STATEMENT OF BASIS

TCMF Hillcrest Facility
Binghamton, Broome County
Site No. 704045
EPA No. NYD002226041
February 2015

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

DECLARATION STATEMENT – STATEMENT OF BASIS

TCMF Hillcrest Facility
Binghamton, Broome County
Site No. 704045
EPA No. NYD002226041
February 2015

Statement of Purpose and Basis

This document presents the remedy for the TCMF Hillcrest Facility site. The remedy was selected in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Parts 373 (RCRA) and 375 (BCP).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the TCMF Hillcrest Facility site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- reducing direct and indirect greenhouse gases and other emissions;
- increasing energy efficiency and minimizing use of non-renewable energy;
- conserving and efficiently managing resources and materials;
- reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- maximizing habitat value and creating habitat when possible;
- fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- integrating the remedy with the end use where possible and encouraging green and sustainable redevelopment.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including soil in and around the former waste water discharge structures identified as Outfall 002 and the former septic system identified as Outfall 003. Remaining drywell type structures, tanks, associated piping, waste sediments, will also be removed. Excavation in the areas of the outfall structures will proceed to a depth of approximately 18 feet and laterally as feasible until lateral endpoint samples indicate there is no soil remaining which contains heavy metals at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8. The approximate excavation areas are shown on Figure 2.

It is estimated that approximately 50 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the design grades at the site.

3. In-Situ Stabilization

In-situ stabilization (ISS) will be implemented below the excavation areas where heavy metals in soil remain at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8. ISS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble. The stabilizing agents will be applied to contaminated soil using direct injection techniques or by soil mixing using an excavator or augers. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. The stabilizing agent, proper stabilization mixture, method of treatment application, and depth of treatment will be determined during remedial design.

Implementation of remedial elements 2 and 3 are expected to eliminate the source of contamination to groundwater. Therefore, groundwater contaminant concentrations and the overall extent of groundwater contamination are expected to decrease over time.

4. Cover System

A site cover system, consisting of buildings, pavement, and sidewalks, currently exists over the majority of the site. The existing cover system will be maintained to allow for commercial use of the site. A site cover will be required over the remainder of the site to allow for commercial use of the site. Any site redevelopment will maintain a site cover, which may consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

5. Vapor Intrusion

Continued operation, maintenance and monitoring of the existing sub-slab depressurization system to prevent the migration of vapors into the building from groundwater.

6. Institutional Control

Imposition of an institutional control in the form of an Environmental Easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in remedial element 7 above.

Engineering Controls: The cover system discussed in remedial element 4 and the sub-slab depressurization system discussed in remedial element 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion should additional portions of the on-site building become occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring of vapor intrusion for any buildings re-occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

February 27, 2015	
Date	Robert W. Schick, P.E., Director Division of Environmental Remediation

FINAL STATEMENT OF BASIS

TCMF Hillcrest Facility
Binghamton, Broome County
Site No. 704045
EPA No. NYD002226041
February 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Statement of Basis (SB) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy. This site is subject to the New York State Hazardous Waste Management Program and the New York State Brownfield Cleanup Program.

The New York State Hazardous Waste Management Program (also known as the RCRA Program) requires corrective action for releases of hazardous waste and hazardous constituents to the environment.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant. The work completed by the remedial party pursuant to the BCP is being used to address the RCRA Program obligations for this site as forth in this SB. This SB will also serve as the BCP Decision Document.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Parts 373 (RCRA) and 375 (BCP). This document is a summary of the information that can be found in the site-related reports and documents listed in the Administrative Record (see Appendix B) and available in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Fenton Free Library
1062 Chenango Street
Binghamton, NY 13901
Phone: 607-724-8649

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The TCMF Hillcrest Facility site is located at 4 Nowlan Road in a suburban area of the Town of Fenton, Broome County. The site is bordered on the north by Nowlan Road; on the south by Beckwith Avenue; on the east by the C.A.E. Electronics facility, an inactive hazardous waste disposal site (Site No. 704015); and to the west by two commercial properties.

Site Features: The site features include one large manufacturing building with attached office space. Only a portion of the manufacturing building is currently occupied and is used for metal parts fabrication. The remainder of the site consists of paved parking areas and only small areas with vegetative cover.

Current Zoning and Land Use: The site is currently active and is zoned for industrial use. The surrounding parcels are currently used for a combination of residential, commercial and industrial uses.

Past Use of the Site: From 1953 to 1999, TCMF performed metal plating on products for military, aerospace and automotive industries. The primary metals used in the TCMF plating business were cadmium, chromium, nickel and zinc. Wastewater from the manufacturing process was released into drywells on-site. Between 1999 and 2012 the building was used commercially as a warehouse and for storage. Manufacturing operations started at the site again in 2012; however, no plating operations currently occur at this facility.

A preliminary RCRA facility assessment was completed in 1993. A Phase 1 environmental site assessment was completed in 1999. Phase 2 subsurface investigation work was conducted in 2000 and 2002. A Corrective Measures Study was submitted to the Department in 2003. The current site remediation program is being performed by Binghamton Realty, Inc., TCMF, Inc., and Zurenda Enterprises, Inc. as Participants in the Brownfield Cleanup Program.

Site Geology and Hydrogeology: Subsurface soils beneath the site consist of higher permeability sand and gravel that is uniformly underlain by lower permeability unit of silt with sand and clay. The approximate depth to the silt unit is 32 feet below ground surface (bgs) and has a thickness greater than 100 feet. Depth to groundwater that exists within the higher permeability sand and gravel unit is approximately 25 feet bgs. The generalized direction of groundwater flow is to the west. It should be noted that although the shallow groundwater unit is not used directly as a water supply, this site is within an area designated as a USEPA Sole Source Aquifer and a NYS Primary Aquifer.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

6 NYCRR Part 373 Hazardous Waste Management Permits include RCRA Corrective Action. This requires owners and/or operators of hazardous waste treatment, storage and disposal facilities to investigate and, when appropriate, remediate releases of hazardous wastes and/or constituents to the environment. Triple Cities Metal Finishing, Inc. had started to implement the Corrective Action Program for this facility prior to acceptance into the BCP.

6 NYCRR Part 375-3 specifies the requirements of BCP. Binghamton Realty, Inc., TCMF, Inc., and Zurenda Enterprises, Inc., entered into a Brownfield Cleanup Agreement (Index # B7-0675-04-09) for this site as Participants on December 6, 2004.

Based on results of RCRA and BCP investigations, the Department has determined that metals contamination of soil in disposal areas are acting as a continued source of contamination to groundwater and constitutes a significant threat to the environment. Due to these conditions and

according to 6 NYCRR Part 375-3.7(a)(3)(ii) the site must be remediated pursuant to the remedy selected by the Department. If the selected remedy is not implemented by the Participants in the Brownfield Cleanup Agreement, the Department will seek for implementation through RCRA or an alternate environmental remedial program.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Site Investigations

The RCRA corrective action process began with evaluations and investigations to identify potential areas of the site that may have been impacted by hazardous wastes and/or hazardous constituents. Based on the results of investigations, the Department has determined that hazardous wastes and/or hazardous constituents have been released at the facility.

The BCP remedial investigation (RI) has included and expanded upon the results from the corrective action evaluations and investigations. Within New York State's environmental remediation programs the RI serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives.

A chronological listing of evaluations and investigations is provided in the Administrative Record (see Appendix A). The documents listed in the Administrative Record are available for review in the site document repository.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: Site Investigation Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data.

The contaminant(s) of concern identified at this site are:

TRICHLOROETHENE (TCE)	COPPER
CADMIUM	LEAD
CHROMIUM	SELENIUM
NICKEL	ZINC

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- sub-slab vapor

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM Soil Vapor Mitigation

As a result of elevated concentrations of volatile organic compounds, primarily trichloroethene, in sub-slab soil vapor samples, a sub-slab depressurization system (SSDS) was installed in the East Addition of the industrial building in January 2006. At that time the East Addition was the only

occupied portion of the on-site buildings. Due to changes in the building use and the occupied areas, the SSDS was expanded into the central portion of the industrial building in April 2012. The coverage of the SSDS for the building is shown on Figure 5.

The SSDS consists of 13 vapor extraction points connected to one roof-mounted blower. The SSDS creates sufficient negative pressure differential to prevent soil vapor intrusion.

Maintenance and monitoring of the SSDS has been performed since system start-up according to an Interim Maintenance and Monitoring plan.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Nature and Extent of Contamination: Based upon investigations conducted to date, the primary contaminants of concern that are site related appear to be the heavy metals associated with the past operational history. The TCE contamination present at this site appears to be the result of disposals that occurred on the adjacent remedial program site known as C.A.E. Electronics.

Soil – Subsurface soil has been impacted by discharges from the former plating operations. Soil samples collected beneath the site at depth ranging from 2 inches to 36 feet bgs contain site related metals contamination at levels above the soil cleanup objectives (SCOs) for commercial use and the protection of groundwater. Heavy metal constituents that are above their respective SCOs for commercial use and the protection of groundwater include cadmium, chromium, copper, lead, nickel, selenium and zinc. Areas of concern are on-site and include portions of the site north and west of the building near previously used waste water discharge structures. In these areas, site related metals contamination in soil does not occur near the ground surface, but at depths ranging from 8 to 36 feet bgs. The 8 foot depth corresponds to the approximate bottom of the waste water discharge structures. Soils below the waste water discharge structures have been impacted by the downward gravity flow of the waste water. Soil samples with site related metals contamination found at depths shallower than 8 feet bgs were collected from beneath the building's concrete floor slab. Soil contamination does not extend off-site. The concentrations of TCE in soil do not exceed the SCO for the protection of groundwater.

Groundwater – Site related contamination has impacted groundwater. Heavy metal constituents with concentrations above their respective groundwater standard include cadmium, chromium, copper, lead, nickel, selenium, thallium and zinc. However, based on the overall concentration range and frequency of samples exceeding the groundwater standards, cadmium, chromium, lead, and nickel appear to be the primary contaminant of concern in groundwater at this site. Heavy metals contamination in groundwater has migrated off-site and appears to extend approximately 300 feet to the west. The concentrations of TCE in groundwater are higher than the respective groundwater standard; however, they are similar to concentrations in groundwater hydraulically upgradient and downgradient of site and have their source on the adjacent C.A.E. Electronics site.

Soil Vapor – Soil vapor underlying the buildings on-site has been impacted by TCE at levels that warranted vapor mitigation. TCE in sub-slab soil vapors ranged from 11 to 270 micrograms per cubic meter (ug/m3). Potential exposures related to soil vapor intrusion into buildings on-site [existing or future] will be addressed by the site remedial program. A soil vapor intrusion evaluation has been completed at the homes and businesses surrounding the TCMF Hillcrest Facility site conducted as part of the environmental remediation work associated with the C.A.E. Electronics site. Actions being implemented off-site to address exposures related to soil vapor intrusion are also being completed as part of the remedial program for the C.A.E. Electronics site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. However, persons who dig below the ground surface may come into contact with contaminants in subsurface soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. A sub-slab depressurization system (systems that ventilate/remove the air beneath the building) has been installed in the occupied portions of the on-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. Actions have been implemented to address off-site soil vapor intrusion concerns associated with contamination from the adjacent C.A.E. Electronics site. These off-site soil vapor intrusion concerns are not the result of contamination from the TCMF Hillcrest Facility.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the Alternatives Analysis report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C. The basis for the Department's selected remedy is set forth at Exhibit D.

The selected remedy is referred to as the Limited Excavation, In-Situ Stabilization and Site Cap. The estimated present worth cost to implement the remedy is $189,000. The cost to construct the remedy is estimated to be $110,000 and the estimated average annual cost is $5,150.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. Remedial Design

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

Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- reducing direct and indirect greenhouse gases and other emissions;
- increasing energy efficiency and minimizing use of non-renewable energy;
- conserving and efficiently managing resources and materials;
- reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- maximizing habitat value and creating habitat when possible;
- fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- integrating the remedy with the end use where possible and encouraging green and sustainable redevelopment.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including soil in and around the former waste water discharge structures identified as Outfall 002 and the former septic system identified as Outfall 003. Remaining drywell type structures, tanks, associated piping, waste sediments, will also be removed. Excavation in the areas of the outfall structures will proceed to a depth of approximately 18 feet and laterally as feasible until lateral endpoint samples indicate there is no soil remaining which contains heavy metals at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8. The approximate excavation areas are shown on Figure 2.

It is estimated that approximately 50 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the design grades at the site.

3. In-Situ Stabilization

In-situ stabilization (ISS) will be implemented below the excavation areas where heavy metals in soil remain at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8. ISS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble. The stabilizing agents will be applied to contaminated soil using direct injection techniques or by soil mixing using an excavator or augers. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. The stabilizing agent, proper stabilization mixture, method of treatment application, and depth of treatment will be determined during remedial design.

Implementation of remedial elements 2 and 3 are expected to eliminate the source of contamination to groundwater. Therefore, groundwater contaminant concentrations and the overall extent of groundwater contamination are expected to decrease over time.

4. Cover System

A site cover system, consisting of buildings, pavement, and sidewalks, currently exists over the majority of the site. The existing cover system will be maintained to allow for commercial use of the site. A site cover will be required over the remainder of the site to allow for commercial use of the site. Any site redevelopment will maintain a site cover, which may consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

5. Vapor Intrusion

Continued operation, maintenance and monitoring of the existing sub-slab depressurization system to prevent the migration of vapors into the building from groundwater.

6. Institutional Control

Imposition of an institutional control in the form of an Environmental Easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in remedial element 7 above.

Engineering Controls: The cover system discussed in remedial element 4 and the sub-slab depressurization system discussed in remedial element 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion should additional portions of the on-site building become occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring of vapor intrusion for any buildings re-occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

STATEMENT OF BASIS

Exhibits A through D

TCMF Hillcrest Facility
Brownfield Cleanup Program
Binghamton, Broome County
Site No. C704045
EPA No. NYD002226041

February 2015

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the site investigations for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into two categories; volatile organic compounds (VOCs), and inorganics (metals). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

As described in the Remedial Investigation (RI) report, waste/source areas were identified at the site and are impacting groundwater and soil.

Solid wastes are defined in 6 NYCRR Part 371.1(c) and hazardous wastes are defined in 6 NYCRR Part 371.1(d). Wastes are also defined in 6 NYCRR 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375-1.2(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contamination to another environmental medium. Waste and source areas that were identified at the site include the following:

- Outfall 002 - Drywell A,
- Outfall 002 - Drywell B,
- Outfall 003 - former septic tank, and
- Piping and soils surrounding Outfall structures.

Wastewater from the former manufacturing process was discharged to the drywells on-site and possibly discharged to the septic tank. Investigation results indicate presence of metals (i.e., cadmium, chromium, copper, lead, nickel, selenium, and zinc) at levels above the SCGs within soils surrounding or in the near vicinity of the drywells and tank structures. Metal constituents in soil are present in groundwater and based on the distribution of groundwater contamination, the drywells and tank areas appear to be the source areas. The approximate locations of Outfalls 002 and 003 are shown on Figure 2.

The waste/source areas identified will be addressed in the remedy selection process.

It should be noted, that although VOCs are present, no source areas for VOCs has been identified through investigations at this site.

Groundwater

Groundwater samples were collected from the overburden using monitoring wells and temporary sampling points. The samples were collected during multiple groundwater sampling events and were used to assess groundwater conditions on- and off-site. The results indicate that contamination in the groundwater at the

site exceeds the SCGs for certain VOCs and metals. Table 1 summarizes all contaminants that exceed the groundwater SCGs.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,1,1-Trichloroethane	0.86 - 2.9	5	0 of 39
Freon 113	0.56 – 16.9	5	4 of 39
Trichloroethene	1.6 – 71.4	5	35 of 39
Metals			
Arsenic	10 - 72	25	2 of 10
Cadmium	1.5 - 245	5	21 of 35
Chromium	4.1 - 850	50	24 of 35
Copper	7.5 - 347	200	3 of 28
Lead	2.3 - 130	25	12 of 35
Nickel	2.6 - 829	100	8 of 28
Selenium	8.5 - 54	10	2 of 10
Thallium	13.8 – 24.3	0.5	3 of 3
Zinc	20 – 4,220	2,000	2 of 28

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The VOCs in groundwater, especially trichloroethene (TCE), have also been found in upgradient monitoring wells at similar or greater concentration and appear to be associated with prior releases at the adjacent C.A.E. Electronics site (Site No. 704015). Therefore, the presence of VOC compounds in groundwater does not necessarily indicate site-related impacts.

The primary groundwater contaminants are the metals associated with the former discharge of wastewater and continued contaminant mass transfer from soil to groundwater. Metals constituents including cadmium, chromium, lead, and nickel were included in most groundwater sampling analyses and detected at concentrations greater than groundwater SCGs more often than other metals. The general distribution of metals contamination is shown on Figure 3. Metals contamination in groundwater has migrated off site and appears to extend approximately 300 feet to the west.

Based on the findings of the RI, the past disposal of hazardous waste and the presence of metals in soil have resulted in the contamination of groundwater. The site contaminants that are considered to be the primary

contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: cadmium, chromium, lead, and nickel.

Soil

Soil samples were collected at the site during the site investigations to identify source areas, assess soil contamination and potential impacts to groundwater. Soil samples were collected from the ground surface to depths up to 38 feet below ground surface. The results indicate that metals are present in on-site soils at concentrations exceeding the unrestricted use SCGs and applicable restricted use SCGs. Table 2 summarizes exceedances of SCGs. Soil contamination does not extend off-site.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use or PGW SCG[c] (ppm)	Frequency Exceeding Commercial SCG
Metals					
Arsenic	3.0 – 13.9	13	1 of 16	16[d]	0 of 16
Cadmium	0.73 - 761	2.5	28 of 46	7.5[d]	23 of 46
Chromium	7.8 – 18,900	1[f]	46 of 46	19[d]	30 of 46
Copper	13.7 – 3,250	50	20 of 46	270	8 of 46
Lead	2.2 - 533	63	5 of 46	450[d]	1 of 46
Nickel	11 – 1,050	30	28 of 46	130[d]	12 of 46
Selenium	3.9 - 25	3.9	16 of 16	4[d]	15 of 16
Silver	0.4 - 119	2	5 of 46	1,500	0 of 46
Zinc	37.9 – 22,100	109	20 of 46	2,480[d]	8 of 46

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater (PGW).
e – NS: No SCG established for this constituent in Part 375.
f – Chromium SCGs used are most restrictive (i.e., Hexavalent Chromium SCGs).

The primary soil contaminants are metals associated with the former discharge of wastewater to the outfall structures on-site. Metals constituents including cadmium, chromium, copper, lead, nickel, selenium, and zinc were detected at concentrations greater than both unrestricted and restricted use SCGs. Each of these metal constituents were detected in at least some of the investigation groundwater samples. The distribution of metals contamination in soil is shown on Figure 4.

It should be noted that: no VOCs were detected in soil at concentrations greater than unrestricted and restricted use SCGs; and several of the samples were collected at or in the vicinity of outfall areas where

the potential for impacts may be highest. These results support that the presence of VOC compounds in groundwater (as discussed above) does not necessarily indicate site-related impacts.

Based on the findings of the RI, the presence of metals has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are: cadmium, chromium, copper, lead, nickel, selenium, and zinc.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of groundwater contamination was evaluated by the sampling of soil vapor and sub-slab soil vapor the on-site building. These samples were collected to evaluate whether actions were needed to address on-site exposures related to soil vapor intrusion.

Soil vapor samples were collected from the on-site property at different depth intervals at three separate locations near former areas of wastewater discharge. VOCs present at elevated concentrations in soil vapor samples included 1,1,1-trichlorethane (TCA), TCE, and Freon 113 with maximum concentrations of 74, 160, and 93 $\mu g/m^3$, respectively.

Sub-slab vapor samples were collected beneath the on-site building. VOCs present at elevated concentrations in sub-slab vapor samples included TCA, TCE, and Freon 113 with maximum concentrations of 1000, 270, and 1300 $\mu g/m^3$, respectively. VOCs present in soil vapor and sub-slab vapor results are consistent with the VOCs present within groundwater sampling results from on-site and off-site.

Based on the concentrations of VOCs detected in the sub-slab vapor samples collected from the on-site building and in comparison with the NYSDOH Soil Vapor Intrusion Guidance, it was determined that a SSDS would be installed for the occupied portions of the on-site building as described in Section 6.2. The coverage of the SSDS for the building is shown on Figure 2. Evaluation of the potential for soil vapor intrusion at the homes and businesses surrounding the TCMF Hillcrest Facility site have been conducted as part of the environmental remediation work associated with the C.A.E. Electronics site.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the cleanup objectives (see Exhibit B) to address the contaminated media identified at the facility as described in Exhibit A:

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment or public health.

Alternative 2: Site Cap (Partial Soil Containment)

This alternative includes construction and maintenance of a cap or cover system across the site, implementation of an institutional control in the form of an environmental easement, development of a Site Management Plan, and monitoring of groundwater.

For this remedial alternative, areas of the site not already covered by a building or pavement system, and where the top one foot of soil exceeds soil cleanup objectives for commercial use, a cover will be constructed to allow for commercial use of the site.

Operation, maintenance and monitoring of the existing sub-slab depressurization system will be continued to prevent the migration of vapors into the building from groundwater.

Since contamination will remain at the site, an institutional control will be placed on the site. The institutional control, in the form of an environmental easement, will: require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3); allow the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g); restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and require compliance with the Department-approved Site Management Plan.

The Site Management Plan will identify and implement the required institutional and engineering controls. It will include, but not necessarily be limited to the following: an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination; a provision for removal or treatment of any source areas identified under the on-site buildings or pavement if and when the building is demolished or pavement removed; provisions for evaluation of the potential for soil vapor intrusion should additional portions of the on-site building become occupied and for any future buildings developed on the site; a monitoring plan, which will include details on groundwater monitoring to determine if natural attenuation is sufficiently protective of public health and the environment; a contingency plan for remediation should natural attenuation be determined insufficient; provisions for the management and inspection of the site cover and cap systems, including descriptions of those areas requiring an impervious cap and those areas where a simple cover system is sufficient; descriptions of the provisions of the environmental easement including any land use restrictions; maintaining site access controls and Department notification; and the steps necessary for the periodic reviews and certification of the institutional controls.

The capital cost to implement this alternative includes the costs to: design and construct the cover system; develop the Site Management Plan; and place the environmental easement on the site. Annual costs under this alternative include the costs to: collect and analyze groundwater samples; inspect and maintain the soil vapor mitigation system; provide periodic review reports and certifications. The estimated cost of Alternative 2 is as follows:

Present Worth: *$154,000*
Capital Cost: *$45,000*
Annual Costs: *$7,100*

Alternative 3: Limited Excavation and Site Cap

This alternative includes excavation of soil from the likely disposal areas, construction and maintenance of a cap or cover system across the site, implementation of an institutional control in the form of an environmental easement, development of a Site Management Plan, and monitoring of groundwater.

Under this alternative, excavation will be conducted to remove the contaminant source areas, including soil in and around the former wastewater discharge structures identified as Outfall 002 and the former septic system identified as Outfall 003. Remaining drywell type structures, tanks, associated piping, waste sediments, will also be removed. Impacted excavated materials will be disposed off-site. Excavation in the areas of the outfall structures will proceed to a depth of approximately 18 feet and laterally as feasible until endpoint samples indicate there is no soil remaining which contains heavy metals at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8.

It is estimated that approximately 50 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the design grades at the site.

In addition, this alternative with include details in Alternative 2 as they apply to: construction of the site cap or cover system; continued operation and maintenance of the soil vapor mitigation system; development of a Site Management Plan; and placement of the environmental easement.

The capital cost to implement this alternative includes the costs to: design and conduct the excavation; including pavement restoration and cover system construction, develop the Site Management Plan; and place the environmental easement on the site. Annual costs under this alternative include the costs to: collect and analyze groundwater samples; inspect and maintain the soil vapor mitigation system; provide periodic review reports and certifications. The estimated cost of Alternative 3 is as follows:

Present Worth: *$170,000*
Capital Cost: *$70,000*
Annual Costs: *$6,500*

Alternative 4: In-Situ Stabilization and Site Cap

This alternative includes in-situ stabilization (ISS) of contaminated soil in the areas of likely disposal, construction and maintenance of a cap or cover system across the site, implementation of an institutional control in the form of an environmental easement, development of a Site Management Plan, and monitoring of groundwater.

For this alternative, ISS will be performed within soil in and around the former wastewater discharge structures identified as Outfall 002 and the former septic system identified as Outfall 003. ISS application will target soil that remains at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8. ISS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble. The stabilizing agents will be applied to contaminated soil using direct injection techniques or by soil mixing using an excavator or augers. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. The stabilizing agent, proper stabilization mixture, method of treatment application, and depth of treatment will be determined during remedial design.

In addition, this alternative with include details in Alternative 2 as they apply to: construction of the site cap or cover system; continued operation and maintenance of the soil vapor mitigation system; development of a Site Management Plan; and placement of the environmental easement.

The capital cost to implement this alternative includes the costs to: design and conduct the ISS; including pavement restoration and cover system construction, develop the Site Management Plan; and place the environmental easement on the site. Annual costs under this alternative include the costs to: collect and analyze groundwater samples; inspect and maintain the soil vapor mitigation system; provide periodic review reports and certifications. The estimated cost of Alternative 4 is as follows:

Present Worth: *$193,000*
Capital Cost: *$115,000*
Annual Costs: *$5,150*

Alternative 5: Limited Excavation, In-Situ Stabilization and Site Cap

This alternative includes excavation of soil from the likely disposal areas, in-situ stabilization of remnant contaminated soil beneath excavated areas, construction and maintenance of a cap or cover system across the site, implementation of an institutional control in the form of an environmental easement, development of a Site Management Plan, and monitoring of groundwater.

Details for this alternative are the same as those included in Alternative 3 as they apply to: soil excavation and off-site disposal; construction of the site cap or cover system; continued operation and maintenance of the soil vapor mitigation system; development of a Site Management Plan; and placement of the environmental easement.

Under this alternative, the implementation of ISS will be modified from the details provided in Alternative 4. The stabilization amendment will not be added from the ground surface down, instead it will be applied to soil below the excavation areas where heavy metals remain at concentrations exceeding their respective soil cleanup objectives for the protection of groundwater, as defined by 6 NYCRR Part 375-6.8.

The capital cost to implement this alternative includes the costs to: design and conduct the excavation and ISS; including pavement restoration and cover system construction, develop the Site Management Plan;

and place the environmental easement on the site. Annual costs under this alternative include the costs to: collect and analyze groundwater samples; inspect and maintain the soil vapor mitigation system; provide periodic review reports and certifications. The estimated cost of Alternative 5 is as follows:

Present Worth: *$189,000*
Capital Cost: *$110,000*
Annual Costs: *$5,150*

Exhibit C

Corrective Measure Alternative Costs (2014)

Corrective Measure Alternative	Capital Cost ($)	Annual Costs[a] ($)	Total Present Worth[b] ($)
Alternative 1: No Further Action	0	0	0
Alternative 2: Site Cap (Partial Soil Containment)	45,000	7,100	154,000
Alternative 3: Limited Excavation and Site Cap	70,000	6,500	170,000
Alternative 4: In-Situ Stabilization and Site Cap	115,000	5,150	193,000
Alternative 5: Limited Excavation, In-Situ Stabilization and Site Cap	110,000	5,150	189,000

More cost and implementation details associated with the alternatives can be found in the Corrective Measures Study (GeoLogic, 2003) and the Alternatives Analysis Report (GeoLogic, 2011).

a – Annual costs represent the estimated average annual Site Management cost for 30 years. It is anticipated that the Site Management costs for individual years may range from $1000 to $12,000. Calculations for each alternative may vary due to the anticipated differences in remedial effectiveness and the long-term Site Management requirements.

b – Present worth was calculated by adding the capital cost to the present worth of the annual costs. A duration of 30 years and an interest rate of 5% was used for calculation of present worth.

Exhibit D

SUMMARY OF THE SELECTED FINAL CORRECTIVE MEASURE(S)

The Department has selected Alternative 5, Limited Excavation, In-Situ Stabilization and Site Cap as the remedy for this site. Alternative 5 will achieve the remediation goals for this site by removing sources of contamination, treating the most significant areas of soil contamination contributing to groundwater contamination, and preventing exposure to remaining site contamination through institutional and engineering controls. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 2.

Basis for Selection

The selected remedy is based on the results of the RI, IRM, and the evaluation of alternatives. A summary of the evaluation criteria and a comparative analysis for the remedial alternatives is provided below.

The first four evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy (Alternative 5, Limited Excavation, In-Situ Stabilization and Site Cap) satisfies this criterion by removing and stabilizing areas of soil contamination, which are sources or potential sources of groundwater contamination, and by preventing exposures to contamination through institutional and engineering controls, namely the Site Management Plan, environmental easement, site cap/cover system, and soil vapor mitigation system.

Alternative 1 (No Further Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2 (Site Cap) adds some additional protection to public health through the construction of the site cap or cover system; continued operation and maintenance of the soil vapor mitigation system; development of a Site Management Plan; and placement of the environmental easement. However, with no remediation of identified soil contamination, Alternative 2 does not provide additional protection for the environment and therefore will not be evaluated further.

Alternative 3 (Limited Excavation and Site Cap) and Alternative 4 (In-Situ Stabilization and Site Cap) comply with this threshold criterion, but to a lesser degree or with lower certainty than Alternative5.

2. Achieve Cleanup Objectives for the Contaminated Media. This criterion evaluates the ability of alternatives to achieve the cleanup objectives established for the facility.

Alternative 5 complies with SCGs to the extent practicable. Cleanup objectives are achieved for soil through excavation and in-situ stabilization (ISS) actions in source areas of contamination, and maintenance or construction of a cover system. The soil removal and stabilization actions also create conditions necessary to restore groundwater quality to the extent practicable.

Alternative 4 complies with SCGs to the extent practicable. Cleanup objectives are achieved for soil through ISS actions in source areas of contamination, and maintenance or construction of a cover system. The soil stabilization actions also create conditions necessary to restore groundwater quality to the extent practicable.

Alternative 3 does not comply with SCGs for soil or groundwater and will not be evaluated further.

3. Remediate the Sources of Releases. This criterion evaluates the ability of the alternatives to reduce or eliminate to the maximum extent possible further releases.

Alternatives 4 and 5 through use of ISS or excavation and ISS, respectively, eliminate or reduce the potential for further releases or transfer of contamination from soil to groundwater. However, Alternative 4 does not include removal of remaining drywell type structures, tanks, and associated piping. These continue to be a potential pathway for contamination and should be properly closed.

Alternative 4 will not be evaluated further due to the lack of remedial actions toward removal of the former waste water discharge structures identified as Outfall 002 and the former septic system identified as Outfall 003.

4. Comply with Standards for Management of Wastes. This criterion evaluates how alternatives assure management of wastes is conducted in a protective manner during remedial activities.

Alternative 5 generates solid waste (e.g. piping, personal protective equipment (PPE)) and contaminated soil waste associated with excavation and removal activities, and during design and application of ISS. Contaminated groundwater waste, disposable sampling equipment waste, and PPE are generated during monitoring events. All generated wastes will be managed in accordance with applicable regulations, in general, wastes will be characterized and property disposed of off-site at regulated facilities.

In this instance, Alternatives 1, 2, 3, and 4 did not satisfy the threshold criteria and; therefore, as stated previously, will not be evaluated further. Alternative 5 is the only remedy to satisfy the threshold criteria.

Although the next five "primary balancing criteria" are typically used to compare the positive and negative aspects of each of the remedial strategies, for this evaluation, they are used to further substantiate the Alternative 5 as the selected remedy.

5. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 5 is the most effective in the long-term since it seeks to remove and stabilize contamination in the source areas and thereby eliminate or reduce the migration of contaminants to groundwater. The Site Management Plan, environmental easement, site cap/cover system, and soil vapor mitigation system are effective methods to minimize risks presented by remnant contamination at the site.

6. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 5 provides the greatest reduction in contaminant volume and the greatest reduction in contaminant toxicity and mobility through the removal and ISS actions discussed previously. Excavation and ISS are each proven remedial technologies for the types of contaminants and the hydrogeologic conditions present at this site.

7. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 5 will require construction type activities for implementation. The implementation of this remedy will create increased noise and traffic, and the potential for increased dust and runoff. While the short-term impacts associated with construction/implementation of Alternative 5 can be mitigated, they are indeed negatives. Implementation of Alternative 5 will also require more energy input and therefore results in greater greenhouse gas (GHG) emissions, also a negative.

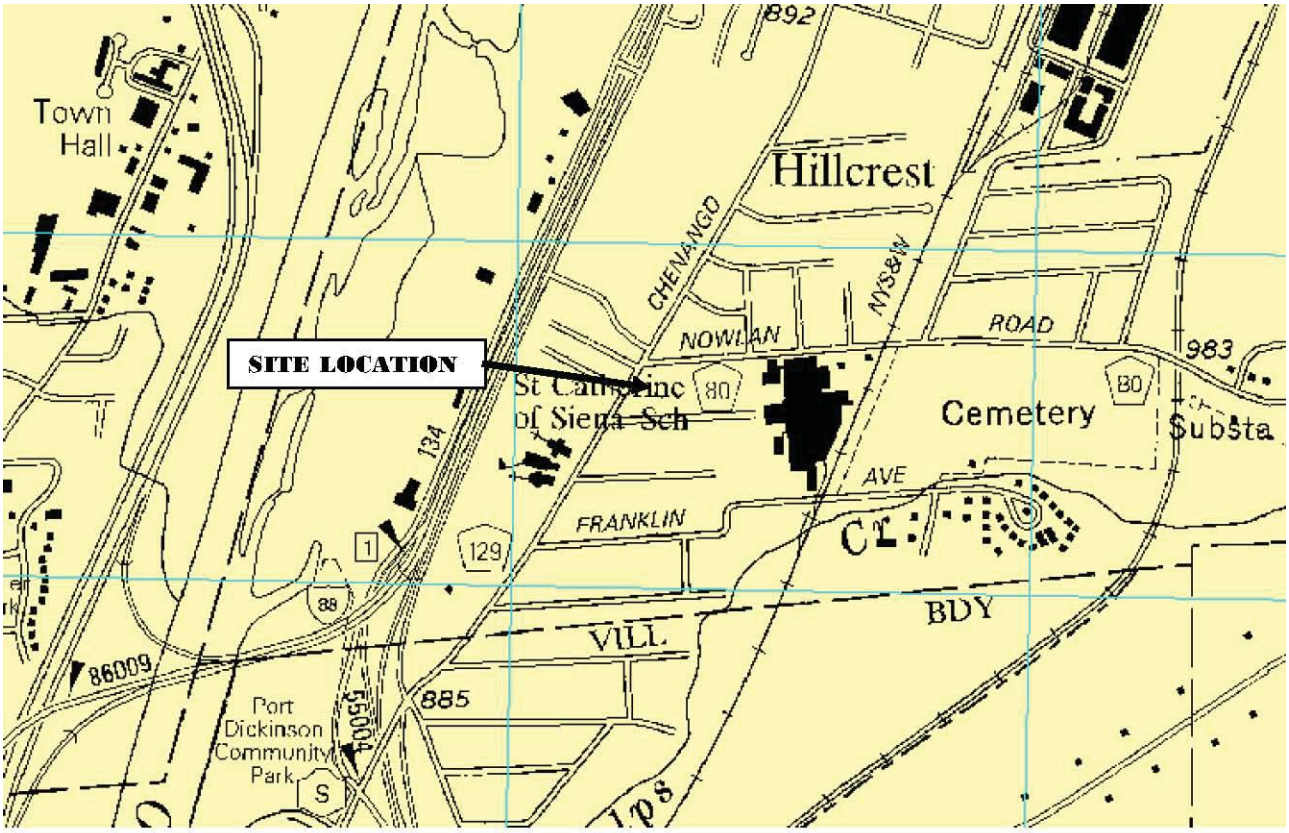
As a positive, the effectiveness of source area excavation and removal actions combined with ISS in Alternative 5 can be nearly immediate. Also, effectiveness of this selected remedial action is measureable with a high degree of certainty through use of routine analytical methods.

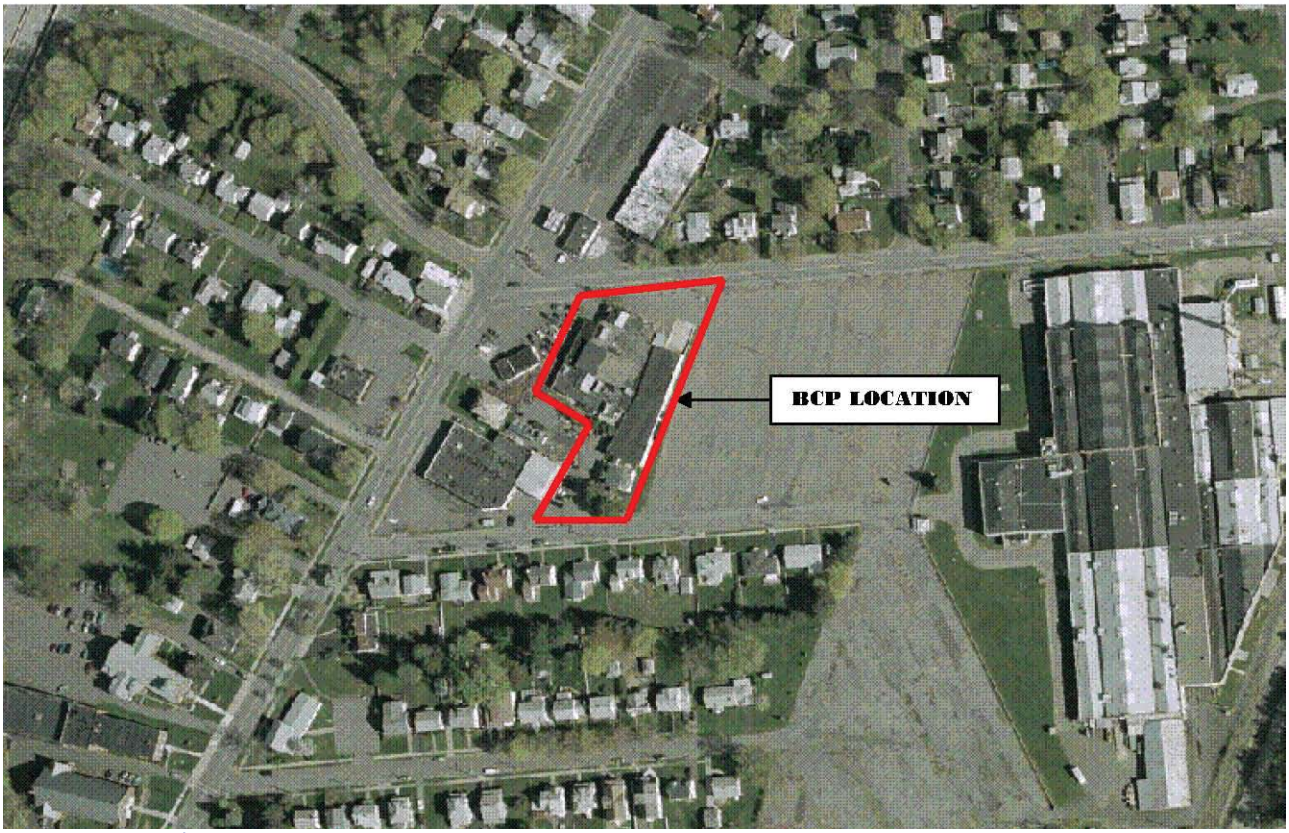
8. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 5 is readily implementable. Equipment, materials and expertise to implement the elements of the selected remedy are all widely available. Overall feasibility and effectiveness of the remedy is improved with the ability to apply ISS in contaminated areas where excavation activities may be limited due to site conditions. Effectiveness monitoring can be achieved through use of standard sampling and analytical methods.

9. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The estimated capitol cost for Alternative 5 is less than Alternative 4 and is expected to require less long-term monitoring than Alternatives 1, 2, and 4, which, reduces the average annual cost. Alternative 5 also has the greatest potential to reduce the overall duration of Site Management requirements related to the metals contamination and; therefore, has the greatest potential to reduce annual costs and total cost below what has been estimated.





Source: www.nysgis.state.ny.us

SITE LOCATION PLAN
TCMF Hillcrest Facility
BCP Site Number: C704045
Town of Fenton, Broome County

FIGURE 1

Modified by GWP from Remedial Investigation Report – Appendix B - Drawing No. 1

SITE FEATURES AND REMEDIAL ELEMENTS
TCMF Hillcrest Facility
BCP Site Number: C704045
Town of Fenton, Broome County

FIGURE 2

Note:
Sampling locations shown with concentrations above SCGs, may be impacted by more than one metals constituent.

METALS IN GROUNDWATER
TCMF Hillcrest Facility
BCP Site Number: C704045
Town of Fenton, Broome County

FIGURE 3

Note:
Sampling locations shown with concentrations above SCGs, may be impacted by more than one metals constituent.

METALS IN SOIL
TCMF Hillcrest Facility
BCP Site Number: C704045
Town of Fenton, Broome County

FIGURE 4

APPENDIX A

RESPONSIVENESS SUMMARY

Responsiveness Summary

TCMF Hillcrest Facility
Binghamton, Broome County
Site No. C704045
EPA No. NYD002226041

February 2015

The draft Statement of Basis for the referenced site was prepared by the New York State Department of Environmental Conservation (Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on December 4, 2014. The draft Statement of Basis outlined the remedial measures proposed for the referenced site.

The release of the draft Statement of Basis was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy. The public comment period for the proposed remedy was held from December 5, 2014 through January 19, 2015.

This responsiveness summary responds to all comments provided during the public comment period. The following are the comments received, with the Department's responses:

André LaClair, on behalf of the Town of Fenton – Conservation Advisory Committee, submitted a letter via electronic mail dated January 9, 2015 which included the following comments:

COMMENT 1: It should be noted that the Chenango River, local groundwater and the Hillcrest public water wells show at least an indirect interconnectedness. As the river rises and falls, so also does the groundwater depth and the well water head. For this reason, we feel that it is prudent to remove any source of contamination to groundwater to avoid potential future contamination of the public water supply.

RESPONSE 1: The remedial action objectives (RAOs) for this site listed in Section 6.5 of the Statement of Basis includes objectives for groundwater restoration to the extent practicable and removal/mitigation of groundwater contamination sources. The RAOs for groundwater are consistent with the recommendation expressed in Comment 1.

COMMENT 2: Why are only the north and west sides of the building areas of concern? Figure 4 (page 31) suggests significant soil contamination on the southwest and south side of the building also.

RESPONSE 2: The areas of concern at this site include former areas of the site associated with possible contaminant sources (i.e., former areas of discharge) and areas of the site where contaminants of concern occur in the subsurface at sufficient frequency and concentration to warrant corrective actions.

Figure 4 is a generalized map showing sampling locations and a comparison of any heavy metal constituent to Unrestricted and Commercial Use Soil Cleanup Objectives (SCO) and does not differentiate areas of the site for which corrective actions are warranted from those for which corrective actions are not warranted. Specifically, Figure 4 does not illustrate vertical distribution of contaminants, number of heavy metal constituents detected, or concentration levels of contaminants at each location which are important information in determining whether actions are warranted in a given location.

Sampling locations on the south-southwest and east side of the building shown as having metals in soil at concentrations greater than Commercial Use SCOs can be more specifically characterized as having only one constituent (cadmium) above the Commercial Use SCOs, only within one soil depth interval at each of two borings, 14 to 22 feet below ground surface (bgs) at one and 25 to 29 feet bgs at the other. Corresponding concentrations were 10.9 to 11 parts per million (ppm), respectively (Commercial Use SCO for cadmium is 9.3 ppm); the difference between the sample concentrations and SCO is not significant. Sampling locations on the southwest and south side of the building shown as having metals in soil at concentrations less than Commercial Use SCOs, but greater than Unrestricted Use SCOs, do not have any metal constituents that exceed respective Protection of Groundwater SCOs. Based on this information, corrective actions are not warranted at these locations.

COMMENT 3: Excavation is currently planned only in the vicinity of outfalls 2 and 3, which are only on the north and northwest sides of the building. Could further excavation be conducted along the west and south sides of the building? As previously noted, data on Figure 4 indicates significant contamination in these areas also.

RESPONSE 3: See Response 2.

COMMENT 4: If excavation is not practical for the southwest and south sides of the building (note question above), can ISS be employed in these regions? Our concern is that if the excavation and ISS do not address all the existing soil contamination, that the ground water flow will find another pathway to continue leaching heavy metals away from the TCMF site.

RESPONSE 4: See Response 2.

COMMENT 5: There appears to be open space on the southwest and south ends of the building that are accessible to address the soil contamination in these regions.

RESPONSE 5: See Response 2.

COMMENT 6: Figure 4 suggests very significant soil heavy metal contamination on the southwest and southern portions of the building. The figure does not indicate actual concentrations for each location, so our assumption is that these provide an undesirable pathway for groundwater contamination
.

RESPONSE 6: See Response 2.

APPENDIX B

ADMINISTRATIVE RECORD

Administrative Record

TCMF Hillcrest Facility
Binghamton, Broome County
Site No. C704045
EPA No. NYD002226041

February 2015

GeoLogic NY, Inc. 1999. RCRA Phase I Sampling. Triple Cities Metal Finishing Corporation, Hillcrest Facility, Binghamton, NY, August 1999.

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