EXPLANATION OF SIGNIFICANT DIFFERENCE
GENERAL CIRCUITS INC. SITE

City of Rochester / Monroe County / Site No. C8-28-085 / March, 2012

Prepared by the New York State Department of Environmental Conservation
Division of Environmental Remediation

1.0 INTRODUCTION

The purpose of this notice is to describe the progress of the cleanup at the General Circuits, Inc site (Site) and to inform you about a change in the Site remedy. The Site is located in an urban area in the City of Rochester, Monroe County near the corner of Buffalo Road and Mount Read Boulevard. On March 31, 2005, the New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision (ROD) which selected a remedy to cleanup the Site. The remedial work identified in the ROD is currently being conducted under a Brownfield Cleanup Agreement (BCA) between 95 Mt. Read Blvd, LLC. and NYSDEC.

The ROD was completed in March 2005 under the Inactive Hazardous Waste Disposal Site Program (IHWDS or State Superfund Program) and the Site entered the Brownfield Cleanup Program (BCP) prior to the cut-off date for class 2 site eligibility of July 1, 2005. The goal of the State Superfund Program is to restore the site to pre-disposal conditions, to the extent feasible. Restoring the General Circuits site to pre-disposal conditions was determined to not be feasible, so alternatives were developed and a remedy selected that restricted the Site use to commercial and industrial use. The remedy selected in the ROD included a soil excavation and removal phase to remove soil containing the greatest concentration of chromium. At the time the ROD was issued, NYSDEC did not have published regulations with soil cleanup objectives (SCOs) for chromium levels at a restricted use commercial or industrial site. The soil cleanup levels in the ROD were based on a combination of NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 recommended soil cleanup level which was the applicable standard, criteria or guidance (SCG) for soil then in effect and site-specific criteria developed in the Feasibility Study.

The General Circuits site was subsequently accepted into the BCP. Regulatory SCOs were established under 6 NYCRR Part 375, Environmental Remediation Programs, for the BCP and were effective as of December 14, 2006. Upon consideration of this new information, a change to the ROD is hereby being made to incorporate the Part 375 Protection of Public Health SCOs for trivalent chromium for commercial use into the ROD, replacing the corresponding SCGs originally identified by the March 2005 ROD.

This Explanation of Significant Difference (ESD) will become part of the Administrative Record for this Site. The information here is a summary of what can be found in greater detail in documents that have been placed in the following repository:

Arnett Branch Library
310 Arnett Boulevard
Rochester, NY 14619

Phone: 585-428-8214
Hours: Mon (11-6), Tue (11-7), Wed (11-6), Thu (11-7), Fri (11-5), Sat (10-2)

Although this is not a request for comments, interested persons are invited to contact the Department's Project Manager for this Site to obtain more information or have questions answered.

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2.0 SITE DESCRIPTION AND ORIGINAL REMEDY

2.1 Site History, Contamination, and Selected Remedy

Location: The Former General Circuits, Inc site is located in an urban area near the corner of Buffalo Road and Mount Read Boulevard.

Site Features: The site covers approximately 3.5 acres. The main site features include a 108,000 square foot single story building surrounded by parking areas and roadways. A basement is located under a portion of the building. The basement includes a series of sumps and floor drains that collect water from the foundation drains. This water is discharged to the sanitary sewer.

Current Zoning: The Site is currently active and zoned for industrial use. The building is subdivided into spaces that are leased to small light-industrial and commercial businesses. The surrounding parcels are currently used for a combination of commercial and industrial purposes. The nearest residential area is located on the east side of Mount Read Boulevard about 100 ft. from the Site.

Historic Use: The original portion of the building was constructed in the 1920s and used for a printing business until the early 1960s. General Circuits began manufacturing printed circuit boards at the Site in the early 1960s and continued operations until 1990 when it closed as a result of bankruptcy. Several expansions were constructed in the 1960s and 1970s that increased the floor space of the building to the current size.

Historic activities that appear to have led to Site contamination include the use of chlorinated solvent degreasers and the use of chromic acid to etch circuit boards.

In 1990, General Circuits filed for bankruptcy and closed its manufacturing operations. As part of the facility closure, General Circuits conducted an environmental assessment of the property. The investigation indicated that the groundwater was contaminated with chlorinated volatile organic compounds (VOCs). In 1991, the Site was sold to a corporate relative of the current owner.

In 1992, the owner installed a groundwater treatment system to treat water that accumulates in the sumps prior to discharging the water to the sanitary sewer. Additionally, NYSDEC listed the Site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A

Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

In 1996, additional sampling performed by the owner. The results indicated that groundwater under the building was also contaminated with chromium. The owner subsequently excavated a limited amount of chromium contaminated soil from under the building. Confirmatory tests indicated that chromium contaminated soils were still present.

In 1998, the owner signed Consent Order for a Remedial Investigation/Feasibility Study (RI/FS).

Site Geology and Hydrogeology: The surface of the Site is generally covered with the building, asphalt or concrete. Beneath the surface layer is a layer of fill material between 1 and 5-feet thick. The fill material consists mainly of reworked soil with some concrete, crushed stone, asphalt, cinders, brick, ceramic tile, coal, slag, ash and glass. The native soil located beneath the fill material is mostly sand with lesser amounts of gravel, silt, clay and weathered rock.

The top of the bedrock underlying the Site ranged from approximately 8 to 17 feet below the existing ground surface. The bedrock is Lockport Dolomite which is a hard and fractured dolomite. Groundwater flow in the bedrock is dominated by fracture networks.

The permanent water table at the Site is located in the overburden, approximately 6 to 12 feet below ground surface. Groundwater in the overburden and shallow bedrock within approximately 50 to 75 feet of the basement sump flows radially toward the sump. Beyond the influence of the sump, groundwater on the eastern portion of the Site is generally flat while groundwater on the western side of the Site appears to flow toward the southwest. Groundwater in the deep bedrock (approximately 38 feet below ground surface) on the western half of the Site flows radially toward the basement sump. Deep groundwater on the eastern half of the Site flows toward the southeast.

Nature and Extent of Contamination:
Based upon investigations conducted to date, the primary contaminants of concern include both trivalent and hexavalent chromium and chlorinated volatile organic compounds- specifically trichloroethene (TCE), tetrachloroethene (PCE) and associated degradation products.

Soil:
Chromium, in the form of chromic acid, was apparently released to the subsurface soil and groundwater in north-central area of the building. In 1996, some soils were excavated from the chromium source area to a depth of about 3.7 feet below grade. Confirmatory soil samples detected total chromium at concentrations ranging from 2,390 ppm to 21,400 ppm. The highest hexavalent chromium concentration detected during the remedial investigation was 3,800 ppm at a depth of 8 to 10 feet below grade. Elevated concentrations of chromium were detected beneath the building adjacent to the primary source area and extending to just outside the building to the north and at depths ranging from just below the building slab down to 12 to 15.5 feet below the slab. The Unrestricted Use Soil Cleanup Objectives (SCO) for chromium are 30 ppm for trivalent chromium and 1 ppm for hexavalent chromium. The Protection of Public Health for Commercial Use SCOs for chromium are 1,500 ppm for trivalent chromium and 400 ppm for hexavalent chromium. The Protection of Groundwater SCO for hexavalent chromium is 19 ppm.

TCE and PCE were found in a limited area of deeper soil (about 9 feet below grade) located just south southwest of the chromium source area. The highest concentrations of TCE and PCE in

soil were 14 ppm and 32 ppm, respectively. For TCE and PCE Unrestricted Use SCOs and the Protection of Groundwater SCOs are the same; 0.47 ppm for TCE and 1.3 ppm for PCE.

Groundwater:
In the groundwater, chromium was detected at concentrations up to 52,300 ppb total chromium which significantly exceeds the groundwater standard of 50 ppb for total chromium. The well with the highest chromium concentration was an overburden well located southeast of the chromium source area. The groundwater collected from this well was bright yellow in color which is indicative of high hexavalent chromium concentrations. Chromium contaminated groundwater was primarily located under the building. Chromium concentrations declined substantially outside of the building and near the property line. The highest concentration of total chromium detected outside the building was 53.5 ppb detected in a deep bedrock monitoring well near the northeast corner of the building.

TCE, PCE and their associated degradation products were found in groundwater at concentrations significantly exceeding groundwater standards (typically 5 ppb). The highest concentrations of TCE (up to 59,000 ppb) and PCE (up to 95,000 ppb) indicate the presence of dense non-aqueous phase liquid (DNAPL). The highest concentrations of chlorinated VOCs were located the overburden groundwater under the central portion of the building. Groundwater impacts were determined to extend into the bedrock to a depth of approximately 50 feet below ground.

Chlorinated VOC concentrations declined substantially outside of the building and near the property line. The highest concentration of chlorinated VOCs outside the building was 144 ppb detected in a deep bedrock monitoring well near the northeast corner of the building, which is also near the eastern Site boundary.

The potential for off-site contaminant migration in groundwater is currently controlled by a groundwater extraction and treatment system that includes a groundwater extraction point near the northeast corner of the building.

Sub-Slab Soil Vapor and Indoor Air:
An Interim Remedial Measure to address the potential for soil vapor intrusion is complete. Prior to remediation, TCE and PCE were the primary contaminants of concern in sub-slab soil vapor and indoor air for a portion of the Site.

Components of the Selected Remedy:
NYSDEC issued a ROD dated March 2005. As described in the ROD, the remedy selection process to address the contaminants of concern at the Site included the following considerations: (1) protection of human health and the environment; (2) compliance with New York State standards, criteria and guidance; (3) short-term effectiveness; (4) long-term effectiveness and permanence; (5) reduction of toxicity, mobility or volume; (6) implementability; and (7) cost-effectiveness. Potential remedial alternatives for the General Circuits Site were identified, screened and evaluated in the FS report.

Based on the results of the RI and the evaluation of alternatives presented in the FS, a remedy was selected, which was summarized in the ROD as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. The Site's existing protective cover (asphalt/concrete pavement, flooring, etc.) will be maintained to prevent exposure to contaminated soils and to minimize storm water infiltration.

3. Since the remedy results in contamination above unrestricted levels remaining at the Site, a Site Management Plan (SMP) will be developed and implemented. The SMP will include the Institutional Controls (ICs) and Engineering Controls (ECs) to: (a) address residual contaminated soils that may be excavated from the Site during future redevelopment and site maintenance activities. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any new buildings or building additions developed on the Site, including provision for mitigation of any impacts identified; (c) provide for the operation and maintenance of the components of the remedy including the protective cover and the sub-slab depressurization (SSD) Interim Remedial Measure (IRM); (d) monitor the groundwater, treated groundwater, soil vapor, and indoor air; and (e) identify any use restrictions on Site development or groundwater use.

4. The SMP will require the property owner to provide an IC/EC certification, prepared and submitted by a professional engineer or environmental professional acceptable to the NYSDEC, annually or for a period to be approved by the NYSDEC, which will certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that will impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or soil management plan.

5. Imposition of an institutional control in the form of an environmental easement that will (a) require compliance with the approved site management plan; (b) limit the use and development of the property to restricted commercial and restricted industrial uses only (health care and day care uses will also be prohibited without a waiver from NYSDEC); (c) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Monroe County Health Department ; and (d) require the property owner to complete and submit to the NYSDEC IC/EC certification.

6. Removal and off-site disposal of soil containing total chromium with concentrations greater than 500 ppm and, within this removal area, removal and off-site disposal of soil containing hexavalent chromium with concentrations greater than 50 ppm, to the extent practicable.

7. Extraction and on-site treatment of groundwater followed by in situ chemical reduction.

8. Installation of a permanent vapor mitigation system in the basement. Specific components of the system (e.g. sealing the sumps, additional ventilation, etc.) will be determined as part of the remedial design.

9. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

3.0 CURRENT STATUS

A brief summary of the status of the three primary remedial components of the selected remedy is as follows:

1. Groundwater Treatment:
   The groundwater extraction and treatment system was constructed and has been operating since July 2008. The groundwater extraction system has been shown to effectively depress groundwater levels throughout the targeted capture zone, effectively provide hydraulic containment to help prevent off-site migration of groundwater contaminants, and provide for chromium removal within the capture zone. The treatment system for the extracted groundwater has consistently met the applicable sewer use effluent limits since start-up.

   An Interim Site Management Plan (dated March 2010) and a Construction Completion Report (dated March 2010) were prepared for the groundwater extraction and treatment system, and are available for review at the document repository (see Section 1.0). The groundwater extraction and treatment system is currently being operated in accordance with the operation, maintenance and monitoring requirements of the Interim Site Management Plan.

2. Soil Excavation and Removal:
   The soil excavation and removal component of the Site remedy is currently in the remedial design phase. A 30% complete submittal package was prepared in November 2009, but further work on the remedial design plan was placed on hold pending resolution of the applicable SCGs addressed by this ESD. The remedial design will recommence upon issuance of this ESD.

3. Mitigation of Potential Sub-Slab Vapor Intrusion:
   An IRM was initiated to address the VOC indoor air concentrations. Specifically, installation of a SSD system (venting system) underneath the impacted portions of the building was completed in January 2005 to mitigate the potential for contaminated sub-slab soil vapors to enter the building. Air purifiers were also subsequently installed to supplement the SSD system, and the most recent round of confirmatory testing showed indoor air quality within the tenant spaces to be within applicable indoor air concentration guidance values.

4.0 DESCRIPTION OF SIGNIFICANT DIFFERENCE

4.1 New Information

New information obtained since the completion of the RI/FS activities and issuance of the ROD include:

- Acceptance of the General Circuits site into the BCP; and
- Issuance of 6 NYCRR Part 375 regulations in December 2006 which included SCOs applicable to BCP sites.

4.2 Comparison of Changes with Original Remedy

The excavation and removal component of the ROD was intended to remove soil with the highest chromium concentration from the Site. To address the impacted soil that will remain at the Site upon completion of the soil removal, institutional and engineering controls (IC/ECs)

were incorporated resulting in a future "restricted use" classification for the Site to only allow commercial and industrial use. The original remedy presented in the ROD called for soil removal to levels of 500 ppm total chromium and 50 ppm hexavalent chromium; however, the current applicable Part 375 regulations identify the Protection of Public Health SCO for commercial use of 1,500 ppm for trivalent chromium and the Protection of Groundwater SCO of 19 ppm for hexavalent chromium (6 NYCRR Part 375 Table 375-6.8(b)). However, the FS determined that it is not feasible to remove soils containing hexavalent chromium at levels below 50 ppm. As such, the hexavalent chromium SCG of 50 ppm specified in the ROD will not be changed.

A comparison of a change from the original ROD to the ESD is presented below for each of the considerations used in the ROD remedy selection process. The differences between the ROD and the amended remedy are also summarized in Table 1.

1. Protection of Human Health and the Environment: Both the ROD and the ESD are protective of public health and the environment for the Site's future restricted commercial and industrial use. While the ROD does have lower SCOs, the Part 375 SCO for trivalent chromium, which forms the basis of ESD, was developed to provide protection of human health and the environment for remedial cleanup activities of this type, and with controls in place as required under the ROD to provide long-term protection against exposure and storm water infiltration, both options provide comparable protection of human health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance: The ROD and the ESD comply with applicable current regulatory requirements and guidelines.

3. Short-Term Effectiveness: The ESD will result in less volume being removed for disposal, which results in beneficial short-term impacts when compared with the ROD. Due to less volume of soil being removed for disposal, the corresponding remedial completion time will be reduced. A shorter remedial completion time will result in less impact upon the local community and existing tenants, including less tenant displacement time and interruption of Site business activities, and less time/risk of potential exposure to possible airborne particulate matter.

4. Long-Term Effectiveness and Permanence: The ROD and the ESD have comparable long-term effectiveness and permanence. Residual chromium concentrations appropriate for the Site's intended commercial and industrial use will remain in place under either option.

5. Reduction of Toxicity, Mobility or Volume: The ESD results in a lower volume of soil being removed from the Site. The ROD estimated that 1,350 tons of soil would be excavated and removed for off-site disposal. Under the ESD, the volume of soil removed would be reduced to approximately 1,200 tons. While the volume of soil removed will be reduced, the relative toxicity and mobility of the contaminants is comparable under either option due to the low solubility of trivalent chromium. Additionally, the soil cleanup level for the more mobile and toxic hexavalent chromium remains unchanged from the ROD.

6. Implementability: Due to the lower volumes being removed, the ESD is preferable to the ROD from the perspective of implementability. Removal of less volume of soil is easier to implement, as it will impact a smaller area and reduce potential impacts on the existing structure and/or underground utilities.

7. Cost-Effectiveness: For purposes of comparison to the cost estimates provided in the ROD, a

new cost estimate was developed for the ESD using the same costs and factors used in the ROD (i.e., costs normalized to 2005 dollars). The cost estimate in the ROD for the net present worth (2005 dollars) of the chromium source area excavation and removal was $1,216,670 (ROD Table 4). The corresponding ESD net present worth (2005 dollars) estimate is $1,150,390,503.

Based on the above considerations, the ESD (use of the Part 375 Protection of Public Health SCO for trivalent chromium for commercial use) is observed to possess several advantages over the ROD and this ESD will amend the ROD to incorporate the applicable Part 375 criteria. Specifically, item 6 of the ROD selected remedy shall be amended to read:

"Excavation and off-site disposal of soil containing trivalent chromium with concentrations greater than 1,500 ppm and/or hexavalent chromium with concentrations greater than 50 ppm, to the extent practicable."

5.0 SCHEDULE AND MORE INFORMATION

Site remediation will continue in accordance with the ROD, and the various components of the selected remedy, as modified herein. Specifically, this ESD results in modification of the SCO levels to be met in completing the ROD-specified excavation and removal of chromium-contaminated soils. The next step in this remedial component is to complete the remedial design for this activity. A schedule for completion of the soils excavation and removal activity will be provided in the remedial design document, a copy of which will be made available at the designated repository (see Section 1.0).

If you have questions or need additional information you may contact any of the following:

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Date

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REVIEWED
By Bartholomew H. Putzig at 4:31 pm, Jun 12, 2012

Date

Bartholomew H. Putzig, RHWRE
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06/19/2012

Date

Michael Cruden, Director
Remedial Bureau E

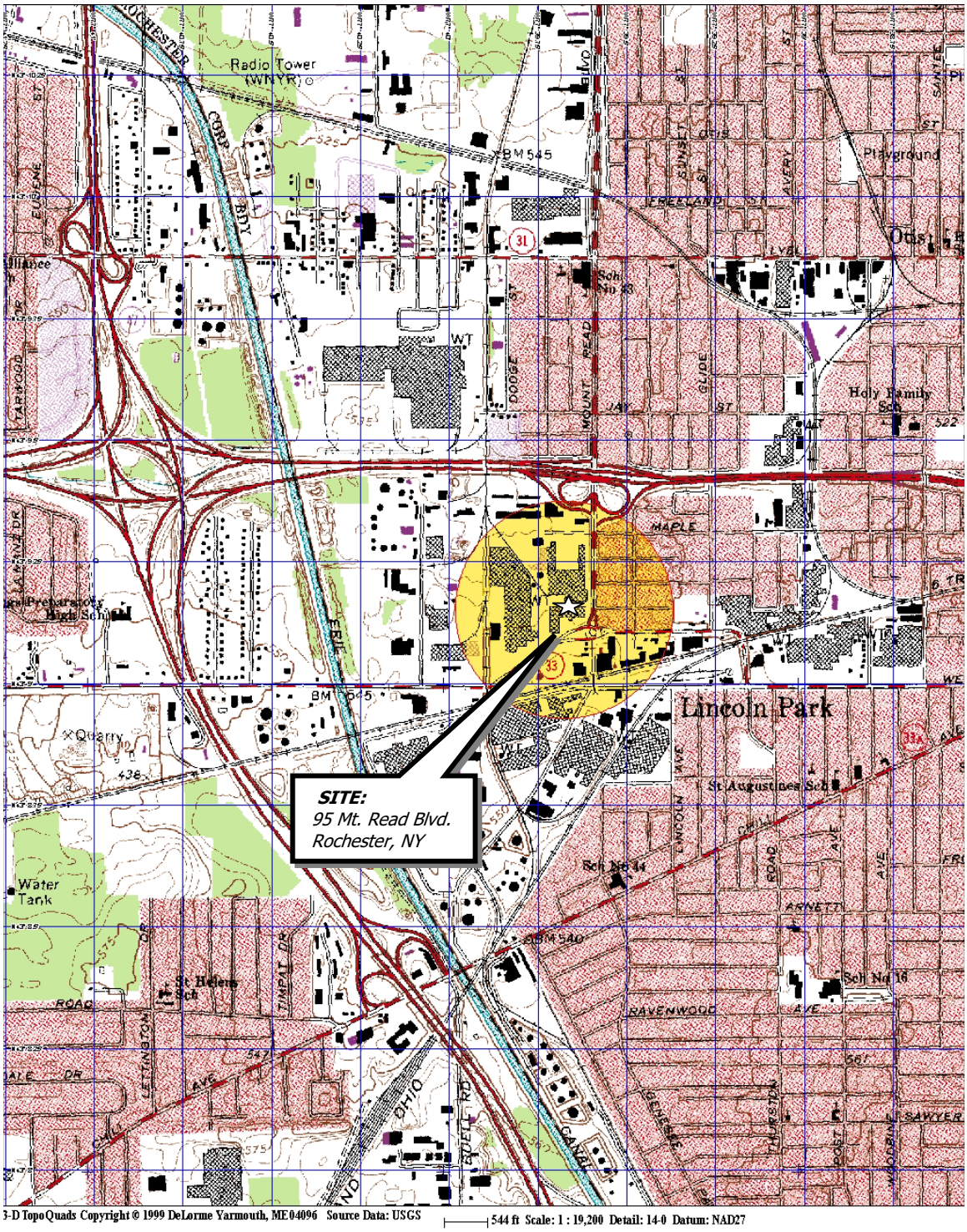
06/19/2012

Date

Robert W. Schick, Director
Division of Environmental Remediation

TABLE 1 - COMPARISON OF MARCH 2005 REMEDY with AMENDED REMEDY

COMPONENT OF ORIGINAL REMEDY INCLUDED IN MARCH 2005 ROD	AMENDED COMPONENT OF REMEDY
• A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program	• No Change
• Development of a Site Management Plan.	• No Change
• The SMP will require the property owner to provide IC/EC certifications.	• No Change
• Engineering control to maintain existing cover system	• No Change
• Institutional controls in the form of an environmental easement	• No Change
• Removal and off-site disposal of soil containing total chromium with concentrations greater than 500 ppm and, within this removal area, removal and off-site disposal of soil containing hexavalent chromium with concentrations greater than 50 ppm, to the extent practicable.	• Changed to "Excavation and off-site disposal of soil containing trivalent chromium with concentrations greater than 1,500 ppm and/or hexavalent chromium with concentrations greater than 50 ppm, to the extent practicable."
• Extraction and on-site treatment of groundwater followed by in situ chemical reduction.	• No Change
• Installation of a permanent vapor mitigation system in the basement.	• No Change
• The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.	• No Change



Drawing Produced From: 3-D TopoQuads, DeLorme Map Co., referencing USGS quad map Rochester West (NY) 1995. Site Lat/Long: N43d-09.15' – W77d-39.67'

DATE **1-12-2006** DRAWN BY **RJM** SCALE **1" = 2000'**	day DAY ENVIRONMENTAL, INC. ENVIRONMENTAL CONSULTANTS ROCHESTER, NEW YORK 14614-1008	PROJECT TITLE **95 MT. READ BOULEVARD** **ROCHESTER, NEW YORK** **GROUNDWATER EXTRACTION AND TREATMENT WORK PLAN** DRAWING TITLE **PROJECT LOCUS MAP**	PROJECT NO. **3681R-05** **FIGURE 1**