RECORD OF DECISION AMENDMENT
GASTOWN MGP TONAWANDA SITE

City of Tonawanda / Erie County / Site No. 915171 / April 2013

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

Statement of Purpose and Basis

The Record of Decision (ROD) Amendment presents the selected remedy for the Gastown MGP Tonawanda site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen 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) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Gastown MGP Tonawanda site and the public's input to the proposed ROD Amendment presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD Amendment.

Description of Amended Remedy

The elements of the amended remedy are 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. 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 gas 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 re-development.

2. Demolition of buildings E, F, G, and H.

3. Shallow soil excavation to 6 feet below grade in the west yard, east yard, a portion of Niagara Frontier Transportation Authority (NFTA) property between the east yard and the fiber optic line, and under the demolished buildings to create a clean utility zone from 0 to 4 feet below grade. 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 designed grades at the site.

4. A site cover will be maintained to allow for commercial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the 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 one foot 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 uppermost six inches of 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 375-6.67(d).

5. Removal of the relief holder and underlying material to the top of clay. This will constitute a complete removal because the clay forms a barrier to vertical migration of contamination. Backfill material will meet the criteria listed in Section 3 above. The required cover will also meet the criteria listed in Section 3 above.

6. In-situ solidification/stabilization is a process that uses a solidifying or stabilizing agent to bind the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place with solidifying or stabilizing agents (typically Portland cement) or other binding agents. The soil and binding agent are mixed to produce a solidified mass resulting in a low- permeability monolith. The solidified mass will then be covered with a soil or gravel cover to prevent direct exposure of the solidified mass to the effects of the freeze-thaw cycle. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination. ISS is planned for the following areas:

   - ISS into top of clay in the west yard, east yard, and under the demolished buildings;
   - ISS into top of clay on NFTA property to within 10 feet laterally of the AT&T fiber optic cable; and
   - ISS around the relief holder.

7. Installation of non-aqueous phase liquid (NAPL) collection trenches at the Gastown Sportsmen's Club property lines and installation of two NAPL collection wells west of the railroad tracks.

8. Installation of soil vapor intrusion mitigation measures including a vapor barrier or sub-slab depressurization systems (SSDS) at the identified areas west of the railroad tracks, Gastown Sportsmen's Club, and buildings at 126 East Niagara Street.

9. Sediment remediation and NAPL collection trench installation along the Canal. Dredging will remove the existing contamination along a hundred foot stretch of the creek bank, extending out a maximum of 75 feet into the creek. Dredging will remove all contaminated sediment, down to the

clay layer approximately 5 feet below the sediment surface. The collection trench will prevent any contamination from reaching the creek in the future.

10. 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 use 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;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

11. 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 above.

Engineering Controls: The sub-slab depressurization systems and NAPL collection systems discussed 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 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/or 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 for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

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

April 4,2013
Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

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1.0 INTRODUCTION

On March 30, 2007, the New York State Department of Environmental Conservation (Department) signed a Record of Decision (ROD) which selected a remedy to clean up the Gastown MGP Site. Since that time, a new technology has been successfully implemented at sites with similar space constraints which will allow the site to be remediated with significantly less impact to the current site occupants and to the surrounding neighborhood. The Department has amended the ROD to provide for a smaller portion of the site to be excavated, with most of the contaminated soils at the site stabilized in place with a technique known as in-situ stabilization (ISS).

A public comment period was conducted between January 14 through February 28, 2013 to provide an opportunity for comment on these changes. A public meeting was held February 5, 2013 at City Hall, Tonawanda beginning at 7 PM.

At the meeting, a description of the original ROD and the circumstances that led to proposed changes in the ROD was presented. After the presentation, a question and answer period was held, during which verbal comments on the proposal were given.

Comments are summarized and responses provided in a Responsiveness Summary.

The information here is a summary of what can be found in greater detail in reports that have been placed in the Administrative Record for the site. These documents are available at the following repositories:

City of Tonawanda Public Library	NYSDEC Central Office	NYSDEC Region 9 Office
333 Main Street	625 Broadway	270 Michigan Avenue
Tonawanda, NY 14150	Albany, NY 12233-7014	Buffalo, New York
Mon, Tues, Thurs 10AM -8 PM	Attn: Richard Dana, CPG	(716) 851-7220
Fri 10AM-4 PM; Sat 10AM -2 PM	email: rhdana@gw.dec.state.ny.us	by appointment only

2.0 SITE INFORMATION

2.1 Site Description

Location: The Gastown MGP Tonawanda Site is located in a small industrial area surrounded by residential neighborhoods in the City of Tonawanda, Erie County (see Figure 1).

Site Features: The site, which is flat, is occupied by a complex of commercial buildings. The site is

bounded to the west and south by a railroad embankment, to the north by Tonawanda Creek, a part of the NYS Barge Canal system and to the east by the Gastown Sportsmen's Club.

Current Zoning/Use(s): The site is zoned for commercial and industrial use. The buildings on the site are used by a number of small businesses.

Historic Use(s): A manufactured gas plant (MGP) was operated at this site by the Tonawanda Gas Light Company, starting in 1884. In 1923 the production facilities were dismantled, however, the plant site continued to be used as a booster and storage facility.

Site Geology and Hydrogeology: There are four geologic units below the site. The first encountered unit below the ground surface (bgs) is man-made fill, ranging in thickness from a few inches to 22 feet. A recent alluvium deposit, made up largely of interbedded layers of sand and silt, lies beneath the fill. Most of the lateral migration of tar has taken place in this unit, which extends down to a depth ranging from 12 to 24 feet bgs. Underlying the alluvium is a layer of coarser sand and gravel, which in turn is underlain by a red clay, which is the hydraulic base (confining layer) at this site.

Depth to groundwater is typically 6 feet. Groundwater flow is primarily to the north, towards Tonawanda Creek. There are also components of groundwater flow both to the east and to the west. This groundwater flow pattern has resulted in the migration of contamination in three directions.

2.2 Nature and Extent of Site Contamination

The primary contaminants of concern at this site are related to coal tar, a condensate from the gas manufacturing process. Coal tar contains BTEX compounds (benzene, toluene, ethylbenzene, and xylene) and PAHs (polycyclic aromatic hydrocarbons). Investigations have shown coal tar and contaminated groundwater present at the site extending to the north, east, and west. Coal tar has also been observed in the sediment in Tonawanda Creek, and contamination exceeds applicable sediment standards. No site-related contamination has been observed in surface water at levels above applicable standards. Contaminated groundwater and NAPL (non-aqueous phase liquid) have entered the basement sump of the Gastown Sportsmen's Club.

2.3 Summary of Human Exposure Pathways

Access to the site is unrestricted. However, contact with contaminated soil or groundwater is unlikely unless people dig below the ground surface. Coal tar entering the sump at the Sportsman's Club is collected and managed to prevent exposures. 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.

Soil vapor intrusion sampling was conducted at on-site and off-site buildings and identified elevated levels of volatile chemicals beneath some structures but not in indoor air. Sub-slab depressurization systems (systems that ventilate/remove the air beneath the building) have been installed in those buildings

to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the buildings.

2.4 Summary of Environmental Assessment

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the Remedial Investigation (RI) report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified:

Sediments in Tonawanda Creek contain levels of PAHs and BTEX that are considered toxic to bottom-dwelling wildlife. This results in potential impacts to wildlife living and/or feeding in the Creek.

Site contamination has also impacted the groundwater resource in the upper, unconsolidated aquifer.

2.5 Original Remedy

In the original ROD, the Department selected Alternative 3, Partial Excavation and Collection Trenches, as the remedy for this site. The elements of the original remedy are as follows:

3. A remedial design program to provide the details necessary to implement the remedial program.

4. Soils containing visible evidence of MGP tar and/or containing total PAHs greater than 500 parts per million (ppm) will be removed from the portions of the site and the property owned by the NFTA. Three buildings which are located above substantial amounts of contaminated material will be demolished to permit access. Excavation in the vicinity of the fiber optic cable will be coordinated with the owner of that line. Any MGP tar left beneath the railroad embankment, cable or buildings will be isolated from the clean backfill by an appropriate barrier. Excavation will be performed in a manner which will adequately control vapors and odors.

5. Underground collection trenches will be constructed around the Sportsmen's Club and also west of the site. MGP tar in the vicinity of these trenches will be extracted to the extent possible, and prevent further migration of the tar. The trenches will also prevent contaminated groundwater from entering these off-site buildings.

6. Sediment between the shore and the navigational channel east of the railroad bridge will be removed. The exact extent will be determined during the remedial design program.

7. Although no current impact to indoor air has been noted to date, sub-slab depressurization systems were provided for the five residential dwellings west of the site, and will continue to be maintained. Soil gas quality will be monitored at the Open Bible Baptist Church School. The sub-slab depressurization systems were installed since the original ROD was executed.

8. 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 and engineering controls to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with Department regulations; (b) evaluate the potential for vapor intrusion for any buildings 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; (d) monitor the groundwater and soil gas; (e) identify any use restrictions on site development or groundwater use; and (f) provide a groundwater monitoring program including installing monitoring wells and sampling them on a periodic basis. Analysis will include BTEX and PAHs. This monitoring program and the effectiveness of the remedy will periodically be re-evaluated.

9. The SMP will require the responsible party or property owner to provide an Institutional Control/Engineering Control (IC/EC) certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department annually or for a period to be approved by the Department, which will certify that the institutional controls and engineering controls put in place are unchanged from the previous certification and that 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.

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 commercial or industrial uses only; (c) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Erie County Department of Health; and (d) require the property owner to complete and submit to the Department IC/EC certification.

3.0 DESCRIPTION OF SELECTED CHANGES

3.1 New Information

On March 30, 2007, the Department signed the Record of Decision (ROD) which selected the remedy described above for the Gastown MGP Site (now known as the Gastown MGP Tonawanda Site). Since that time, a new technology has emerged which allows a site to be remediated with significantly less impact on the current site occupants and on the surrounding neighborhood. The Department has amended the ROD to require a far smaller portion of the site to be excavated, with most of the contaminated soils at the site stabilized in place with a technique known as in-situ stabilization (ISS). Below, the performance, scope and cost of the selected remedy modifications are addressed.

Since the ROD was finalized more than five years ago, significant experience has been gained regarding the use of in-situ stabilization as a technique for immobilizing in place highly contaminated coal tar wastes. In brief, the ISS technique involves thoroughly mixing the contaminated soils with a cement-based slurry. When the slurry hardens, the soil is transformed into an impermeable mass which is significantly stronger than the original soil, yet still amenable to excavation if this proves to be necessary in the future. Utility companies have now successfully employed ISS techniques at eight former MGP sites across New York State. In general, source areas and contaminated subsurface structures are still excavated, with ISS techniques used to stabilize and immobilize tar contamination which has already

migrated away from the source areas. The net effect is to reduce the disruption of activities on the site and the surrounding areas by reducing truck traffic, reducing construction noise and vibration impacts, and shortening the length of time required to complete remediation. In most cases, significant cost savings are also realized.

At the Gastown MGP Tonawanda Site, the use of ISS in place of excavation for all but the former gas holder will decrease disruption to the on-site businesses and residential neighbors while allowing treatment of a larger volume of NAPL-contaminated soil than could be reached by excavation alone. In particular, a 15-foot wide strip of the west side of the site lies along an active railroad track. Due to potential structural complications with the embankment, it was not originally slated for excavation. The use of ISS techniques will allow for treatment of this material, some of which contains mobile liquid coal tar at depth.

The use of ISS for all but the former gas holder will reduce the amount of excavated material by 18,000 cubic yards, 68% of the estimated excavation volume, and will reduce the amount of clean backfill imported by 32,000 tons, or 81%. As a result, the number of truck loads hauled through this primarily residential neighborhood will decrease significantly.

As noted in the original ROD, the first step in implementing the remedy was a pre-design investigation to more precisely define the area to be remediated. This investigation has been completed and found that the extent of off-site contamination beyond the railroad tracks along the western site boundary was significantly smaller than originally estimated. To the west of the railroad grade, NAPL-saturated soil was found in only two of the more than 20 soil borings completed. This prompted a recalculation of the extent of remediation warranted in this area. The ROD amendment will eliminate approximately 600 feet of NAPL collection trenching in the area west of the railroad grade. In its place, two NAPL collection wells will be installed.

The original ROD called for an extensive excavation across the footprint of the former MGP site, progressing as far west as possible without compromising the stability of the adjacent railroad embankment. The area to be excavated is in current use as a driveway and parking area for a number of small businesses, and the excavation would have required temporary relocation of some or all of these businesses. The true cost and complexity of moving eight small businesses was not evident until the recent (2012) receipt of estimates from two rigging companies. What was estimated at $503,747 in the original ROD is now estimated at $1.27 million.

This ROD amendment reduces the overall cost by $12,558,007 or 48% over the original ROD remedy costs, in 2011 dollars. It will reduce the Department's oversight costs as well, since the overall length of time to complete the field work will be reduced from 10 months to seven months.

3.2 Selected Changes

The amended ROD eliminates all deep excavation with the exception of removal of the former gas holder and its contents. Instead, in situ stabilization (ISS) will be used to remediate contaminated soil. Figure 2 shows the location of the gas holder and the extent of the ISS.

This ROD amendment will eliminate approximately 600 feet of NAPL collection trenching to a depth of 22 feet in the area west of the railroad grade. In its place, two NAPL collection wells will be installed.

Unlike the original ROD, which has all on-site businesses relocating, the amended ROD involves the temporary relocation of only three of the businesses, those in Buildings E, F, G, and H (see Figure 3) and significantly lessen disruption to the businesses that will remain on-site during the remedial activities.

4.0 EVALUATION OF SELECTED CHANGES

4.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD and will remain unchanged. The goals selected for this site are to eliminate or reduce to the extent practicable:

- the presence of NAPL and MGP-related contaminants as the sources of soil, groundwater and soil gas contamination;
- migration of NAPL and MGP-related contaminants that would result in soil, groundwater or soil gas contamination;
- the release of contaminants from NAPL in on-site soil into groundwater that result in exceedances of groundwater quality standards;
- the potential for ingestion of groundwater with contaminant levels exceeding drinking water standards;
- the potential for ingestion/direct contact with contaminated soil;
- impacts to biota from ingestion/direct contact with sediments; and
- the release of contaminants from subsurface soil under buildings into indoor air through soil gas migration and intrusion.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards; and
- recommended soil cleanup objectives as defined by 6 NYCRR 375-6.

4.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided.

The first two evaluation criteria are called threshold criteria and must be satisfied in order for an alternative to be considered for selection.

2. **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 changes allow the Department to increase the volume of contaminated soil remediated through the use of ISS. This improvement will take place along the western site boundary, where the original excavation remedy was limited by proximity to the railroad embankment, but where ISS can be safely implemented.

In all other aspects, the amended ROD is equally protective of human health and the environment. Although less contaminated material will be physically removed from the site under the revised remedy, the stabilized material which remains on-site will pose no risk of migration because of the stabilization process.

2. **Compliance with New York State Standards, Criteria, and Guidance (SCGs).** Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Both the original remedy and the amended remedy meet SCGs. The ISS technique is highly effective at preventing contact between site contaminants and groundwater, so the substitution of ISS for excavation should have the same positive impact on groundwater quality in the areas to be treated. Groundwater quality along the western site boundary, where ISS can be applied in an area where excavation could not, will improve more under the revised remedy than it would under the original remedy.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. **Short-term 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.

The amended remedy will significantly mitigate short-term impacts to the community, with truck traffic through the community reduced by 68%, and three months less disruption and noise. The amended remedy will also create fewer impacts to the small businesses on-site, because only three will be required to temporarily relocate and those that remain will see significantly reduced impacts on their businesses.

4. **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.

The ROD amendment will eliminate approximately 600 feet of NAPL collection trenching to a depth of 22 feet in the area west of the railroad grade. In its place, two NAPL collection wells will be installed. Since the ROD was finalized, the estimate of contamination under the railroad grade and extending into the residential neighborhood to the west has been drastically revised downward based upon the pre-

design investigation. To the west of the railroad grade, NAPL-saturated soil was found in only two of the more than 20 soil borings completed. In boring DP-35 there is a 0.1 foot thick NAPL-saturated seam at a depth of 21 feet, and in boring DP-24 there is a 0.2 foot saturated seam at 21 feet, and a second seam 0.1 foot thick at 13.5 feet. This recalculation of contamination to the west warrants a recalculation of the extent of remediation warranted. The two NAPL collection wells will be placed where borings DP-35 and DP-24 were drilled, and are shown on Figure 1.

The magnitude of the remaining environmental risks will be slightly less with the amended remedy, since more soil will be remediated along the western site boundary. Some contaminated soil will still remain, largely beneath the railroad embankment where human and environmental exposure is unlikely. The adequacy of the engineering and/or institutional controls intended to limit the risk will not change in any significant way with the amended remedy. The reliability of these controls also will not change.

5. **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.

The amended remedy will not lead to any significant change in the reductions in toxicity or mobility. Both excavation and in-situ treatment are highly effective in achieving these reductions. The ISS monolith to be created under the amended remedy will micro-encapsulate the contaminants rendering them essentially inert, though they will remain in place. The volume of material increases somewhat because the ISS process often results in "swelling" of the treated soil beyond its original volume. It is anticipated that some volume of treated soil will be transported off-site for proper disposal.

6. **Implementability.** The technical feasibility 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.

Since the original ROD was finalized more than five years ago, significant new information has been developed relating to the cost, reliability, and effectiveness of ISS as a technique for immobilizing in place highly contaminated coal tar wastes. Use of ISS in place of excavation for all but the holder will reduce costs, decrease disruption to the on-site businesses and residential neighbors, and allow a slightly larger volume of NAPL-contaminated soil to be addressed. ISS has been used effectively in New York State at numerous sites containing high levels of coal tar wastes, including former MGP sites in Nyack, Sag Harbor, Norwich, Poughkeepsie, White Plains, Elmira and soon, Hempstead.

Using ISS on all but the holder, eliminates the technically challenging task of installing sheet piles close to occupied buildings without causing settling, cracking or other deleterious effects. ISS will also significantly lessen the challenges of preventing airborne contamination from leaving the site and entering the adjacent, close by residential neighborhoods. Though in-situ stabilization is in some ways more technically demanding than excavation, the technical challenges are all well understood and implementable.

The use of ISS for all but the holder also will reduce the amount of excavated material by 18,000 cubic yards, or 68%, and the amount of clean backfill imported by 32,000 tons, or 81%; thereby reducing by a similar percentage the anticipated truck traffic through this primarily residential neighborhood.

The use of ISS has the advantage of assuring our ability to address a 15-foot wide strip of the site along the west border, which lies adjacent to an active rail line. The use of ISS in lieu of excavation adjacent to the railroad embankment will assure that NAPL (at a depth of up to 22 feet) will be addressed by the remedy

7. **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 ROD amendment will reduce the overall cost by $12,558,007 or 48% over the original ROD remedy costs. It will reduce the Department's oversight costs as well, since the overall length of time to complete the field work will be reduced from ten months to seven months.

This final criterion is considered a modifying criterion and is considered after evaluating those above. It is focused upon after public comments on the proposed ROD amendment have been received.

8**.** **Community Acceptance.** Concerns of the community regarding the selected changes have been evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Unlike the original ROD which has all on-site businesses relocating, the amended remedy will involve temporary relocation of only three businesses and will cause significantly less disruption to the businesses that will remain during the remediation. Opposition to relocation and the disruption has been expressed in writing in letters (June 2011) from five of the businesses scheduled in the original ROD for temporary relocation. The letters urge the State to consider amending the ROD to reduce disruption and loss in business. The original ROD Responsiveness Summary noted that the Department would "strive to plan and phase the project to allow as many of the current businesses to remain on-site as possible."

Under the original ROD, remediation included approximately 600 feet of collection trench dug to the confining layer, 90 percent of the digging being in residential front, side and back yards. The pre-design investigation suggested that the 600 foot trench could have negligible impact on the ability to recover NAPL. Therefore, the disruption to residents caused by the installation of a 22 foot deep trench no longer can be justified on the basis of meeting remediation objectives. In place of the collection trench, two NAPL collection wells will be installed.

5.0 SUMMARY OF SELECTED CHANGES

The Department is amending the ROD for the Gastown MGP Tonawanda Site. The selected changes include:

Instead of a large, deep excavation, ISS will be used in all areas except the former gas holder, which will be removed along with its contents as well as immediately adjacent contaminated soils. The ROD amendment will eliminate approximately 600 feet of NAPL collection trenching to a depth of 22 feet in the area west of the railroad grade. In its place, two NAPL collection wells will be installed. Unlike the original ROD, which has all on-site businesses relocating, the selected ROD amendment will require

temporary relocation of only three of the businesses, and will cause significantly less disruption to those remaining during the remediation.

The estimated present worth cost to carry out the amended remedy is $13,575,090. The estimated present worth to complete the original remedy was $26,133,097. The cost to construct the amended remedy is estimated to be $11,066,875 and the estimated average annual cost for 30 years is $163,163.

The elements of the amended remedy are 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. 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 gas 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 re-development.

3. Demolition of buildings E, F, G, and H.

4. Shallow soil excavation to 6 feet below grade in the west yard, east yard, a portion of Niagara Frontier Transportation Authority (NFTA) property between the east yard and the fiber optic line, and under the demolished buildings to create a clean utility zone from 0 to 4 feet below grade. 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 designed grades at the site.

5. A site cover will be maintained to allow for commercial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the 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 one foot 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 uppermost six inches of 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 375-6.67(d).
6. Removal of the relief holder and underlying material to the top of clay. This will constitute a complete removal because the clay forms a barrier to vertical migration of contamination.

Backfill material will meet the criteria listed in Section 3 above. The required cover will also meet the criteria listed in Section 3 above.

11. In-situ solidification/stabilization is a process that uses a solidifying or stabilizing agent to bind the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place with solidifying or stabilizing agents (typically Portland cement) or other binding agents. The soil and binding agent are mixed to produce a solidified mass resulting in a low-permeability monolith. The solidified mass will then be covered with a soil or gravel cover to prevent direct exposure of the solidified mass to the effects of the freeze-thaw cycle. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination. ISS is planned for the following areas:

- ISS into top of clay in the west yard, east yard, and under the demolished buildings;
- ISS into top of clay on NFTA property to within 10 feet laterally of the AT&T fiber optic cable; and
- ISS around the relief holder.

12. Installation of non-aqueous phase liquid (NAPL) collection trenches at the Gastown Sportsmen's Club property lines and installation of two NAPL collection wells west of the railroad tracks.

13. Installation of soil vapor intrusion mitigation measures including a vapor barrier or sub-slab depressurization systems (SSDS) at the identified areas west of the railroad tracks, Gastown Sportsmen's Club, and buildings at 126 East Niagara Street.

14. Sediment remediation and NAPL collection trench installation along the Canal. Dredging will remove the existing contamination along a hundred foot stretch of the creek bank, extending out a maximum of 75 feet into the creek. Dredging will remove all contaminated sediment, down to the clay layer approximately 5 feet below the sediment surface. The collection trench will prevent any contamination from reaching the creek in the future.

15. 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 use 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;
- prohibits agriculture or vegetable gardens on the controlled property; and
- requires compliance with the Department approved Site Management Plan.

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

d) 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 above.

Engineering Controls: The sub-slab depressurization systems and NAPL collection systems discussed above.

This plan includes, but may not be limited to:

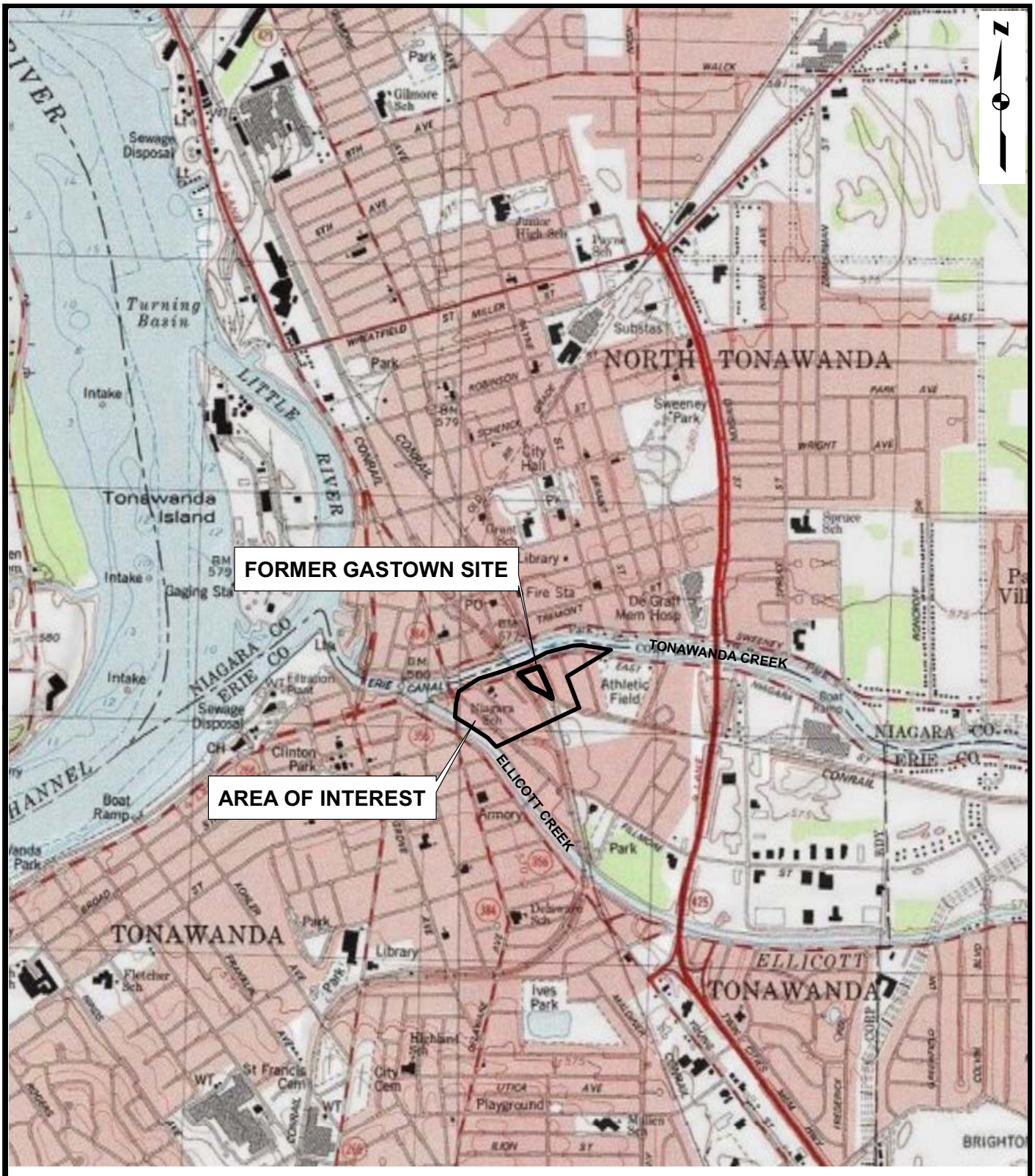
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion 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/or engineering controls.

e) 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 for vapor intrusion for any buildings occupied or developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

f) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.



SOURCE:
1. NATIONAL GEOGRAPHIC, TOPO

0 1,000 2,000 4,000

SCALE, FEET

UPGRADIENT ASSESSMENT INVESTIGATIONS FINDINGS REPORT
FORMER GASTOWN MGP SITE
TONAWANDA, NEW YORK

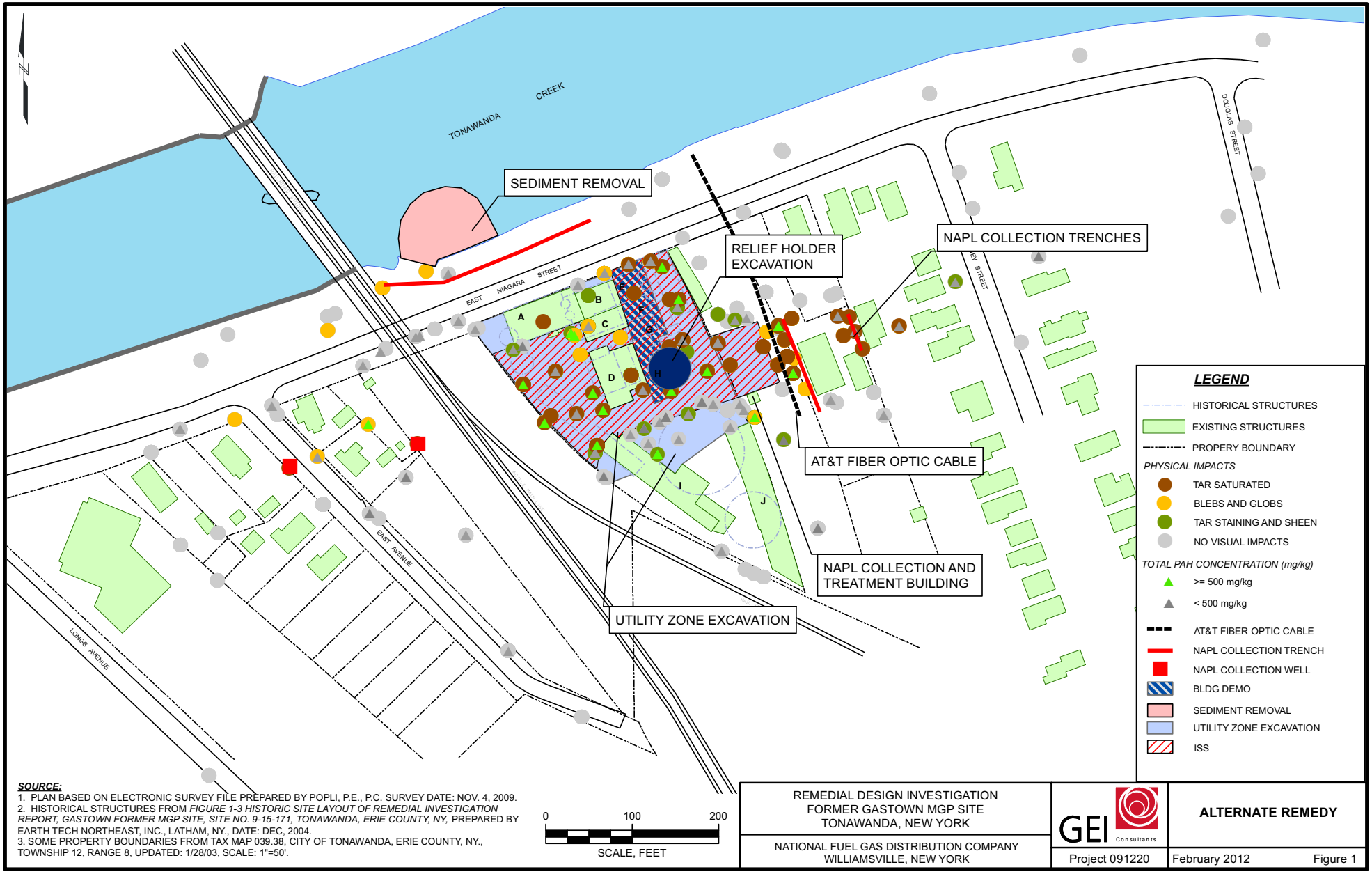
NATIONAL FUEL GAS DISTRIBUTION COMPANY
WILLIAMSVILLE, NEW YORK

GEI Consultants

SITE LOCATION MAP

Project 09122-0 | June 2010 | Fig. 1

J:\GIS\Projects\National_Fuel_Gas-Gastown\Site_Location_Upgradient.mxd



SOURCE:

1. PLAN BASED ON ELECTRONIC SURVEY FILE PREPARED BY POPLI, P.E., P.C. SURVEY DATE: NOV. 4, 2009.
2. HISTORICAL STRUCTURES FROM *FIGURE 1-3 HISTORIC SITE LAYOUT OF REMEDIAL INVESTIGATION REPORT, GASTOWN FORMER MGP SITE, SITE NO. 9-15-171, TONAWANDA, ERIE COUNTY, NY,* PREPARED BY EARTH TECH NORTHEAST, INC., LATHAM, NY., DATE: DEC, 2004.
3. SOME PROPERTY BOUNDARIES FROM TAX MAP 039.38, CITY OF TONAWANDA, ERIE COUNTY, NY., TOWNSHIP 12, RANGE 8, UPDATED: 1/28/03, SCALE: 1"=50'.

REMEDIAL DESIGN INVESTIGATION
FORMER GASTOWN MGP SITE
TONAWANDA, NEW YORK

NATIONAL FUEL GAS DISTRIBUTION COMPANY
WILLIAMSVILLE, NEW YORK

GEI Consultants

Project 091220

ALTERNATE REMEDY

February 2012 Figure 1

J:\Projects\National_Fuel_Gas_Gastown\Remedial_Design_Investigation\Alternate_Remedy.mxd

Bldg #	Business Name
A & C	Acme Grinding Service Inc.
B & E	Niagara Construction Co.
D	D.L. Moore
F & G	Holler Carpentry
H	Advanced Electrical Services
I	Great Lakes Gear Co, Inc.
J	P & M Facility Management Service
J	Custom Stone of Western New York LLC.

Legend

Site Border

Property Lines (Erie County Tax Parcels)

Figure 3

LOCATION OF BUSINESSES AND PROPERTY LINES

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Gastown MGP Tonawanda Site
Tonawanda, New York
Site No. 915171

The proposed Record of Decision (ROD) Amendment for the Gastown MGP Tonawanda site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on January 14, 2013. The proposed ROD Amendment outlined the remedial measure proposed for the contaminated soil, sediment, and groundwater} at the Gastown MGP Tonawanda site.

The release of the proposed ROD Amendment was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 6, 2013, which included a presentation of the proposed ROD Amendment for the Gastown MGP Tonawanda site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the proposed ROD Amendment ended on February 28, 2013.

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

COMMENT 1: Can you comment briefly on the monitoring plan (page 12 of the proposed ROD Amendment)? What does it consist of?

RESPONSE 1: A Monitoring Plan is the component of the Site Management Plan (SMP) to assess the performance and effectiveness of the remedy. Once remediation is completed in accordance with this Amended Record of Decision, the SMP will be implemented. The plan has not been prepared yet, but it is expected to include, at a minimum, monitoring of:

- groundwater wells downgradient of the solidified mass and downgradient of any contamination left in place;
- the seven sub-slab depressurization systems already installed;
- the two NAPL recovery wells west of the rail line;
- the two NAPL and groundwater recovery trenches either side of the Gastown Sportsmen's Club;
- the groundwater collection trench along Tonawanda Creek; and
- the groundwater treatment system installed to treat contaminated groundwater on-site.

Once remediation is complete, a site management plan will direct what actions must be taken for long-term management of the site and the surrounding area. This SMP will include both

groundwater monitoring, and evaluations of the potential for vapor intrusion as part of the long-term management of the site. The monitoring will be on a regular schedule, which also is yet to be determined. As part of the periodic certification of institutional and engineering controls, the results of the monitoring will be reported to the Department, and made available to the public.

COMMENT 2: Will DEC be out here to the site periodically?

RESPONSE 2: Before remediation begins, Department staff will be visiting the site to inspect the existing NAPL collection system and to work with National Fuel Gas and their consultant, GEI, on the detailed design of the remediation. During remediation, the Department will provide oversight sufficient to ensure compliance with the approved Remedial Design. This may be daily during some activities, but less frequently during others.

COMMENT 3: Future monitoring will be important as waste is still on-site.

RESPONSE 3: The Department agrees that future monitoring is a crucial component of post-remediation activity, and has included this requirement in the ROD Amendment.

COMMENT 4: Will the monitoring well results be available to the public?

RESPONSE 4: Yes. All monitoring results will be reported to the Department by National Fuel Gas. Once the results have been reviewed by the Department's Project Manager and approved, they will be publicly available in the site document repository.

COMMENT 5: Is more contaminated material being left behind under this amendment?

RESPONSE 5: There will be more material left behind, however, the material left behind will be solidified using in-situ solidification, a process by which the contaminated soil and tar seams are mixed together into a solidified, impermeable mass, rendering the contaminants immobile and inert. If, in the future, this material is excavated, the Site Management Plan will require it to be disposed of as a solid waste in a landfill or other solid waste disposal facility. None of this material will be left within four feet of the ground surface.

COMMENT 6: How will this be bid, public or private?

RESPONSE 6: National Fuel Gas is responsible for implementing the remedy. Their procurement procedures are not within the scope of this document.

Hon. Kevin R. Hardwick, Erie County Legislator, submitted a letter dated February 12, 2013, which included the following comment:

COMMENT 7: After considering the information presented at the public meeting on February 6th, 2013 at City Hall in Tonawanda, I concur that the Proposed Amended Record of Decision for Gastown Manufactured Gas Plant (MGP) Tonawanda Site has a number of advantages for area residents. My support of the amendment, however, is contingent upon the adoption of a stringent

plan for monitoring the site. Such a plan must include continuous assessment of both groundwater quality and vapor intrusion.

RESPONSE 7: Comment noted. Also see Response 1 regarding future site management.

APPENDIX B

Administrative Record

Administrative Record

Gastown MGP Tonawanda Site
Tonawanda, New York
Site No. 915171

1. Proposed Record of Decision Amendment for the Gastown MGP Tonawanda Site, January 2013, prepared by the Department.

2. Memorandum dated July 6, 2000 for referral for State-Funded Remedial Investigation and Feasibility Study, and Implementation of the Remedial Design for the Gastown Manufactured Gas Plant Site.

3. Order on Consent, Index No. A9-0599-05-08, between the Department and National Fuel Gas Distribution Corporation, executed on July 16, 2008.

4. "Site Investigation Report Former Gastown MGP Site, 126 East Niagara, Street, Tonawanda, Erie County New York," January 2001, prepared by New York State Department of Environmental Conservation, Division of Environmental Remediation, Glenn May, CPG.

5. "Remedial Investigation Report Gastown Former MGP Site Site No. 9-15-171 Tonawanda, Erie County, NY," December 2004, prepared by Earth Tech Northeast, Inc. Volume 1 of 3 – Report, Text, Figures, and Tables

6. "Remedial Investigation Report Gastown Former MGP Site Site No. 9-15-171 Tonawanda, Erie County, NY," December 2004, prepared by Earth Tech Northeast, Inc. Volume 2 of 3 – Appendices A through G.

7. "Remedial Investigation Report Gastown Former MGP Site Site No. 9-15-171 Tonawanda, Erie County, NY," December 2004, prepared by Earth Tech Northeast, Inc. Volume 3 of 3 – Appendices H through J

8. "Feasibility Study Report Gastown Former MGP Site, Site No. 9-15-171, Tonawanda, Erie County NY," February 2005, prepared by Earth Tech Northeast, Inc.

9. "Proposed Remedial Action Plan Former Gastown M.G.P. Site" February 2007, prepared by Division of Environmental Remediation, New York State Department of Environmental Conservation.

10. "Record of Decision Former Gastown MGP Site" March 2007, prepared by Division of Environmental Remediation, New York State Department of Environmental Conservation.

11. Letter dated February 12, 2013 from Hon. Kevin R. Hardwick, Erie County Legislator.