. Under the PPA, the County will seek a third-party buyer for the property via a public auction. Once a buyer is found through the auction process, the County will proceed to take title to the property and then immediately transfer it to the new owner. As a precondition of this transfer, the new owner will sign the PPA and become obligated to provide EPA with continued access and to forebear from disturbing the site infrastructure.

As part of the PPA, the County will grant an easement to the United States prior to the property's transfer from the County to the new owner. This easement will provide for nondisturbance of the groundwater pumping and treatment and monitoring well systems, as well as for continued access to the site, until such time that EPA has determined that the remedial action goals have been achieved. The easement therefore does not seek to restrict the future use of the groundwater at the site. At some later date, however, the terms of the easement could be amended (with some effort) to provide for specific restrictions on the use of the site groundwater, if EPA determines that property specific restrictions on the groundwater are warranted.

The site property is located in the middle of a multi-block area of active light industrial properties. This part of Farmingdale, New York is zoned for light industry; there are no residential uses of property in this area. Therefore, the site property is likely to continue to be zoned for light industrial uses into the future, and there are no future residential uses of the site property that can be reasonably contemplated. In addition, contaminated soil has been removed from the site.

New York State law restricts to a large degree the future use of groundwater at this site. New York Environmental Conservation Law Section 15-527 provides that on Long Island (which includes Suffolk County), "No person or public corporation shall hereafter install or operate any new or additional wells... to withdraw water from underground sources for any purpose or purposes whatsoever where the installed pumping capacity of any such new well or wells singly or in the aggregate, or the total installed pumping capacity of old and new wells on or for use on one property is in excess of forty-five gallons a minute without a permit pursuant to this title."

Furthermore, the New York Sanitary Code (Title 10 of the New York Code of Rules and Regulations Section 5-2.4) states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official." Based on these statutory controls, it is likely that most potable uses of the site groundwater (for a property that is not now zoned residential and is likely never to be zoned as such) would not be permitted in the future.

V. Progress Since the Last Five-Year Review

This is the first five-year review for the site.

VI. Five-Year Review Process

Administration Components

The five-year review team consisted of Sharon Trocher, EPA Remedial Project Manager, Rob Alvey, EPA Hydrogeologist, and Chuck Nace, EPA Risk Assessor. This is an EPA-lead site. EPA's contractor for OU-2 LTRA is USACE. USACE procured URS Corporation to implement the OU-2 LTRA.

Community Involvement

The EPA Community Relations Coordinator for the site, Cecilia Echols, had a notice published in a local newspaper, the Farmingdale Observer, on January 28, 2005, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the remedies for the site to ensure that the implemented remedies remain protective of public health and the environment and are functioning as designed. The notice also indicated that once the five-year review is completed, the results will be made available in the local site repository. The notice included the Remedial Project Manager's address and telephone for questions related to the five-year review process for the site. A similar notice, notifying the public that the review has been completed, will be published when the review is finished.

Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data (see Section XI).

Data Review

VOCs

The groundwater pump and treat facility is monitored to determine its performance and whether the treated groundwater meets the requirements for reinjection back into the aquifer. Influent and effluent groundwater samples from the groundwater treatment facility have been collected and analyzed for VOCs and inorganics on a monthly basis since its startup in June 2000. The performance monitoring data indicate that the influent exceeds the groundwater discharge criteria for site VOCs of concern while the treated effluent is below the groundwater discharge criteria for all VOCs. These results indicate that the air stripper is effectively treating the groundwater pumped from the extraction wells to applicable criteria. The total VOC concentrations detected in the plant influent have dropped considerably over time from approximately 50 to 60 parts per billion (ppb) to approximately 10 ppb. To date, approximately 75 million gallons of groundwater have been treated at the facility.

Groundwater monitoring wells are also monitored to determine whether the groundwater contamination plume is being captured and to determine the progress of groundwater restoration and compliance with the groundwater quality criteria. Currently, there are 19 monitoring wells that are used for groundwater monitoring of the OU-2 remedy. Of the 19 monitoring wells, 12 wells are shallow and seven are deep. Shallow wells are those wells screened in the shallow portion of the Upper Glacial aquifer that are approximately 30 to 40 feet

deep. Deep wells are those wells screened in the deep Upper Glacial aquifer or shallow Magothy aquifer that are approximately 90 to 100 feet deep. From June 2000 to August 2003, groundwater samples were collected from each well quarterly for VOCs and semi-annually for inorganic analytes. Starting in 2003, well sampling was reduced to an annual frequency, and after 2003, groundwater samples were analyzed for VOCs only.

Based on the groundwater sampling results, it can be concluded that the concentrations of VOCs have decreased substantially from the shallow wells. The OU-2 ROD required treating only the upper 40 feet of the saturated Upper Glacial aquifer where site-related contamination was detected. Table 3 summarizes the total VOC concentrations detected in monitoring wells during the annual groundwater sampling events (see Figure 1-2 for locations of monitoring wells). The decrease in VOC concentrations detected in the monitoring wells can be attributed to the removal of contaminated soils from the site and to the ongoing groundwater remediation. Since the contaminated groundwater plume has substantially decreased in size, groundwater samples were collected from the three extraction wells to determine if any of the wells could be shut down. In January 2005, extraction well RW-3 (the furthest well from the site) was shut down since it was extracting groundwater containing only low levels of VOCs (less than 5 ppb).

EPA plans on conducting soil sampling near monitoring well MW-4S where moderate levels of VOCs have been detected in the groundwater to determine if additional measures are needed to facilitate the cleanup of the groundwater. This action could include installing an air sparging and soil vapor extraction system.

Inorganics

All site-related inorganic contaminants were detected below applicable criteria during the monthly sampling of the facility influent and effluent. During the sampling of monitoring wells, chromium was the only site-related inorganic contaminant detected above groundwater drinking water standards on more than one occasion in any individual well. Elevated levels of chromium were detected in shallow monitoring wells MW-4S, MW-6S, MW-7S and MW-19S, with the onsite monitoring well MW-4S detected at the highest level (1,110 ppb in July 2001). Since June 2000, the chromium levels detected in the groundwater from the monitoring wells MW-4S, MW-6S, MW-7S and MW-19S have widely fluctuated or have shown relatively little change. Filtered groundwater samples collected from the monitoring wells in April 2003 revealed that the dissolved chromium concentrations were well below the groundwater drinking water standard; whereas, the total chromium concentrations (unfiltered groundwater samples) were above the standard. This indicates that colloid-sized particles (high turbidity in the samples) are contributing to chromium concentrations and that dissolved chromium is not an issue. EPA subsequently determined that inorganics were no longer a concern regarding groundwater cleanup at the site, and as such, monitoring for inorganics in groundwater was terminated in 2004. However, inorganics are still a major factor at the site because elevated iron and manganese are the cause of much labor and maintenance in the groundwater treatment plant.

Site Inspection

Site inspections were performed on January 4, 2005 and July 13, 2005. The following parties were in attendance:

Greg Gangemi, URS - 1/4/05 and 7/13/05
Rob Alvey, EPA - 1/4/05
Sharon Trocher, EPA - 1/4/05 and 7/13/05

During the site inspections, problems or deviations from the on-going operation and maintenance activities being implemented at the site were not observed.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The primary objectives of the RODs are to remove the continuing sources of contamination into the groundwater, prevent potential future ingestion of site-related contaminated groundwater, restore the quality of the groundwater and to mitigate the off-site migration of the site-related contaminated groundwater. By removing contaminated sediment and soil and the onsite building, the sources of contamination into the groundwater were removed. EPA's review of site documents and the results of the site inspection indicate that the groundwater treatment plant is functioning as intended by the OU 2 ROD. The air stripper was designed to reduce contaminants of concern (COCs) from levels above their maximum detected concentrations to less than 5 ppb, which is below applicable groundwater drinking water standards. The air stripper, which has a 99 percent design efficiency, is performing as designed as verified by review of the monthly sampling data collected since June 2000 from the plant influent and effluent. Additionally, the groundwater plume of contamination is effectively being captured as determined by annual sampling and hydraulic monitoring of the groundwater monitoring wells.

Question B: Are the (a) exposure assumptions, (b) toxicity data, (c) cleanup levels and (d) remedial action objectives used at the time of the remedy selection still valid?

(a) The selection of contaminants of potential concern and the exposure assumptions used to estimate the potential risks and hazards at the site followed acceptable Agency guidance at the time the assessments were conducted. Although using current guidance may result in some differences in the chemical of potential concern selection, this would not result in the selection of a different remedy if the assessment were to be revised using current guidance and therefore the results of the risk assessments are still valid.

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. The land use for the site is expected to remain industrial over the next five years, the period of time considered in this review. The land use considerations and potential exposure pathways considered in the baseline human health risk assessment are still valid.

The evaluation of groundwater in this review focused on two primary exposure pathways, direct ingestion (as a potable water source) and the possibility of vapor intrusion into buildings constructed over the plume. The evaluation of the direct contact pathway showed that nearby residents are on public water supplies, and since they are not using the contaminated wells for drinking water purposes, there is no current exposure. Therefore, the remedy is protective for the direct ingestion route of exposure. The groundwater remediation goals selected in the ROD were the Maximum Contaminant Levels (MCLs) and the MCLs remain protective.

Soil vapor intrusion was evaluated based on the conservative (health protective) assumption that there are residences located above the maximum detected concentrations of the contaminated groundwater. EPA also utilized the health-based screening criteria provided in its Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. This guidance provides calculations of concentrations in

groundwater associated with indoor air concentrations at acceptable levels of cancer risk and noncancer health hazards. This review compared the June 2004 data from the groundwater monitoring wells for the site with EPA's soil vapor intrusion groundwater screening values associated with a cancer risk of 10^{-6} or a noncancer hazard quotient of 0.1. Groundwater data from only wells monitoring the upper portion of the Upper Glacial aquifer were evaluated since contaminants detected in the deep Upper Glacial and shallow Magothy aquifer are not site-related contamination.

As shown in Table 4, the soil vapor intrusion groundwater screening values are exceeded only one time for contaminants detected in groundwater samples above the analytical detection limit. Tetrachloroethene exceeds the soil vapor intrusion groundwater screening value by a factor of 11. A second-tier approach outlined in the vapor intrusion guidance indicates that the degree of elevation be considered to determine if contaminants that exceed the screening value may result in vapor intrusion, with a comparison value of 50 times the screening value. The value of 11 times for tetrachloroethene is less than 50 times the screening value, which indicates that the vapor intrusion pathway would not be relevant for tetrachloroethene. 1,1,2-trichloroethane and trichloroethene were not detected above the analytical detection limits in groundwater samples collected from all monitoring wells. The detection limits for these contaminants were above their screening criteria with the detection limit for 1,1,2-trichloroethane being slightly greater than the screening value and the detection limit for trichloroethene at almost 100 times the screening value. Assigning a concentration of half of the detection limit to contaminants that are not detected in groundwater samples is a standard practice. Applying this approach for these two data sets would indicate that neither contaminant exceeds the screening criteria by more than 50 times.

In addition, there are no residential homes located within 100 feet of the highest contaminant concentrations (monitoring well MW-4S), which indicates that there is not a completed vapor intrusion pathway for a residential scenario. Although there is an industrial building located with 100 feet of monitoring well MW-4S, there is another well between the industrial building and MW-4S that does not contain contaminant concentrations that are above the screening criteria; thus, it is unlikely that this building would have a completed vapor intrusion pathway. Based on the assessment completed above, the vapor intrusion pathway would not be considered to be completed. Therefore, further evaluation of the vapor intrusion to indoor air pathway from groundwater and soils is not warranted.

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(b) The toxicity data that were used in the risk assessments were valid at the time the assessments were conducted and the use of these data indicated that a remedy was needed for the site. Since then, some of the toxicity values have been changed, with the general trend resulting in toxicity values becoming more stringent. This would result in a net effect of increasing the estimated potential risks and hazards, which would also support the decision that a remedy was needed for the site. Thus, even though toxicity values have changed, the resulting remedies that were supported by the older toxicity values are still valid.

(c) The cleanup values chosen for the soil, sediment, and groundwater are still valid.

(d) The remedial action objectives identified in the 1991 and 1994 Record of Decisions are still valid.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedies.

Technical Assessment Summary

According to the data reviewed and the site inspection, the remedies are functioning as intended in the RODs. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedies. The cleanup levels cited in the RODs have not yet been met for OU 2. The RAOs are still valid and are currently being met for OU 1. The groundwater contamination plume is being contained and treated prior to reinjection back into the aquifer. The groundwater monitoring wells are functional, and the annual groundwater sampling data from these wells indicate that the site-related VOC groundwater contamination levels are considerably less than the levels present in June 2000.

Currently, there is no human or environmental exposure to, or ingestion of, contaminated groundwater and soil, and no exposures expected during the next five years. Potential impacts of contaminated soil on groundwater was addressed under OU 1 through removal of the contaminated soil and sediment. The groundwater contamination is being addressed under OU 2 through pumping and treatment to reduce the levels of contamination to appropriate Federal and State standards. The community is serviced by public water that meets appropriate Federal and State standards, and the pathway of potential exposure if no public water supply were available has been interrupted. Site remedial action at OU 2 is ongoing and is expected to fully protect human health and the environment when it is completed.

VIII. Issues, Recommendations and Follow-Up Actions

The remedial action for OU 2 needs to be continued. If a source is confirmed in the vicinity of monitoring well MW-4S and subsequently removed, monitoring only of the remaining groundwater contamination may be considered. This is part of the ongoing remedial action at this site.

This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the decision documents.

IX. Protectiveness Statement

The remedy for the Circuitron Corporation Superfund site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks and none expected as long as the engineered and institutional controls currently in place continue to be properly operated, monitored and maintained.

X. Next Review

The next five-year review for the Circuitron Corporation Superfund site is required by 2010, five years from the date of this review.

Approved by: Date:

_____ _____

XI. Bibliography for Circuitron Corporation Superfund Site

On-Scene Coordinator's Report, U.S. Environmental Protection Agency, February 1990.

Record of Decision, U.S. Environmental Protection Agency, March 1991.

Record of Decision, U.S. Environmental Protection Agency, September 1994.

Remedial Action Report Building Demolition, U.S. Environmental Protection Agency, September 1996.

Remedial Action Report Contaminated Soil/Sediment Remediation, U.S. Environmental Protection Agency, March 1997.

Preliminary Site Close-Out Report, U.S. Environmental Protection Agency, September 2000.

Remedial Action Report Groundwater Treatment System, Radian International, April 2001.

Comprehensive Five-Year Review Guidance, U.S. Environmental Protection Agency, EPA 540-R-01-007, June 2001.

Monthly Progress Reports, URS Corporation.

Annual Performance Monitoring Reports, URS Corporation, June 2003, March 2004 and October 2004.

Streamlined Remediation System Evaluation (RSE-Lite), GeoTrans, Inc., February 2005.

Table 1: Chronology of Site Events

Event	Date
Removal activities - chemical containers and storage tanks	1987
Removal activities - drums, aboveground tanks, underground storage tanks and treatment basins.	1988-1989
Final listing on EPA National Priorities List	3/31/1989
Remedial Investigation/Feasibility Study (RI/FS) completed - Source Areas	1/1991
ROD selecting source control remedy signed	3/29/1991
Remedial design (RD) approved for source control remedy	9/30/1994
RI/FS completed - Groundwater	5/25/1994
ROD selecting groundwater remedy signed	9/30/1994
Superfund State Contract signed	10/7/1994
Start of building demolition - OU-1	5/15/1995
Completion of building demolition - OU-1	8/8/1996
Remedial Action Report approved for building demolition	9/30/1996
RD approved for ground water remedy - OU-2	9/30/1996
Start of contaminated so il/sediment remediation - OU-3	11/10/1996
Completion of contaminated soil/sediment remediation - OU-3	1/24/1997
Remedial Action Report approved for contaminated soil/sediment remediation - OU-3	3/31/1997
Start of construction of groundwater remedy - OU-2	9/20/1999
Completion of construction of groundwater remedy - OU-1	9/19/2000
Preliminary Close-Out Report approved	9/22/2000
Interim Remedial Action Report approved for groundwater remedy - OU-1	5/15/2001

Table 2: Annual System Operations/O& M Costs for LTRA, OU-2

Dates		Total Cost rounded to nearest $1,000
From	**To**	
6/2000	12/2000	$288,000
1/2001	12/2001	$479,000
1/2002	12/2002	$455,000
1/2003	12/2003	$439,000
1/2004	12/2004	$429,000
1/2005	12/2005	Not Available

Table 3: Total Volatile Organic Compound Concentrations

Well Type	Monitoring Well	June 2000	Oct 2000	Jan - Feb 2001	Apr - May 2001	Jul - Aug 2001	Oct 2001	Jan - Feb 2002	Jul - Aug 2002	April 2003	June 2004
Shallow	MW-1S	16	ND	5	ND	56	4	8	ND	5	ND
Shallow	MW-3S	20	13	5	7	8	8	6	[a]4	4	2
Shallow	MW-4S	1155	915	720	279	93	328	347	NS	219	[a]239
Shallow	MW-6S	15	374	119	89	[a]112	107	64	NS	19	[a]25
Shallow	MW-7S	ND	[a]2	[a]2	ND	ND	11	NS	NS	ND	ND
Shallow	MW-13	154	397	124	47	41	31	35	[a]14	34	[a]10
Shallow	MW-14	30	10	17	13	14	15	21	1	6	[a]3
Shallow	MW-15	68	[a]1	[a]35	29	ND	5	[a]2	ND	ND	ND
Shallow	MW-16	ND	ND	ND	[a]ND	ND	1	3	ND	ND	ND
Shallow	MW-17	44	71	37	11	14	32	26	8	4	ND
Shallow	MW-18	ND	ND	13	13	[a]ND	10	ND	ND	ND	ND
Shallow	MW-19S	17	34	21	14	13	16	5	5	10	ND
Deep	MW-1D	61	52	45	[a]41	7	[a]53	57	45	27	[a]26
Deep	MW-3D	5	2	7	4	5	5	8	1	1	ND
Deep	MW-4D	[a]94	57	49	50	41	38	43	37	[a]23	[a]34
Deep	MW-5D	[a]10	30	4	7	4	8	ND	ND	ND	ND
Deep	MW-6D	30	24	35	14	20	31	17	37	25	[a]28
Deep	MW-7D	30	35	29	36	23	32	[a]28	19	[a]8.5	[a]3
Deep	MW-19D	133	139	136	158	176	[a]180	214	199	146	[a]111

All concentrations in ug/L

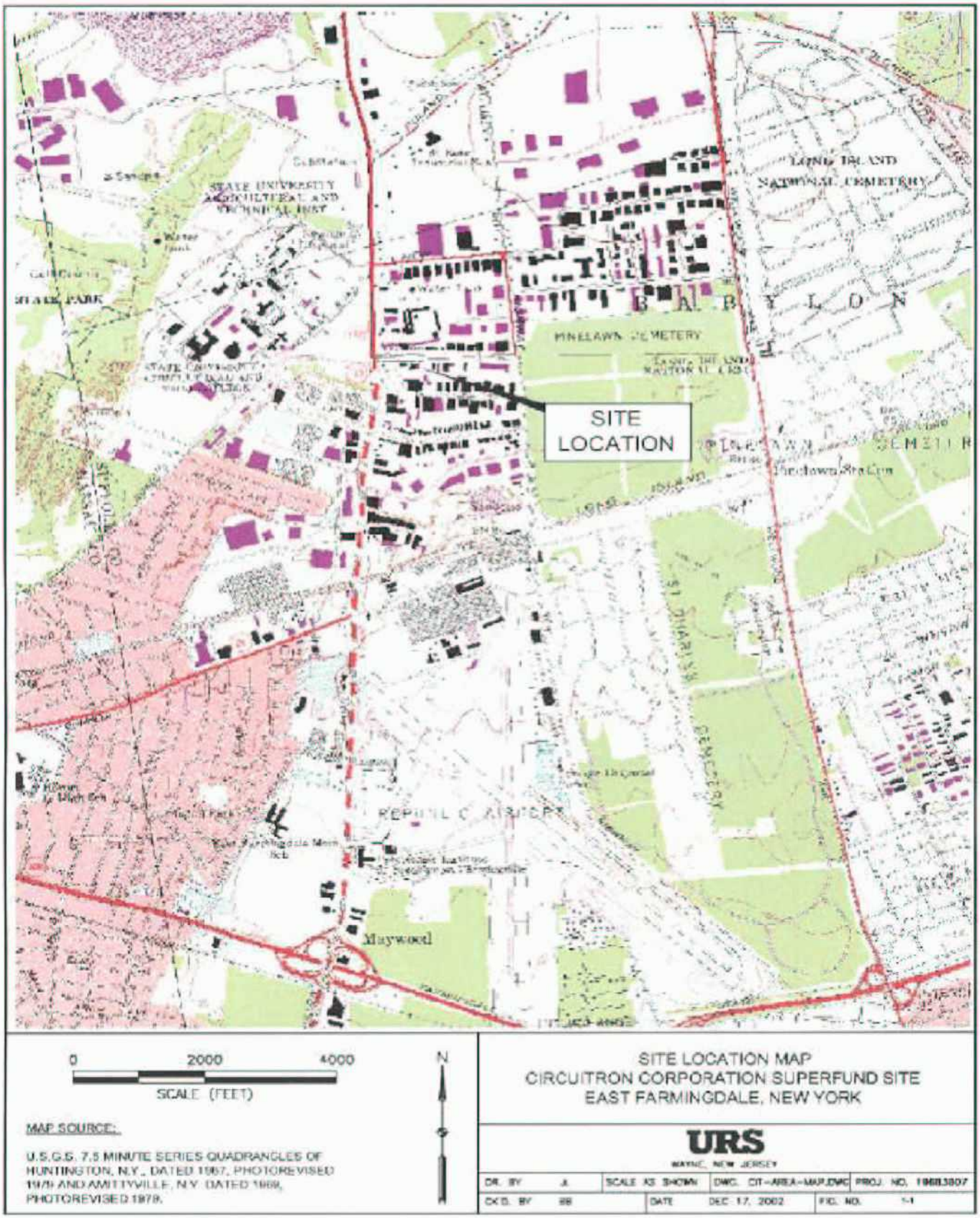
ND: no VOCs detected

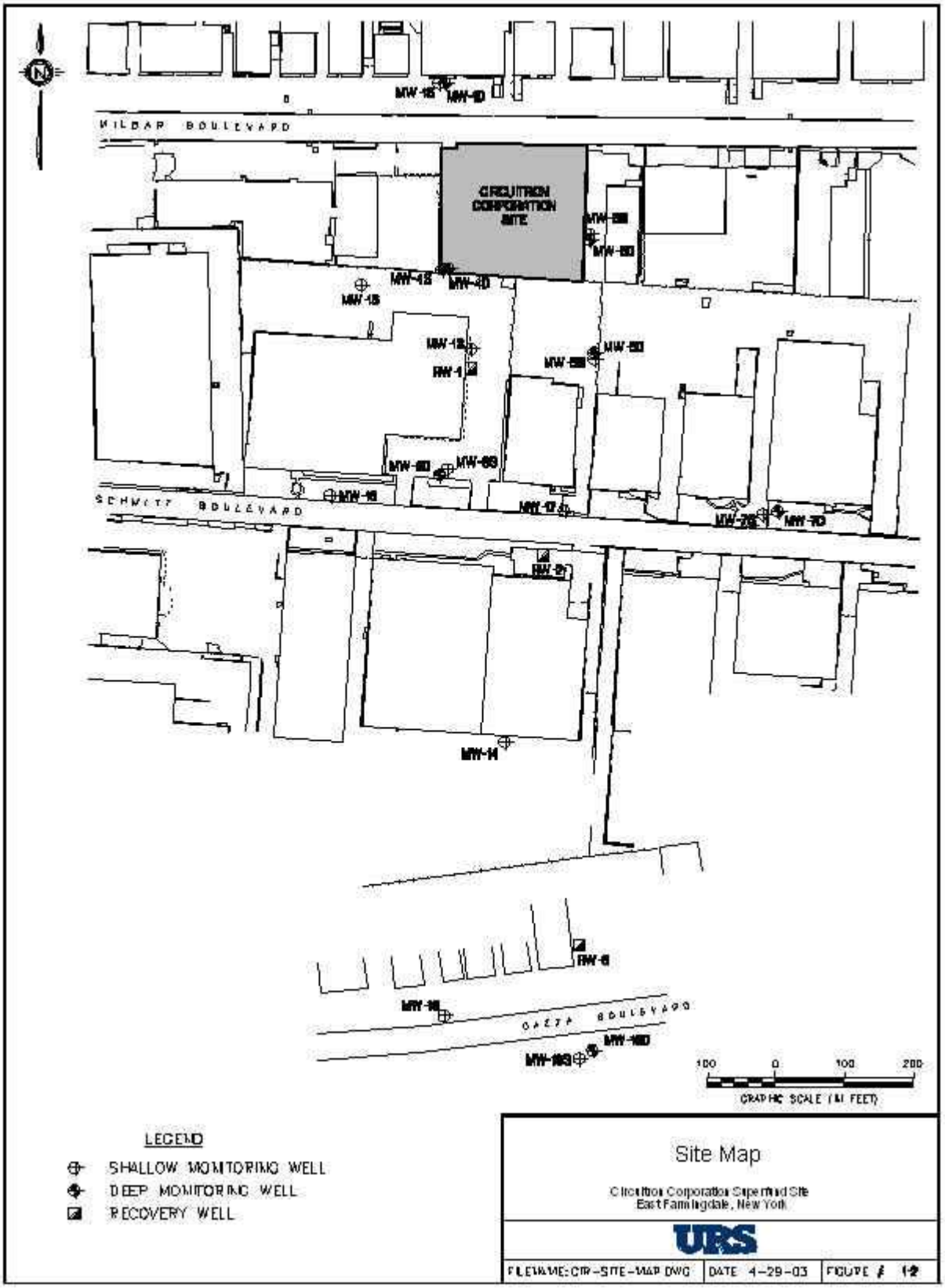
[a]Values are the arithmetic mean of normal and duplicate samples. For June 2004, values are the arithmetic mean of multiple bag samples. For MW-4S and MW-19D, values are arithmetic mean of bag samples, duplicates, and low flow samples.

Table 4: Comparison of Maximum Detected Concentrations with Risk-based Concentrations to Evaluate the Potential for Vapor Intrusion: Upper Portion of the Saturated Upper Glacial Aquifer

Parameter	Vapor Intrusion Groundwater Screening Concentration (ppb) Cancer risk - E-06; HQ-0.1	Maximum Detected Concentration (ppb)	Multiple Above Screening Value	Location/ Depth
1,1-dichloroethane	220	ND (<5)	Not above	All locations
1,1-dichloroethene	19	5	Not above	MW-4S (34 feet)
Tetrachloroethene	1.1	12	11 times above	MW-4S (34 feet)
t-1,2-dichloroethene	18	ND (<5)	Not above	All locations
1,1,1-trichloroethane	310	260	Not above	MW-4S (34 feet)
1,1,2-trichloroethane	4.1	ND (<5)	DL <2 times above	All locations
Trichloroethene	0.05	ND (<5)	DL <100 times above	All locations

ND = Not detected;
DL = Detection limit
HQ = Hazard Quotient


SITE
LOCATION
0
2000
4000
SCALE (FEET)
N
MAP SOURCE:
U.S.G.S. 7.5 MINUTE SERIES QUADRANGLES OF HUNTINGTON, N.Y., DATED 1967, PHOTOREVISED 1979 AND AMITYVILLE, N.Y. DATED 1969, PHOTOREVISED 1979.
SITE LOCATION MAP
CIRCUITRON CORPORATION SUPERFUND SITE
EAST FARMINGDALE, NEW YORK
URS
WAYNE, NEW JERSEY
DR. BY
SCALE AS SHOWN
DWG. 01-AREA-MAP.DWG
PROJ. NO. 19683807
CKD. BY
DATE
DEC 17, 2002
FIG. NO.
1-1


WILBAR BOULEVARD
CIRCUITRON CORPORATION SITE
SCHMITT BOULEVARD
GAZZA BOULEVARD
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20
MW-21
MW-22
MW-23
MW-24
MW-25
MW-26
MW-27
MW-28
RW-1
RW-2
100 0 100 200
GRAPHIC SCALE (IN FEET)
LEGEND
SHALLOW MONITORING WELL
DEEP MONITORING WELL
RECOVERY WELL
Site Map
Circuitron Corporation Superfund Site
East Farmingdale, New York
URS
FILENAME: CTR-SITE-MAP.DWG
DATE 4-29-03
FIGURE # 12