Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Sterling Drug Site 3
Operable Unit No. 02
East Greenbush, Rensselaer County, New York
Site Number 442011

March 2009

New York State Department of Environmental Conservation
DAVID A. PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Sterling Drug Site 3 Inactive Hazardous Waste Disposal Site
Operable Unit No. 02
East Greenbush, Rensselaer County, New York
Site No. 442011

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit 02 of the Sterling Drug Site 3, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law 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 Operable Unit 02 of the Sterling Drug Site 3 inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) 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.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Sterling Drug Site 3 and the criteria identified for evaluation of alternatives, the Department has selected institutional controls (ICs) and monitoring. The components of the remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary to determine the exact location and number of area properties impacted above the applicable SCGs and to provide additional information for the design of the monitoring program element of the proposed remedy.

2. Imposition of an institutional control (ICs) in the form of an environmental easement that will require (a) development and compliance with an approved site management plan (SMP); (b) if groundwater is to be utilized at the site for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH for the Sterling Drug Site 3 related contaminants of concern will be provided; (c) the on-site property owner (NPEC) to complete and submit to the Department a periodic certification of the institutional and engineering controls; and (d) the

on-site property owner (NPEC) will be required to enter into an order on consent with the Department, to ensure the long term implementation, maintenance, monitoring and enforcement of the institutional controls for both the on and off-site areas.

3. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final cover system; (b) continued evaluation of the potential for vapor intrusion for any buildings developed on the site or in the area of the off-site groundwater contamination, including provision for mitigation of any impacts identified; (c) if groundwater contaminated with site related chemicals is to be utilized at the off-site property(s) for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH will be provided; (d) monitoring of groundwater and soil vapor; (e) identification of any use restrictions on the site; (f) controlling site access where warranted; (g) provisions for the continued proper operation and maintenance of the components of the remedy.

4. The on-site property owner (NPEC) will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department states in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state 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 the site management plan unless otherwise approved by the Department.

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

6. In the event that an element(s) of the proposed remedy cannot be implemented, then alternative G5 will be implemented as the contingency remedy.

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.

MAR 3 0 2009

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Sterling Drug Site 3, Operable Unit No. 02, which encompasses the off-site portion of the groundwater contaminant plume. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, uncontrolled waste disposal activities have resulted in the migration of hazardous wastes, including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). These wastes have contaminated the groundwater at the site, and have resulted in:

- a significant threat to human health associated with exposure to contaminated soil vapor and groundwater.

- a significant threat to the groundwater environmental resource associated with it's best use as a Class GA source of drinking water.

To eliminate or mitigate these threats, the Department has selected institutional controls and monitoring as the remedy for this operable unit.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially 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.

SECTION 2: SITE LOCATION AND DESCRIPTION

Sterling Drug Site 3 consists of two operable units. Operable Unit (OU) No. 02, which is the subject of this document, includes the off-site contaminated groundwater plume. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site is: Operable Unit No. 01, consists of the inactive landfill area including onsite soils, groundwater, surface water and sediments. Remedial actions at OU-01 have been implemented pursuant to an order on consent which include: a large drum removal program, soil vapor extraction (SVE), groundwater treatment system (GWTS) operation, air sparging, design of the landfill impermeable cap system and environmental monitoring.

The Site is located off of American Oil Road (Riverside Avenue Extension) in the Town of East Greenbush, Rensselaer County, New York. (Figure 1) OU-01, the inactive landfill is approximately 7 acres in size and is situated on a wedged shaped parcel of land between Papscanee Creek to the

west and the CSX Transportation railway tracks to the east. OU-02, the groundwater plume, extends within the subsurface from the landfill's western boundary in a northwesterly direction along the line of groundwater flow and is approximately 2,400 feet long and 750 feet wide. The plume has migrated to several of the adjacent and/or nearby individual off-site property parcels. Generally the OU-02 area is relatively flat and is situated within the 100 year floodplain of the Hudson River. The Hudson River is located approximately 2,200 feet west of OU-01. The majority of the immediate surrounding lands are rural in appearance and are either open land or leased for agricultural purposes (row crops). The Sterling Drug Site 2 is located approximately 1.5 miles to the northeast.

Three water-bearing zones have been identified in the vicinity of the Site (see block geology model below). The water-bearing zones from shallowest to deepest are: the upper unconsolidated aquifer at a depth of 10 to 90 feet, which consists of gravel and sand and is overlain by silt; the lower unconsolidated aquifer at a depth of 80 to 100 feet, which consists of till and which is separated from the upper aquifer by a clay aquitard; and the bedrock aquifer at a depth of 45 to 120 feet. The upper unconsolidated aquifer has been impacted by the site (see aquifer model below). Groundwater flow in the upper unconsolidated aquifer is controlled by a geologic trough and flows towards the Hudson River in a northwest direction. The river exerts tidal influence on groundwater of up to 2 feet in the monitoring wells closest to the Hudson, with progressively less influence back towards the landfill. Tidal influence near the landfill has been shown to be approximately 0.08 feet at high tide.

SECTION 3: SITE HISTORY

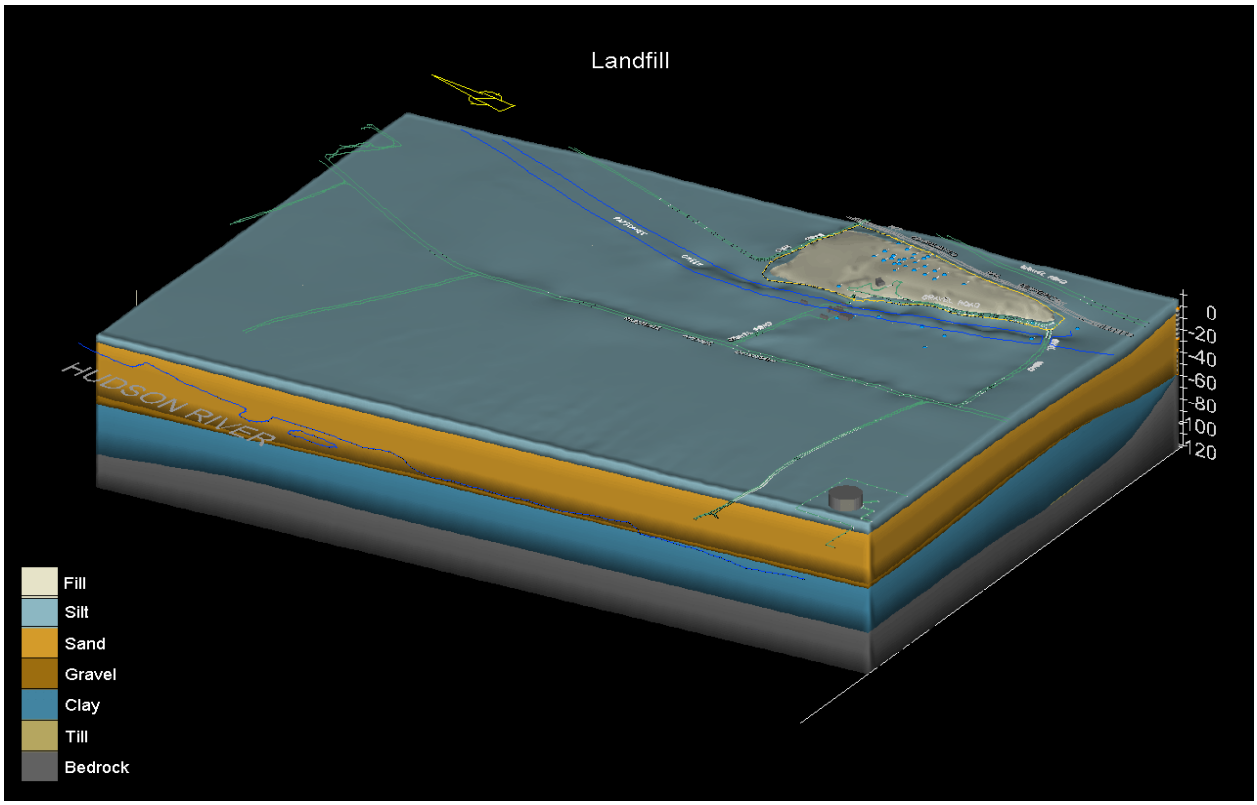
3.1: Operational/Disposal History

In 1956, Sterling leased Site 3 from S.A. Graziano for the land disposal of plant wastes. Disposal of wastes began in 1956 and continued until the latter part of 1977. Disposed wastes included pharmaceutical intermediates, finished pharmaceutical products, Sterling Winthrop Research Institute waste, filter cakes, solvents, still bottoms, oils, and wood. An initial estimate was that 2,000 drums containing waste and waste solvents had been disposed of in the northern section of the landfill. In 1977, the landfill was covered with sandy clay and gravel and closed. The site has remained inactive since the termination of landfill activities. An 8 foot chain link security fence was erected around the perimeter of the landfill in January of 1984.

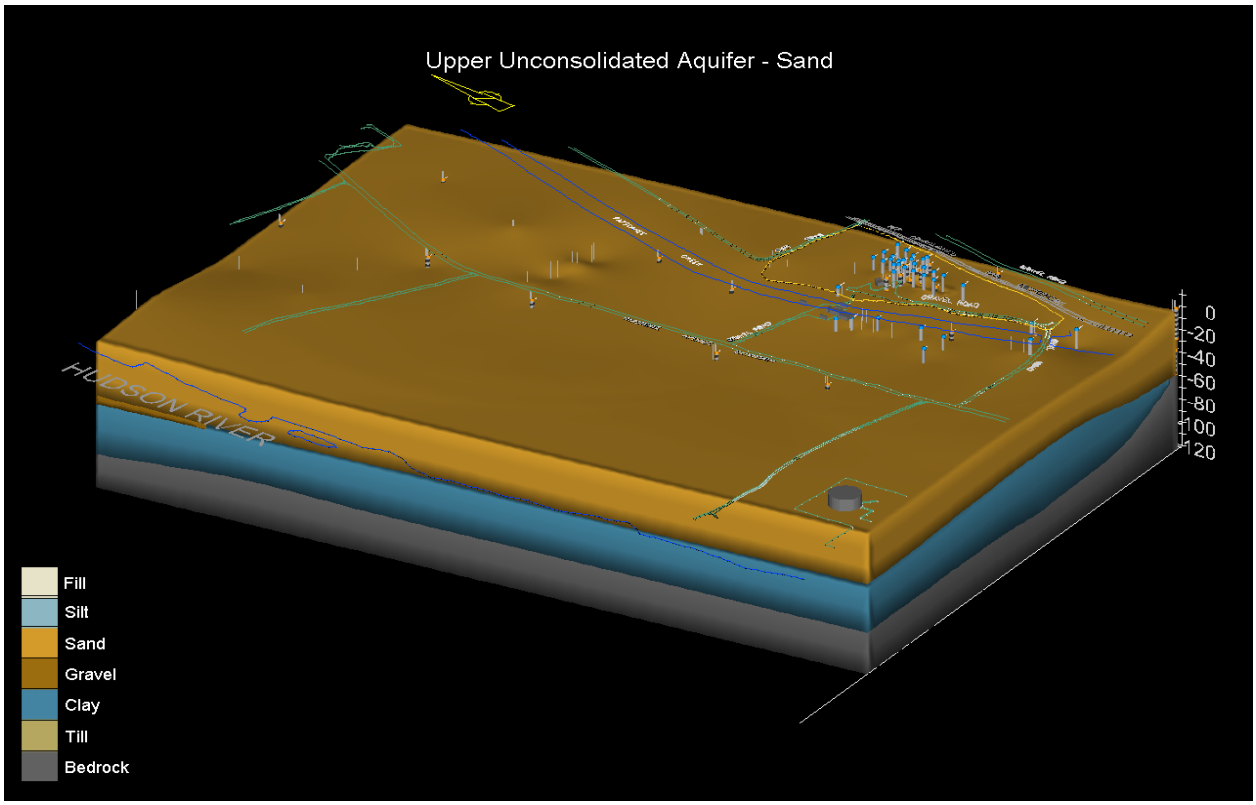
3.2: Remedial History

The site has been the subject of remedial investigations, remedial actions in the form of interim remedial measures (IRMs), feasibility studies and remedial design phases since the early 1980s. In 1982, the Department listed the site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. In 1983 the site was designated a Class 2 based upon the Department's numerical rankings under the ECL. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

Between 1982 and 1987, Phase I and II Remedial Investigations (RI) were conducted which included various field activities along with physical/chemical testing and reporting. The investigations were conducted in order to delineate the nature and extent of the site contamination.



Sterling Drug Site 3 - Block Geology Model (Conestoga Rovers Associates)



Sterling Drug Site 3 - Aquifer Model (Conestoga Rovers Associates)

Between 1987 and 1991, various IRMs and remedial actions were implemented in order to address contaminant sources, source areas and to control contaminant migration. Some of these activities included:

- groundwater treatment system design
- drum removal programs (8,452 removed)
- landfill characterization programs
- clay breach area (CBA) source removal pilot tests using air sparging
- additional sampling and analysis of site media (on and off-site)

In 1992 the Record of Decision (ROD) for OU-01 of the site was signed by the Department. The selected remedy for the site included: vacuum extraction of hot-spots identified in the on-site soils, groundwater recovery and treatment of the on-site portion of the contaminant plume, installation of an impermeable landfill cap, site use restrictions and environmental monitoring. The 1992 ROD also included a "Documentation of Significant Changes" between the site PRAP and the finalized remedy. The "Documentation of Significant Changes" section of the ROD recognized the fact that the February 1992, "Final Draft Feasibility Study Sterling - Site 3 Inactive Landfill", adequately addressed the on-site contamination, but did not adequately evaluate remedial alternatives to address the off-site contaminant plume. Based upon this, the Department deferred selecting a remedy for this portion of the site and created a second operable unit (OU-02) under which the off-site contaminant plume would be addressed.

Between 1994 and 2000, various remedial actions selected in the remedy for the on-site area (OU-01) and outlined in the 1992 ROD were implemented. Some of these actions included:

- full-scale air sparging and vapor extraction treatment system operation,
- full-scale groundwater extraction and treatment system operation,
- preliminary landfill cap design, and
- sampling and analysis of site media (on and off-site)

The remedial objectives outlined in the 1992 ROD for the contaminated subsurface soils at OU-01specified that the vapor extraction treatment system (and subsequent air sparging system) would operate until specific contaminant levels were achieved or until performance data indicates that the system was no longer effective. Once it was determined that a significant mass of contamination had been removed, the containment portion (landfill capping) of the selected alternative for OU-01 would be implemented. This determination was made in November of 2007, at which time the Department directed that the landfill capping phase of the remedy be implemented.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Department and Sterling Drug, Inc. entered into a Agreement and Determination (Index #437T072382) on August 6, 1982. The Agreement and Determination obligated the responsible parties to implement a investigative remedial program. In 1986, an Amendment (Index # T061485) to the Agreement and Determination was implemented which required Sterling Drug, Inc. to perform a Remedial Investigation/Feasibility Study (RI/FS) of the site, as well as interim remedial measures as appropriate. In March of 1993, the Department executed an Order on Consent (Index # A4-0281-

92-04) with Sterling Winthrop, Inc. which required the development of remedial design work plans, a remedial design and for the remedial design implementation and reporting, for Operable Unit 01 of the site. At the time of execution of the 1993 order, Sterling was a subsidiary of the Eastman Kodak Company. In 1994, Kodak sold the stock of Sterling but retained the environmental liabilities obligations. In May of 2000, the Department executed an Order on Consent (Index # A4-0404-9911) with 360 North Pastoria Environmental Corporation (NPEC), a wholly owned subsidiary of the Eastman Kodak Company. This Order on Consent included the following statement: "whereby NPEC will become a named Respondent for this Site and thereby assume the remedial obligations with respect to the Site". Since execution of this Order on Consent, NPEC has been responsible for the all remedial aspects of the Sterling Drug Site 3, including both operable units.

SECTION 5: SITE CONTAMINATION

A focused feasibility study (FFS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The initial RI was conducted in two phases between 1982 and 1987 and included investigations of both the landfill (OU-01) and the off-site plume (OU-02) areas. The field activities and findings of the investigation are described in the RI reports. In addition, up to date environmental data has been collected on an on-going basis, during the monitoring programs (semi-annual and biennial) required as part of the remedy for OU-01. These programs include activities which monitor the off-site OU-02 plume area.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the groundwater contains contamination at levels of concern, data from the investigation were compared to the following SCGs:

- the best usage of water resources as outlined in 6NYCRR Part 701, "Classifications - Surface Waters and Groundwaters";

- groundwater, drinking water, and surface water quality standards are based on 6NYCRR Part 703, covering the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code for Unspecified Organic Contaminants (UOCs).

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI reports.

5.1.2: Nature and Extent of Contamination

This section describes the findings of the investigations for all environmental media that were investigated.

The disposal activities at the site (OU-01) resulted in a variety of wastes being disposed within the landfill. These included pharmaceutical intermediates, finished pharmaceutical products, Sterling Winthrop Research Institute waste, filter cakes, solvents, still bottoms, oils, and wood. The primary contaminants of concern identified from the waste disposal included VOCs such as, benzene, toluene, ethyl ether, methylene chloride, acetone, methyl thiophene, 1,2-dichloroethane, trichloroethene and chloroform, and SVOC pharmaceutical type compounds such as, talbutal, lidocane, mephobarbital, phenobarbital, hexobarbital and pentazocine.

As described in the RIs and on-going monitoring reports, many groundwater samples have been collected to characterize the nature and extent of contamination. As seen in Figures 2 and 3, the main categories of contaminants that exceed their SCGs at OU-02 are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water. Figure(s) 2 and 3 summarize the degree of contamination for the contaminants of concern in groundwater and compare the data with the SCGs for the site. The following are the media which were investigated for OU-02 and a summary of the findings of the investigation.

Groundwater

The impacts to groundwater from the majority of the contaminants disposed at OU-01 have been reduced and controlled by the treatment systems (air sparging, SVE and GWTS) at the landfill. A groundwater plume (OU-02) consisting primarily of ethyl ether and some of the SVOC pharmaceutical compounds above SCGs, has migrated from the former landfill within the upper unconsolidated aquifer some 2,400 feet to the northwest. The groundwater plume has impacted a number of off-site private property parcels at concentrations above the NYSDOH Part 5, Drinking Water, Unspecified Organic Contaminant (UOC) standard of 50 ppb (ug/l) for these chemicals. The presence of the UOC contamination on these off-site private property parcels has impacted the best usage of the groundwater resource as source of drinking water in these areas. Figure 2 shows the ethyl ether contamination trends overtime in terms of isoconcentrations within the sand and gravel unit of the upper unconsolidated aquifer. Figure 3 shows the locations and estimated concentrations of SVOC pharmaceutical compounds detected in the groundwater plume at two monitoring points above the UOC drinking water standard of 50 ppb.

Groundwater contamination identified during the remedial investigations and on-going monitoring programs, as well as in the FFS, will be addressed in the remedy selection process.

Soil Vapor/Sub-Slab Vapor/Air

No site-related soil vapor/sub-slab vapor/air sampling and analysis was conducted during the RI based upon the fact that there are no continuously occupied structures that exist on the site or on the OU-02 off-site properties. However, provisions for the evaluation of the potential for vapor intrusion and vapor exposures within any future buildings developed on the OU-02 properties, including provisions for mitigating any impacts identified, will be addressed in the remedy selection process.

5.2: 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 completion of the RI/FS.

There were no IRMs performed to address OU-02 of this site during the RIs.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. Additional discussion of the human exposure pathways can be found in Section 4 of the FFS. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Currently there are no known exposure pathways which exist at the site. The potential exposure pathways which could exist in the future include the following:

- inhalation of vapors from contaminants in the groundwater for construction workers involved in future excavation activities.

- inhalation of vapors accumulating in the indoor air via the vapor intrusion pathway into structures constructed on-site in the future.
- ingestion, dermal contact and/or inhalation of vapors from contaminated groundwater if drinking water or irrigation wells are installed on-site in the future.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of 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.

Site contamination has impacted the groundwater resource in the upper unconsolidated aquifer, above the maximum contaminant levels (MCLs) as outlined in Part 5 of the New York State Sanitary Code for certain unspecified organic contaminants (UOCs). Contamination has migrated with the groundwater in this aquifer from the landfill area (OU-1) to various off-site properties (OU-02).

The Hudson River is another environmental resource located near the OU-02 area. The river is approximately 500 feet west of the furthest OU-02 down-gradient groundwater monitoring point. Based upon the concentration of contamination in the plume, the relatively low volume of potential groundwater contamination emerging to this surface water body and the river's waste assimilation capacity, viable exposure pathways to fish and wildlife receptors from discharges to the Hudson are not a concern for OU-02.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- the ingestion of groundwater with contaminant levels exceeding drinking water standards;
- the contact with volatiles and/or semi-volatiles, or inhalation of volatiles, from contaminated groundwater;

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

- drinking water standards, based upon the potential to use groundwater as a drinking water source, for the site specific, regulated, unspecified organic contaminants (UOCs);
- restoration of the groundwater aquifer for the Sterling Drug Site 3 related contaminants.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected 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. Potential remedial alternatives for the Sterling Drug Site 3, OU-02 were identified, screened and evaluated in the FFS report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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. In order to compare the costs of alternatives G4 and G5 it was assumed that these remedies would operate over a two year period.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated groundwater and potential for soil vapor intrusion at the site.

Alternative G1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring and inspections only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. This alternative could be implemented immediately.

Present Worth: *$175,000*
Capital Cost: *$0*
Annual Costs:
(Years 1-30): *$14,000*

Alternative G2: Institutional Controls

Under this alternative the contaminated groundwater would not be actively remediated and the site conditions would remain the same. Institutional controls (ICs) would be utilized to provide protection of human health and the environment. The ICs would be enforced through the execution of an environmental easement between NPEC and the Department for the site. The ICs applicable to the site would include an environmental easement which would require the following items:

- development and compliance with an approved site management plan (SMP);

- if groundwater is to be utilized at the site for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH for the Sterling Drug Site 3 related contaminants of concern would be provided; and

- periodic certification of the institutional controls and engineering controls would be completed and submitted to the Department.

The site management plan would include the following items:

- management of the final engineering controls;
- in the event of development of the impacted property(s), then NPEC would provide for the continued evaluation of the potential for vapor intrusion for any buildings developed on the property(s), including provisions for mitigating any impacts identified;

- if groundwater is to be utilized at the impacted off-site property(s) for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH for the Sterling Drug Site 3 related contaminants of concern would be provided;

- provide for the ability to access site properties in order to design and implement a remedial monitoring program for soil, soil vapor, air and groundwater;

- provide for the identification of any use restrictions on the site; and

- provide provisions for the continued proper operation and maintenance of the components of the remedy.

This alternative would meet the remediation goals for the site in terms of protection of human health by controlling the groundwater and soil vapor exposure pathways utilizing wellhead treatment for the site related contaminants or alternative potable water sources and by mitigation respectively, in the event of property development. The groundwater resource would eventually be restored through the site specific attenuation processes. Periodic certifications would be required in order to ensure that all the institutional controls put in place are still in place, are effective and that they are unchanged from the previous certification. Monitoring of the site related contaminants of concern would be performed at upgradient, source area (OU-01) and at downgradient (OU-02) monitoring locations. The existing monitoring network would be supplemented with additional points. This alternative could be implemented within 6 months.

Present Worth: *$430,000*
Capital Cost: *$14,000*
Annual Costs:
(Years 1-30): *$33,000*

Alternative G3: Monitored Natural Attenuation

Under this alternative the contaminated groundwater would not be actively remediated and the site conditions would remain the same. The natural attenuation processes on-going at the site would be allowed to determine the fate and transport of the contamination at OU-02 and to achieve the remedial objectives by removing the contaminants via these processes in a time period that is reasonable. Natural attenuation is a set of physical/mechanical, chemical and/or biological processes which may include such things as biodegradation, chemical transformation, volatilization, adsorption, dispersion and dilution. Monitoring of natural attenuation indicator parameters would be performed at upgradient, source area (OU-01) and at downgradient (OU-02) monitoring locations. The existing monitoring network would be supplemented with additional groundwater sample collection points in order to effectively natural attenuation processes.

Institutional controls (ICs) in the form of an environmental easement made between NPEC and the Department, such as outlined for alternative G2 would be implemented under this alternative. This alternative would require the development and compliance with an approved site management plan (SMP), including continued site monitoring and inspections. This alternative could be implemented within 6 months.

Present Worth: *$450,000*
Capital Cost: *$36,000*
Annual Costs:
(Years 1-30): *$33,000*

Alternative G4: In-situ Chemical Oxidation

Alternative G4 would involve the subsurface injection of a chemical oxidant which would react with the groundwater and result in the oxidation (destruction) of the site contaminants. The chemicals would be applied in the subsurface (in-situ) by methodologies which would allow them to react as directly as possible with the existing contamination. In-situ groundwater treatment would occur over a two year period. The remediation goals for the site would be met by the elimination of the organic contaminants of concern. This alternative would include the following items:

- a treatability study would be conducted during design in order to;

    - determine the optimum chemical oxidant for the site, based upon the existing contamination and background conditions;
    - determine the number of injection points required; and
    - determine the volume of oxidant to be injected per point;
- injections of chemical oxidant;
- post-injection media monitoring of the on and off-site groundwater;
- evaluation of remedy effectiveness and re-injections if required;
- development and compliance with an approved site management plan (SMP); and
- institutional controls similar to those listed in alternative G2.

The time required to design and implement alternative G4 would be approximately one (1) year. After two years the effectiveness of the alternative will be evaluated and re-injections of chemical oxidant would be continued if warranted.

Present Worth: *$3,700,000*

Capital Cost: *$290,000*

Annual Costs: Groundwater Injections (Years 1-2): *$1,700,000*

Annual Costs:

(Years 1-30): *$24,000*

Alternative G5: Ex-situ Carbon Adsorption

Alternative G5 would involve the extraction of the contaminated groundwater and processing it through a on-site treatment works (ex-situ), which would utilize carbon adsorption to capture the contaminants of concern. The treated groundwater would then be discharged in accordance with an approved plan and the adsorbent materials would be regenerated, replaced and/or disposed of as required. The remediation goals for the site would be met by the elimination of the organic contaminants of concern from the groundwater through the treatment process. This alternative would include the following items:

- a modeling study would be conducted during design in order to;
    - determine the optimum carbon adsorbent to be used, based upon the existing contamination and background conditions;
    - the number of carbon adsorbent units required; and
    - the need for groundwater pretreatment, such as filtration;
- construction of the treatment works;
- continuous evaluation of treatment efficiency;
- development and compliance with an approved site management plan (SMP); and
- institutional controls similar to those listed in alternative G2.

The time required to design and implement alternative G5 would be approximately one (1) year. The system would be operated and monitored for a period of two years. After two years of operation and

monitoring the effectiveness of the alternative will be evaluated and the remedy continued and/or modified if needed.

Present Worth: $1,400,000

Capital Cost: $290,000

Annual Costs: Groundwater Treatment System Operation (Years 1-2): $470,000

Annual Costs:

(Years 1-30): $24,000

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York. A discussion of the evaluation criteria and comparative analysis is included in the FFS report and in Section 8 which follows.

The first two 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.

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.

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.

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.

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.

6. 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.

7. Cost-Effectivness. 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 costs for each alternative are presented in Table 1.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RIs and FFS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative G2, Institutional Controls (ICs) as the remedy for this site. The selected remedy is based on the results of the RIs, the historical monitoring of the site area and the evaluation of alternatives presented in the FFS. The elements of this remedy, which have been slightly modified from the PRAP version are described at the end of this section. In the event that an element(s) of the proposed remedy cannot be implemented, then alternative G5 would be implemented as the contingency remedy.

The focused feasibility study suggests Alternative G3 - Monitored Natural Attenuation as the preferred remedy for the contaminant plume, however the Department is proposing Alternative G2 based upon the evaluation criteria and comparative analysis as discussed in the following parts of this section.

The "no action" alternative (G1) would not be protective of human health and/or the environment. It would not address the potential exposure pathways in the event of development of the impacted properties.

Alternative G2, Institutional Controls is being proposed because, as outlined below, it satisfies the threshold criteria and provides an acceptable balance of the primary balancing criteria described in Section 7.2. The remediation goals will be met by implementing institutional controls which will eliminate and/or control the two pathways of potential exposure at the site. In the event of future

development of the site (groundwater used as drinking water and structures built) and if determined that completed exposure pathways exists, the remediation goals will be achieved by, providing an alternative water source or point of use treatment for the contaminated groundwater and by mitigating contaminated soil vapor intrusion to indoor air. The institutional controls, along with the source containment provided by the installation of the landfill impermeable cap (OU-01 remedial action), along with the elimination of the secondary source of the ethyl ether (discharge to groundwater from the OU-01 GWTS above standards) and the natural physical and mechanical attenuation processes (dilution and dispersion) on-going within the upper unconsolidated aquifer at the site, will address the threats posed by the groundwater contamination.

Alternatives G3, G4, and G5 would also comply with the threshold selection criteria through remedial actions and with the implementation of the institutional controls as outlined in alternative G2.

Because alternatives G2, G3, G4, and G5 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

Both alternatives G4 (in-situ chemical oxidation) and G5 (ex-situ carbon adsorption) have been utilized successfully at other inactive hazardous waste sites. However, there may be short-term impacts associated with the construction of these two remedies which may affect the impacted properties. These could include, the installation and operation of chemical oxidant injection wells for G4 and the installation of groundwater extraction wells, a forcemain and an associated culvert system for G5. Alternative G4 may also pose some short term risks due to the need to handle and inject the reactive chemicals into the subsurface. Alternatives G2 and G3 will not have any short term impacts.

Achieving long-term effectiveness and permanence is best accomplished by destruction of the groundwater contamination (G4) or by removing and capturing the contamination (G5) on an adsorbent ex-situ and discharging the treated water. However, the control and elimination of the contaminant source areas (landfill and groundwater discharge) will allow the physical natural attenuation processes to reduce the groundwater contamination concentrations over time. Institutional controls (G2) will also provide permanence in that the requirements to address the two exposure pathways will remain in effect as long as contamination levels at the impacted properties are above standards. Additionally, the ICs will be structured to run with the land - in other words, to remain in force despite changes in ownership. Alternative G3 would not provide any additional long-term effectiveness and permanence beyond what alternative G2 will provide. Alternative G3 does not provide any enhancement of the on-going natural attenuation processes affecting the groundwater on the impacted properties. In addition, ethyl ether does not degrade by biological natural attenuation, thus alternative G3 is essentially the same as alternative G2. The monitoring activities associated with alternative G2 will provide the data needed to assess the on-going effects of the attenuation processes (dilution, dispersion, volatilization) which may be occurring at the site.

Alternatives G2, G3, G4 and G5 would, to various degrees, reduce the toxicity, mobility and volume of the contaminants in the site groundwater. Alternative G2 will over time, reduce the toxicity of the contaminants in the site groundwater through dilution, dispersion and volatilization. Alternative G4 would permanently reduce the volume of contaminants through oxidative destruction, once the contamination is physically reacted with the treatment chemicals. Alternative G5 would provide reduction in the volume of contaminants overtime and may positively affect contaminant mobility by

changing the site hydraulic gradients through extraction well placement and the associated zones of influence. Alternative G5 would however, generate quantities of carbon adsorbent treatment residuals which would have to be regenerated or replaced and disposed of.

Alternatives G2, G3, G4, and G5 are all technically feasible from the perspective that they have been implemented as remedial actions at other sites. However, at the Sterling Drug Site 3, the three alternatives differ in terms of implementability. Alternative G2, will involve minor technical issues associated with the wellhead treatment of the drinking water and vapor mitigation systems if needed, both of which could be readily managed. In addition, from a technical perspective, its feasible to provide uncontaminated drinking water from wells installed into the lower aquifer or from an alternative municipal source. The implementability of alternative G4 is less certain, in that the destruction of the contaminants would only occur by direct contact with the oxidizing chemicals. While the treatment technology of in-situ chemical oxidation has been used successfully at other sites, it has been primarily utilized to treat halogenated and petroleum related VOCs. The technology is less proven to treat the site related non-halogenated ethyl ether and the pharmaceutical SVOCs. The reliability of the G4 alternative is also highly dependant upon utilizing sufficient mass of treatment chemicals to both come in direct contact with and then react with, the site contamination. Factors such as, injection point locations, soil permeability and naturally occurring background interferences are important technical considerations. The Hudson River tidal influence on the western portions of the operable unit, may also impact the chemical oxidant dispersion in this area. An in-depth treatability study, considering each of these site specific factors would be required in order to effectively design and implement the remedy. Alternative G5 is technically feasible in terms of construction and operation, as has been shown through the operation of the groundwater treatment system (GWTS) utilized at OU-01. However, operation of this system has shown that the proper selection of the carbon adsorption media is critical to the effective removal of the ethyl ether contamination. The aquifer transmissivity at the site provides for adequate water volumes for operation of an ex-situ treatment system. A thorough modeling study would be required in order to determine the type of granular activated carbon adsorbent which would be most effective for removing the ethyl ether, the number of adsorption units required, as well as the necessity to pretreat the groundwater, to remove such things as iron, which may foul the treatment works. A permitted discharge point would be required for the treated effluent. Both alternatives G4 and G5 may require that the existing property access agreements (easements) with the impacted property owners be modified to allow for the construction and operational activities associated with the active groundwater treatment remedies.

Alternatives G2, G3, G4, and G5 are all administratively feasible. There are no limitations on the activities needed to coordinate with local, state and federal offices and/or agencies. The services and materials necessary to implement the groundwater treatment alternatives, such disposal facilities, chemical suppliers and well drillers are readily available.

The estimated costs for alternatives G2 and G3 are roughly the same, $450,000. Whereas the costs for alternative G4 is approximately $3,700,000 and that of alternative G5 is $1,400,000. The groundwater injection treatment costs associated with the in-situ chemical oxidation represent a significant portion of the costs of this alternative. Utilization of portions of the on-site existing GWTS works for alternative G5 would be required in order to meet the estimated capital costs of this remedy.

As outlined above, alternatives G2, G3, G4 and G5 differ in respect to the way and the degree to which they meet the primary balancing criteria. They also differ significantly in terms of cost effectiveness. The alternatives that actively treat the groundwater would present short term impacts and be more difficult

to implement since they would require more complex treatment systems. The nature of the site's geology and hydrogeology (large volume of groundwater to be treated) could necessitate the need for repeated chemical treatments in the case of alternative G4 and for long term pumping and ex-situ treatment for alternative G5. Each of the active groundwater treatment alternatives would require that institutional controls be implemented in order to be protective during the time period from remedy design to the point at which the remediation goals are achieved.

Based upon the above, the fact that the sources of the contamination will be eliminated and/or controlled and because alternatives G4 and G5 may only provide an indeterminately shorter time interval in which the remediation goals are met, compared to that which may be achieved through the natural attenuation processes, the active treatment of the groundwater in general would not be particularly cost effective. Therefore, the contaminated groundwater and potential soil vapor intrusion can be addressed through institutional controls, and the Department has selected Alternative G2 to address these threats. The estimated present worth cost to implement the remedy is $430,000. The cost to construct the remedy is estimated to be $14,000 and the estimated average annual costs for 30 years is $33,000.The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary to determine the exact location and number of area properties impacted above the applicable SCGs and to provide additional information for the design of the monitoring program element of the proposed remedy.

2. Imposition of an institutional control (ICs) in the form of an environmental easement that will require (a) development and compliance with an approved site management plan (SMP); (b) if groundwater is to be utilized at the site for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH for the Sterling Drug Site 3 related contaminants of concern will be provided; (c) the on-site property owner (NPEC) to complete and submit to the Department a periodic certification of the institutional and engineering controls; and (d) the on-site property owner (NPEC) will be required to enter into an order on consent with the Department, to ensure the long term implementation, maintenance, monitoring and enforcement of the institutional controls for both the on and off-site areas.

3. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final cover system; (b) continued evaluation of the potential for vapor intrusion for any buildings developed on the site or in the area of the off-site groundwater contamination, including provision for mitigation of any impacts identified; (c) if groundwater contaminated with site related chemicals is to be utilized at the off-site property(s) for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH will be provided; (d) monitoring of groundwater and soil vapor; (e) identification of any use restrictions on the site; (f) controlling site access where warranted; (g) provisions for the continued proper operation and maintenance of the components of the remedy.

4. The on-site property owner (NPEC) will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department states in writing that this certification is no

longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state 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 the site management plan unless otherwise approved by the Department.

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

6. In the event that an element(s) of the proposed remedy cannot be implemented, then alternative G5 will be implemented as the contingency remedy.

A long-term monitoring program will be instituted. This program will provide the data and other information required to monitor the localized contaminant concentrations as well as the area wide contaminant migration and thus the need for groundwater point of use treatment and/or soil vapor mitigation. The monitoring program will be a component of the long-term management for the site.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.

- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

- A fact sheet announcing the time, date and place for the PRAP public meeting and/or copies of the complete PRAP were mailed to the site contact list.

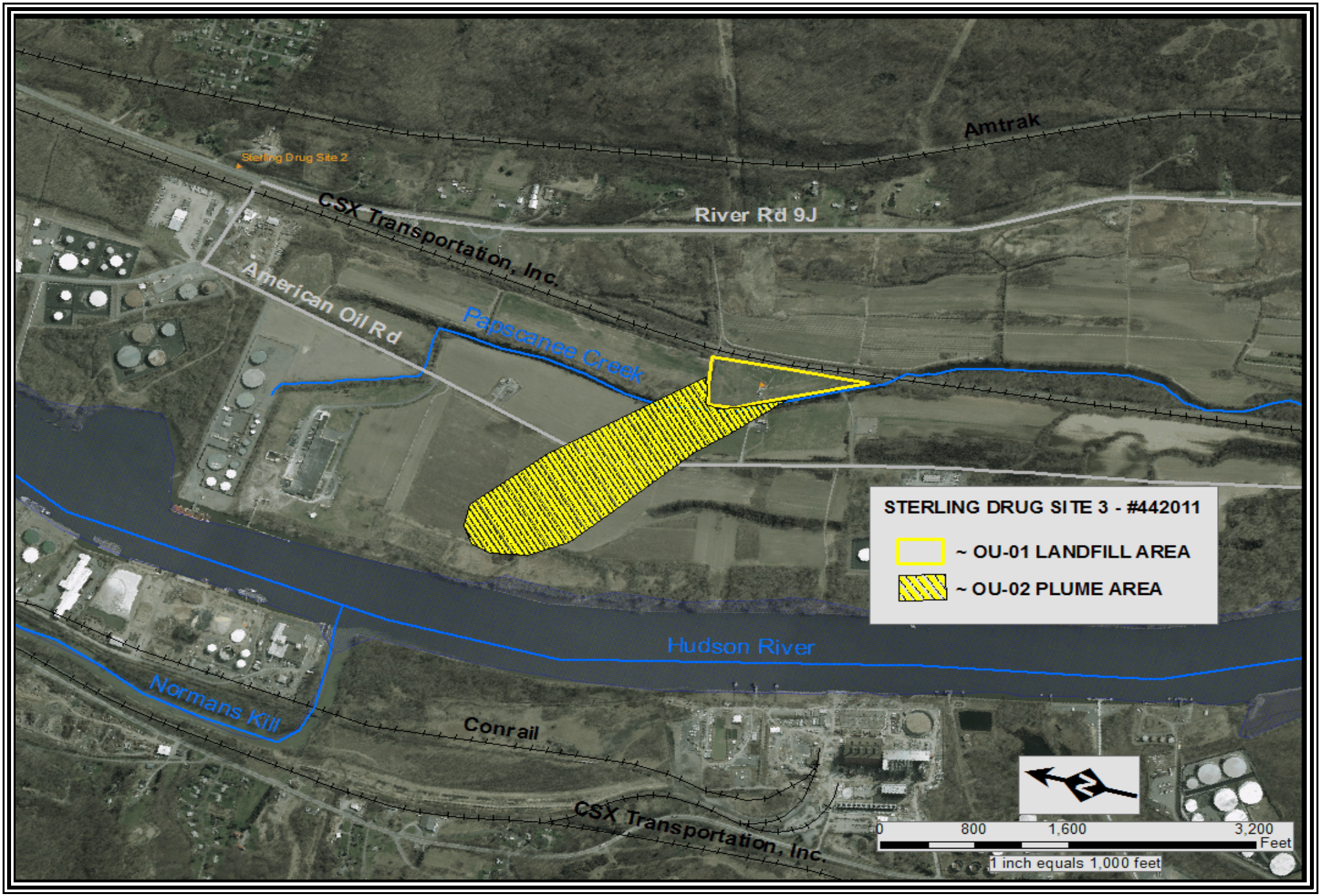
- A public meeting was held on January 22, 2009 to present and receive comment on the PRAP.

- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

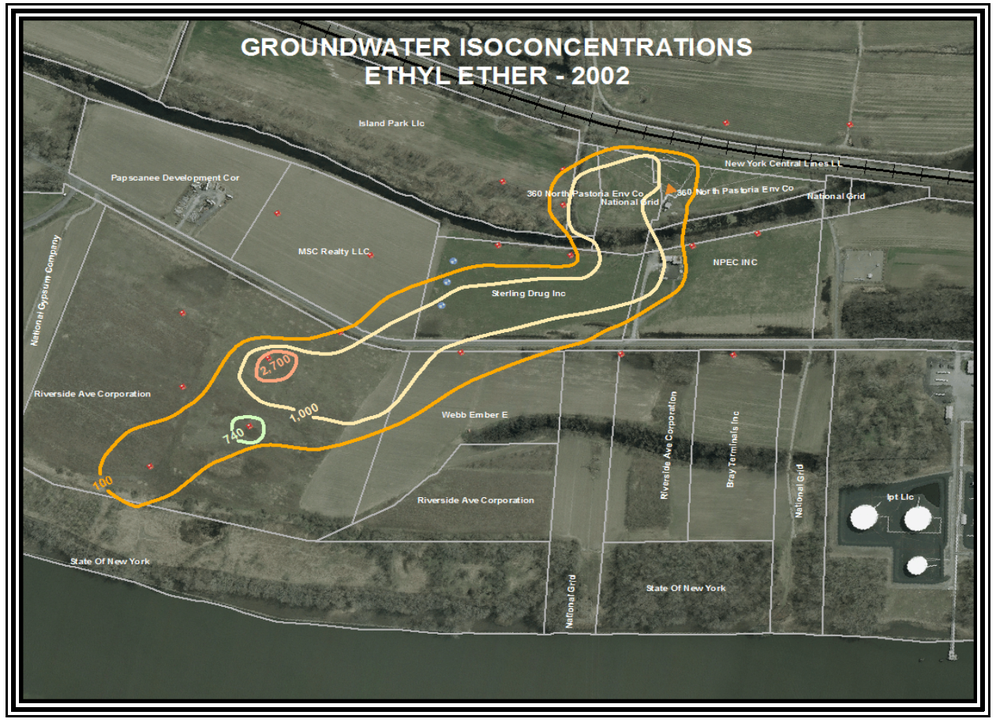
Table 1

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
G1: No Action	0	14,000	175,000
G2: Institutional Controls	14,000	33,000	430,000
G3: Monitored Natural Attenuation	36,000	33,000	450,000
G4: In-situ Chemical Oxidation	280,000	1,990,000	3,700,000
G5: Ex-situ Carbon Adsorption	290,000	760,000	1,400,000

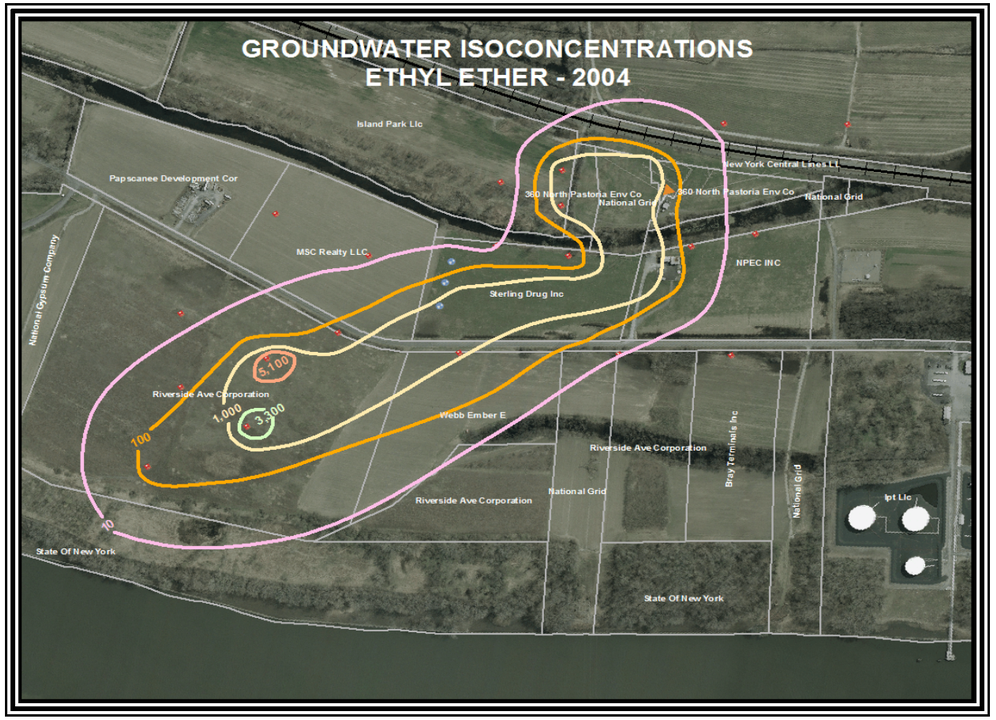


STERLING DRUG SITE 3 | SITE LOCATION MAP | FIGURE 1



ISOCONCENTRATIONS ARE IN ppb (ug/l)

ETHYL ETHER SCG IS 50 ppb



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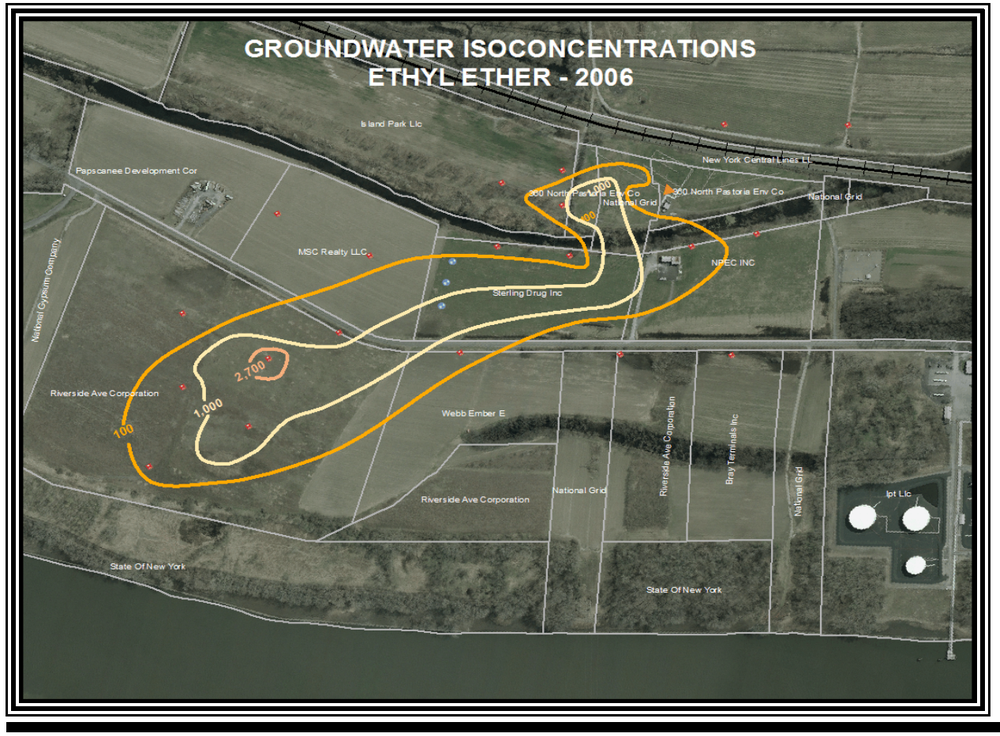
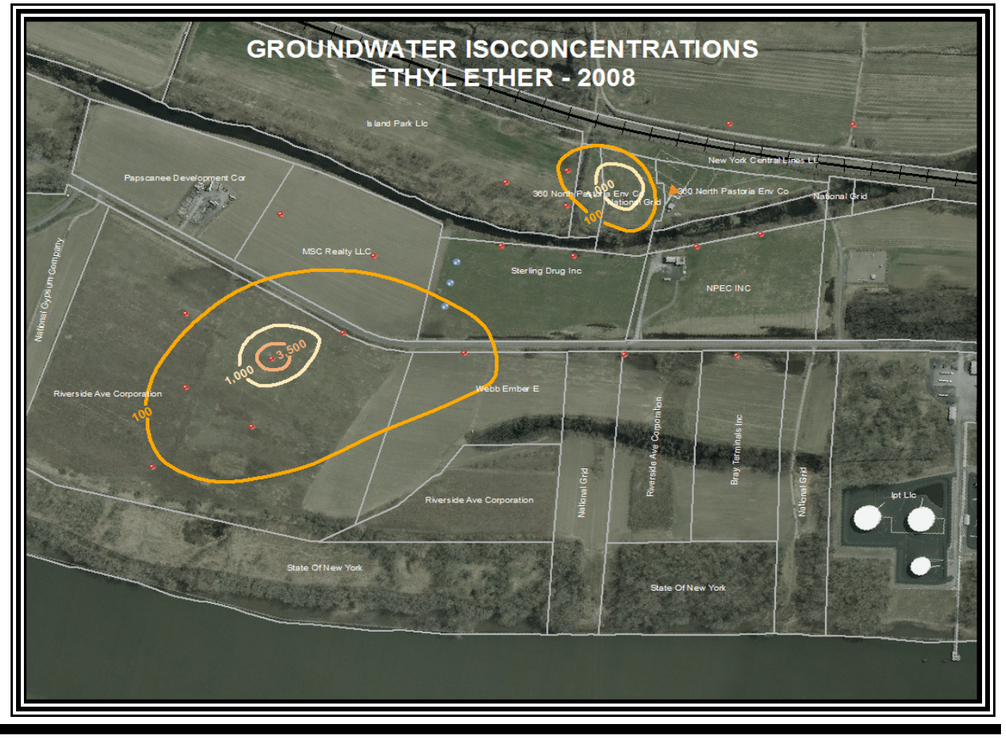
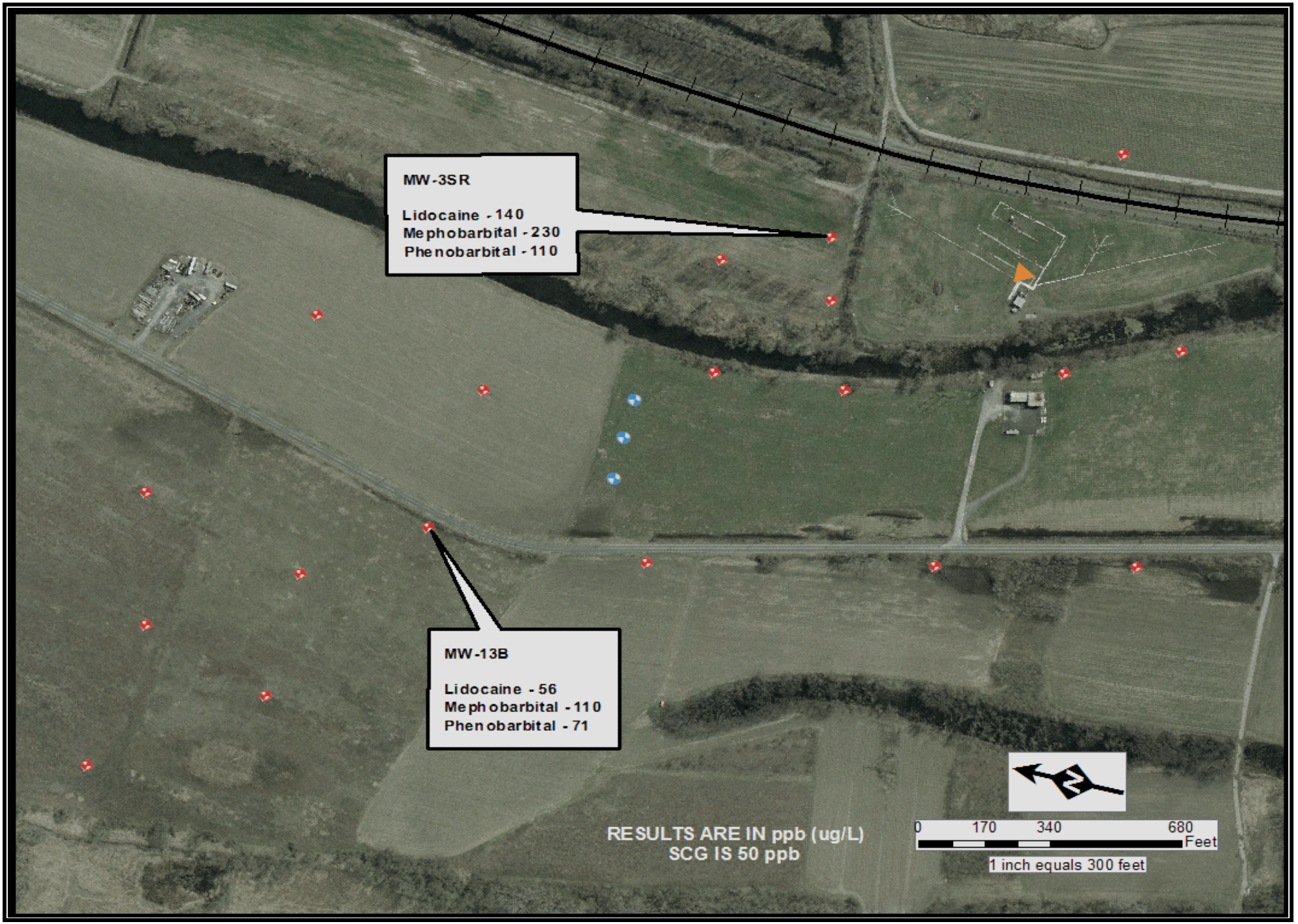


GROUNDWATER FLOW DIRECTION



STERLING DRUG SITE 3, OU-02 | HISTORICAL ETHYL ETHER CONTAMINATION TRENDS | FIGURE 2



STERLING DRUG SITE 3 | SVOC CONTAMINATION | FIGURE 3

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Sterling Drug Site 3

Operable Unit No. 02

East Greenbush, Rensselaer County, New York

Site No. 442011

The Proposed Remedial Action Plan (PRAP) for the Sterling Drug Site 3, 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 5, 2009. The PRAP outlined the remedial measure proposed for the contaminated groundwater and soil vapor at the Sterling Drug Site 3.

The release of the PRAP 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 January 22, 2009, which included a presentation of the Remedial Investigations (RIs), on-going monitoring programs and the Focused Feasibility Study (FFS) 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 PRAP ended on February 4, 2009. Written comments were received from the following parties during the course of the public comment period:

- Letter dated January 28, 2009, from Joseph G. Gabriel, President, North Pastoria Environmental Corporation (NPEC), Inc., 3800 Dewey Avenue, Rochester, NY (attached);

- Letter dated February 2, 2009, from Dean S. Summer, Attorney, Young, Sommer.....LLC, Five Palisades Drive, Albany, NY. Attorney representing Joseph Buono of Island Park LLC, an adjacent property owner;

- Letter dated February 3, 2009, from Michael E. Stammel, County Legislator, Rensselaer County Legislature, 1600 Seventh Avenue, Troy, NY;

- Letter dated February 3, 2009, from Robert L. Pasinella Jr., Director, Rensselaer County Industrial Development Agency, 1600 Seventh Avenue, Troy, NY;

- Letter dated February 4, 2009, from Jack R. Lebowitz, Attorney, Green Seifter Attorneys, PLLC, 110 West Fayette Street, Syracuse, NY. Attorney representing Joseph Van de Loo of ADG Properties, Inc., an off-site property owner;

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:

The first four comments were received from the responsible party (NPEC) and are addressed individually.

COMMENT 1: Section 1 of the PRAP states that wastes have impacted the groundwater at the site and have resulted in "a significant threat to the groundwater environmental resource associated with its best use as a Class GA source of drinking water." Based upon background groundwater quality, as measured at well MW-4B and MW-5B, the groundwater at the Site is not suitable as a Class GA source of drinking water. The groundwater concentrations of total iron range from 3.45 to 47.9 mg/L and dissolved iron range from 0.375 to 43 mg/L in wells upgradient of OUI and OU2 based on 2001 to 2005 data for monitoring wells MW-4B and MW-5B. These iron concentrations are above the aesthetic drinking water standard of 0.3 mg/L for a Class GA source of drinking water, as presented in the NYSDEC Division of Water and Operation Guidance Series (TOGS 1.1.1) (NYSDEC, 1998).

Based upon a search of the Water Well Information on the NYSDEC web site, there are no known water wells downgradient of OUI. The location of OU2 within the floodplain of the Hudson River would restrict the potential installation of a potable water supply well as such a well would have to be protected from seasonal surface water inflows. The ambient groundwater quality in the vicinity of OU2 (i.e. iron concentrations above the drinking water standard) would render the installation of a well for a potable water supply unlikely. Any requirements established to address treatment or alternative sourcing of water for impacted off-site properties should be based on a reasonable use of the existing groundwater and NPEC's responsibility will be associated with any incremental increase in cost of treatment or alternative sourcing of water (if any) that might be caused by ethyl ether and the pharmaceutical related compounds related to OU-1 found in the off-site groundwater.

RESPONSE 1: The “best use” of all groundwater in New York State is as a Class GA source of drinking water. The goal of groundwater remediation is to restore the groundwater to pre-release conditions. It is recognized that the groundwater resource in the upper unconsolidated aquifer in the contaminant plume area contains naturally occurring total and dissolved iron concentrations above both the TOGS 1.1.1 standard of 0.3 mg/L for a Class GA source of drinking water and consequently above the MCL for iron as outlined in Part 5 of the New York State Sanitary Code. The Department has considered this fact and has developed the site-specific remedial goals as outlined in Section 6 of the ROD. These goals

cover the Sterling Drug Site 3 related volatile and semi-volatile contaminants unspecified organic contaminants (UOCs), and not the naturally occurring inorganics.

The absence of the current use of groundwater as drinking water source at an impacted property parcel shall not exclude the need for remediation. There is no prohibition from installing a drinking water well in the flood plain. Engineering controls, drilling techniques and monitoring methods exist to deal with a groundwater source which may periodically have the potential to be influenced by surface water (flooding). While there is a greater potential for ingestion exposures to contaminated groundwater through use of a drinking water well, there is also the potential for inhalation exposures if irrigation wells are drawing in contaminated groundwater and therefore the aesthetic quality of the groundwater is not an issue for irrigation wells, but still warrants action to prevent the potential exposure.

The institutional controls (ICs) are based upon a reasonable use of the groundwater (as per present land use, applicable zoning and/or possible future use at the off-site impacted properties). The site management plan must address the Sterling Drug Site 3 related contaminants as it pertains to the required water treatment or alternative water source for the off-site area.

COMMENT 2: The risk assessment presented in the Focused Feasibility Study Report (CRA, 2008) indicates that the exposure to ethyl ether in OU2 groundwater for the hypothetical future resident is within acceptable limits. The State has not shown that there is a significant threat to human health. Although ethyl ether concentrations in OU2 groundwater are above the 50 ppb (ug/L*)* MCL for Unspecified Organic Contaminant (UOC), under 10NYCRR Part 5, the UOC level is not chemical-specific or site-specific. Concentrations above the UOC level of 50 ppb do not constitute a significant threat to human health as none is exposed to or drinking the groundwater within OU2.

In May 2008, the USEPA developed new risk-based screening criteria for ethyl ether of 7,300 ug/L for a residential tap water scenario. A property-specific target concentration of 1,460 ug/L for ethyl ether can be calculated for a groundwater (drinking water) scenario using the methodology provided in 6NYCRR Part 602. NYSDEC should use compound-specific criteria for chemicals of concern including ethyl ether.

RESPONSE 2: As outlined in the Department's letter of May 12, 2008, the Department reviewed NPEC's documentation concerning utilizing an alternative standard for ethyl ether other than the NYSDOH UOC of 50 ug/L. The studies and documentation do not provide adequate evidence that utilization of the proposed alternative concentration value would be as protective as the current

standard, and thus further consideration of this alternative standard is not warranted.

COMMENT 3: It is unlikely that vapor intrusion would be of concern for potential future receptors within OU2 based upon the location within the 100-year floodplain of the Hudson River. The floodplain location would likely limit the types and methods of building construction to industrial buildings that are slab on grade. Any requirements established to address vapor intrusion at impacted off-site properties should be reasonable and clearly limited to common construction practices.

RESPONSE 3: The requirements for vapor intrusion evaluations and mitigation of any impacted building will be conducted in accordance with the NYSDOH guidance document entitled: "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated October 2006.

COMMENT 4: The impermeable cover system for the landfill area is currently being redesigned to minimize the geographic footprint and meet other requirements at the site. It is recognized that prolonged negotiations with the property owners could delay implementation of the cover system and that any installation schedule would be dependent (on) the requirements and approval of the property owner.

RESPONSE 4: The cover system for the landfill is part of the Record of Decision(ROD) for OU-01. There are no negotiations, requirements or approvals needed with or from the impacted off-site (OU-02) property owners in order to implement the OU-01 landfill remedy.

The remainder of the issues raised either in writing during the comment period or verbally during the public meeting have been grouped into categories by topic. The following categories were utilized in order to address the same or similar comments received: (I) Nature and Extent of Contamination; (II) Health and Environmental Issues; (III) Remedy Selection and Implementation Issues; (IV) Other Issues.

(I) <u>Nature and Extent of Contamination</u>

COMMENT 5: What are the VOCs in the groundwater plume?

RESPONSE 5: The primary volatile organic chemical in the groundwater plume is ethyl ether (also known as diethyl ether).

COMMENT 6: Will the ethyl ether form a separate layer in the plume?

RESPONSE 6: The solubility of ethyl ether is approximately 69 grams per liter of water (69,000,000 ug/L). The current, relatively low concentrations at the site, in comparison to the solubility, would preclude the formation of a separate ethyl ether layer in the plume. In addition, historical monitoring data does not indicate

that ethyl ether concentrations were at any time high enough such that a separate light non-aqueous phase layer would have been present in the plume area.

COMMENT 7: Is Papscanee Creek impacted by the groundwater plume?

RESPONSE 7: Papscanee Creek flows on the overburden silt layer which is approximately 10 feet thick. The groundwater plume is in the upper unconsolidated aquifer below the silt layer and thus has had no impact on the creek.

COMMENT 8: The PRAP calls for continued monitoring of groundwater in the unconsolidated upper aquifer where the subject contamination of VOCs (ethyl ether) and SVOCs (pharmaceutical wastes) has occurred. The current network of wells within OU-2 are primarily wells screened in the lower twenty feet of the upper consolidated aquifer.

Given the propensity of the major subject contaminant, ethyl ether, to dissolve in groundwater and to rise towards the surface of the upper unconsolidated aquifer it is likely that the ethyl ether plume might be larger and at higher concentrations were it to also be measured by an expanded shallow well network with a screened interval in the upper section of the upper unconsolidated aquifer.

RESPONSE 8: The existing site monitoring network includes clusters of groundwater monitoring wells at a number of off-site locations. The monitoring wells are screened at the following intervals within the upper unconsolidated aquifer: “A” wells are screened at the top of the aquifer, “B” wells are screened at the bottom of the aquifer and “S” wells are screened over the entire upper aquifer. The current and historical data indicates that the highest concentrations of ethyl ether are detected in the “B” wells, screened at the bottom of the aquifer, followed by the “S” wells and then the “A” wells. Ethyl ether concentrations in the “A” wells has historically been well below the 50 ug/L SCG. See also RESPONSEs 6 and 19.

The elements of the remedy, include the design of an expanded monitoring network in order to determine the number and locations of the impacted properties as well as the degree of any impacts. This expanded network may include additional wells in clusters in order to monitor various depths within the aquifer. Based on this monitoring, additional figures will be generated as part of the reporting of this data.

COMMENT 9: The rate of bio attenuation is not defined.

RESPONSE 9: The ethyl ether and the pharmaceutical compounds have not been readily biodegraded at this site, thus a rate for this natural attenuation mechanism is not applicable. Physical processes such as dilution, dispersion and possibly volatilization are the attenuation mechanisms applicable to the site.

(II) Health and Environmental Issues

COMMENT 10: There is currently construction activity in the immediate vicinity of the plume and there are actual exposures occurring. Contractors are excavating 50' deep foundations for electric transmission line facilities associated with the Besicorp project. It is not clear whether the ground water being pumped out of the foundation pits is contaminated and, if so, how the contaminated ground water is being treated/disposed.

RESPONSE 10: This activity is occurring in areas that are upgradient (to the north and east) of both the landfill and the plume area and thus not in an area of site related groundwater contamination.

COMMENT 11: Our residents ought to be aware of any public health issues that could possibly affect their property and physical well being.

RESPONSE 11: Currently, there are no actual completed contaminant exposure pathways that exist. The remedy addresses the exposure pathways in the event of future development (use of groundwater and structures being built). According to the Department's citizen participation requirements, the public will be notified of any changes of site use (that may result in any potential exposure concerns to on-site workers or the nearby community) through the site contact list.

COMMENT 12: The plume cannot be allowed to discharge to the Hudson River.

RESPONSE 12: Based upon the concentration of contamination in the plume, the relatively low volume of potential groundwater contamination emerging to this surface water body and the river's assimilation capacity, discharges to the Hudson are not a significant environmental concern.

(III) Remedy Selection and Implementation Issues

COMMENT 13: I am in favor of a more in depth cleanup for the site in order to facilitate site redevelopment. As noted, Alternative G2 "would over time, reduce the toxicity of the contaminants in the site groundwater through dilution, dispersion and volatilization." I am not comfortable with the uncertainty of the time period referenced. A longer process and indefinite time table puts our residents and future land use at risk. I believe in a more complete mitigation, as detailed in Alternative G4 and Alternative G5. Both would better serve to resolve the situation, manifested both in our residents health as well as community redevelopment.

RESPONSE 13: Alternative G2, Institutional Controls is being proposed because it satisfies the threshold criteria and provides an acceptable balance of the primary balancing criteria. The elimination of the landfill (OU-01) as a source of contaminant migration along with secondary groundwater treatment system discharge would allow for the attenuation of the plume through dispersion, dilution and/or volatilization in the upper unconsolidated aquifer over time.

Currently there are no actual completed exposure pathways which would affect public health. Alternative G2 eliminates the impediments to redevelopment in terms of public health by addressing the exposure pathways if groundwater is utilized for drinking and/or process water and if structures are developed on the impacted properties.

In the event that an element(s) of the G2 remedy cannot be implemented, then the G5 alternative will be implemented as the contingency remedy.

COMMENT 14: In addition, as part of any final decision (remedy selection), I would implore the DEC to make allowances for an adequate number of public meetings and disclosure reports throughout the remediation project.

RESPONSE 14: The Department has followed the citizen participation requirements of the Inactive Hazardous Waste Disposal Site Remedial Program throughout the process. For a significant modification of the remedy, the Department would notify the public thru the site contact list. Fact sheets will be distributed through the design and remedial phases of the project.

COMMENT 15: By selection of option G2, the groundwater contamination plume is expected to exist at concentrations above regulatory values for many years to come. The restrictions to be placed on groundwater use will require a developer to either extend a municipal water line to the site, or install and operate a groundwater treatment system for an undefined number of years. These are both expensive requirements. Any new occupied structures on the site will require the design, installation, operation and periodic testing of a sub slab vapor capture system. Although these types of systems are relatively inexpensive at the time of construction, they also need to be maintained and monitored for years which add up over time. A site management plan often requires special handling of contaminated soils or groundwater if encountered during construction. Although we can not predict if either would be encountered during a redevelopment activity, they normally are not inexpensive to address if encountered.

RESPONSE 15: The remedy requires the installation and maintenance of the soil vapor mitigation systems if required, as well as the water treatment systems and/or alternative water source if needed. Thus, NPEC will be responsible for the costs associated with the design, installation, operation and maintenance of these systems.

Historical site data have not indicated the soils in the overburden silt layer, which is approximately 10' thick, have been contaminated at the off-site properties. Thus, it is not likely that there would be an exposure concern or a disposal issue with the soils if development occurs.

COMMENT 16: Without cleanup of the site, financing the development or refinancing the improvements may be difficult. Lenders may require an environmental insurance policy for a part or all of the term of the loan. Premiums for such policies can be expensive.

RESPONSE 16: Having a remedy in place which addresses the potential exposure pathways is protective of public health. This remedy will be enforced through a legally binding mechanism, including execution by the responsible party of an order on consent as per 6NYCRR Part 375-2.5, which will require the responsible party to fund any necessary remedial measures and to implement the approved site management plan, is a positive aspect in terms of potential redevelopment.

COMMENT 17: The current and future marketability of the site may be lessened if the site is not cleaned up.

RESPONSE 17: See RESPONSE 16.

COMMENT 18: As currently drafted, the PRAP, which deals with this contaminated "off-site" plume area, is implemented through NPEC giving easements to the Department, however, it is not explained how NPEC can grant such interests in real property which it does not own. Nor has NPEC (to our knowledge) contacted or met with any landowners to discuss the terms of such easements, or the interests and concerns of the landowners.

RESPONSE 18: The order on consent part of the G2 remedy will be executed between NPEC and the Department. The order will require the development, implementation and compliance with a site management plan. There will be no easements required as part of the remedy for the off-site private property parcels. The site management plan will cover both the on and off-site responsibilities.

COMMENT 19: With respect to informational content, the PRAP should be revised to include an additional figure: a general area map showing a plan view of the parcels and tax map number IDs with acreage and ownership of all lands within OU-2 including the farthest extent of any lands downgradient of the plume which might feasibly be necessary for monitoring purposes.

(I note that this information appears to be readily available, but for some unknown reason appears to have been redacted from the subject report through pixilation so that the referenced information is not legible. See PRAP Fig. 2 which shows the historical concentrations of the predominant contaminant of ethyl ether in groundwater within OU-2, with tax map parcel boundaries and redacted owner's names).

RESPONSE 19: There was no intent to "redact" through "pixilation" any information on any of the figures. The parcel boundaries depicted on figure 2 were from a real property tax parcel GIS polygon layer for Rensselaer County. The parcels were labeled with the owners data as listed in this GIS layer.

COMMENT 20: Since all alternative remedies call for future monitoring to assess the extent of continuing contamination within OU-2, ADG therefore respectfully requests that the PRAP and future orders require an expanded network of shallow wells within OU-2 to accurately represent groundwater contamination of ethyl ether

under these sites and to fully delineate the extent of the groundwater contamination.

RESPONSE 20: See RESPONSE 8.

COMMENT 21: The RP will enter into some kind of "easement", previously discussed, or consent order arrangement which will supposedly obligate NPEC to continue to monitor the subsurface contamination for the decades (perhaps even over 100 years, realistically) which might be required for this relatively persistent VOC contaminant plume to ever reach the Department's relevant 50 ug/l standard for Class A groundwater and drinking water.

RESPONSE 21: As part of the site management plan, an off-site monitoring program will be implemented. Also see RESPONSE 8.

COMMENT 22: On account of the proposed “easement”, NPEC would also be obligated to provide drinking water and mechanical vapor intrusion control systems if the now vacant lands in this area were developed. While the PRAP without discussion seems to assume that the lands will remain vacant and in agricultural uses for the future, the lands are zoned for industrial use and economic developments have been contemplated by ADG and others.

RESPONSE 22: There is no assumption that the impacted properties would remain vacant. The remedy is intended to address the exposure pathways in the event of development. If structures are built then there will be a continued evaluation of the potential for vapor intrusion for any buildings developed on the impacted off-site property(s), including provision for mitigation of any impacts identified. If groundwater is to be utilized at the off-site impacted property(s) for drinking water or process water, then an acceptable water supply alternative or the necessary water quality treatment as determined by NYSDOH for the Sterling Drug Site 3 related contaminants of concern will be provided.

COMMENT 23: ADG respectfully believes that the Department's proposed analysis of the various remedies and balancing tests engaged in Sections 7 and 8 of the PRAP are in error in favoring Alternative G2, “Institutional Controls”. We believe this approach is really just "kicking the can" of this significant contamination problem into the distant future, where a correct and responsible remedy may be needed but uncertain or unavailable. (Note: Comment is verbatim as received)

RESPONSE 23: See Response 13.

COMMENT 24: The concentrations in the ethyl ether plume are very high, several orders of magnitude higher than the relevant environmental quality standard of 50 ug/l (ppb). As noted above, the Department's and NPEC's preferred remedy of natural attenuation / institutional controls assumes that individuals and organizations will continue to monitor and respond to this contamination essentially in perpetuity. Given today's turbulent business environment, the need for even the most solvent

companies to hoard cash and the questionable prospects for the RP's parent corporation, one cannot be assured that the problem will be able to be dealt with in the future as the Department seems to assume.

RESPONSE 24: The on-site property owner (NPEC) will be required to enter into an order on consent with the Department, to ensure the long term implementation, maintenance, monitoring and enforcement of the institutional controls for both the on and off-site areas.

COMMENT 25: As previously discussed; it cannot be assumed that a financially solvent RP will be ready, willing and able to quickly provide the requested alternative clean water supply or vapor controls should owners wish to develop their properties to their highest and best use. At best, even with a cooperative and solvent RP, the regulatory delays and procedures would not make these sites "shovel ready" without significant time and effort. At worst, the site remains contaminated forever and is another "orphan site" with no source of income for cleanup other than limited state funds.

RESPONSE 25: See RESPONSE 13 and 24.

COMMENT 26: While the site remains contaminated under a "natural attenuation/institutional controls regime as proposed, such contamination puts the property under a legal and perceptual cloud as an “inactive hazardous waste site" which makes it much harder to attract industrial tenants and necessary capital. Such a “cloud” is especially inequitable where it falls on entirely innocent parties and the community's plans for economic development in the affected area.

RESPONSE 26: Alternative G2 is protective of human health and the environment and will eliminate and/or control the two pathways of potential exposure. Also see RESPONSEs 13, 16, 22 and 24.

COMMENT 27: As previously discussed, the Department’s preferred Alternative G2 and the associated discussions of “easements” negotiated between the Department and NPEC is legally impractical and infeasible conceptually, because it entirely fails to consider that the remedial activities take part on property owned by uninvolved third parties who have not negotiated or consented to allow any easements or other interests.

For all of the above reasons, landowner ADG respectfully submits that the Department should amend the PRAP in the manner suggested, including selection of remedial alternative G5 which it has also determined to be reasonable, effective and financially achievable within a span of several years to remove the residual contamination in OU-2 to applicable and relevant standards.

RESPONSE 27: See RESPONSE 13 and 24.

COMMENT 28: Island Park submits these comments to protect its property interests and to make certain that the Responsible Parties ("RPs"), Eastman Kodak Company and 360 North Pastoria Environmental Corporation, ("NEPC"), remain fully responsible for funding and implementing the long term remedial activities, including institutional and engineering controls associated with the New York State Department of Environmental Conservation's ("NYS DEC") selected remedy. Moreover, as more fully described below, Island Park seeks confirmation, and a commitment from the NYSDEC, that the RPs will be compelled to implement any abatement measures necessary in the future to allow for the use and development of the adjacent private property, including but not limited to: (i) the treatment of water supplies extracted from the groundwater, (ii) the elimination of soil gas and vapor intrusion risks in the event of future building construction, and (iii) the implementation of any necessary soil management or groundwater management measures associated with future construction.

These commitments to address the subsurface contaminant plume are necessary because the NYS DEC remedial measure abandons contaminants in the subsurface of private property and permits the continued migration of contamination across private property that is expected to provide for commercial and agricultural development.

RESPONSE 28: See RESPONSEs 13, 15, 16, 22 and 24.

COMMENT 29: Island Park plans to use groundwater from this area to irrigate its crops. The adjacent field is currently being used for sod production. Island Park intends to pump groundwater from this source and is concerned about the impact of the plume.

RESPONSE 29: The Department should be notified if a drinking or irrigation well is going to be constructed. Although the historical monitoring data does not indicate that the groundwater contamination above SCGs extends to Island Park's adjacent property parcel to the north, it would be prudent to try to locate a well such that it's zone of influence does not include the landfill (OU-01) or plume area (OU-02). However, if the groundwater is to be utilized for drinking water or process water (irrigation) and it is determined to be contaminated from the Sterling Drug Site 3 related contaminants then an acceptable water supply alternative or water quality treatment as determined by NYSDOH will be provided as per the remedy.

COMMENT 30: In order to avoid the future risk of inhalation of chemical vapors, ingestion of contaminated water, or dermal exposure to contaminated groundwater or subsurface soils, the selected remedial action must make appropriate provision to address such future contingencies, and must leave the burden of implementation squarely on the RPs.

RESPONSE 30: See RESPONSE 24.

COMMENT 31: Because of the potential for exposure pathways: (i) inhalation from vapors, (ii) dermal during future site construction, (iii) ingestion from contaminated groundwater, and (iv) damage to crop land from irrigation by pumping of groundwater and/or spraying of groundwater directly onto crops, it is necessary and appropriate that future use of the properties be taken into account. The contemplated future use of the property is expected to initially be agricultural, followed by possible commercial building development. As such, any remedial action plan must address the need to eliminate such exposure pathways in order to avoid both the impairment/preclusion of properly zoned activity and third party tort liability.

RESPONSE 31: See RESPONSE 15 and 24.

COMMENT 32: The elimination of such pathways will necessitate specific activity planning, such as the planting of crops and/or the construction of structures, and the expenditure of funds to engineer solutions such as, but not limited to: (i) the installation of a sub-slab depressurization system (SSDS) for vapor elimination and mitigation, (ii) the installation of carbon treatment system(s) for water supplies, both for agricultural use and commercial purposes, and (iii) the possible excavation, removal, transport and proper disposal of impacted soils and contaminated groundwater during construction activities. In addition, future construction work will be somewhat complicated because of health and safety issues associated with subsurface excavation activities.

RESPONSE 32: See RESPONSEs 15, 22 and 24.

COMMENT 33: The NYS DEC must select a remedial action program that does not permit the abandonment of contamination on the adjacent private lands such that the OU 2 plume impairs our client's use of his property. In the event that a continuing trespass is tolerated by the NYS DEC, that is, the plume is not immediately removed from the adjacent off-site property, the selected remedial action must require that the RP be responsible for fully, completely and unambiguously responding to future contingencies so that the groundwater can be used, crops can be cultivated, and the property can be commercially developed. Island Park does not agree to a remedial action that forever stigmatizes its property, permits the abandonment of chemicals in the subsurface of its property, and eliminates the value and use of the property.

RESPONSE 33: See RESPONSEs 13, 15, 16 and 29.

COMMENT 34: Island Park wishes to cooperate with the NYS DEC, but the innocent down-gradient landowner cannot be expected to simply tolerate the abandonment of contamination in the subsurface that causes significant property use limitations. The selected remedy must specifically mandate that future groundwater treatment, vapor intrusion protection (SSDS) and future handling and disposal of contaminated media will be at the expense of the PRP. As such, the selected remedial action should provide that a long term contingency fund be established to insure that monies will be available for the monitoring and implementation of

engineering controls associated with the use and development of the contiguous down-gradient parcel owned by Island Park. This fund would also provide for payment for any annual certifications required because of the future abatement measures.

The innocent, down-gradient adjacent property owner must not be burdened with such obligations and costs that are a direct result of the NYS DEC decision not to pump and treat the contaminated groundwater or to implement another feasible active remedial action so as to remove the plume of contamination.

RESPONSE 34: See RESPONSEs 15, 16 and 24.

COMMENT 35: Island Park respectfully requests that the NYS DEC specify in the selected remedial action plan that the Responsible Party is responsible for engineering measures and abatement steps that will be necessary to allow for: (i) the present and future use of groundwater on the adjacent parcel and (ii) the present and future commercial development of the parcel. The NYS DEC cannot simply abandon contamination on the adjacent parcel without mandating that the RP remains liable for the necessary handling, management, removal and disposal of the chemical contamination associated with the Operable Unit 2 Site. Island Park's property rights as to the adjacent parcel and as to the easement across Operable Unit I must not be extinguished or significantly impaired.

RESPONSE 35: See RESPONSEs 13, 15, 16, 24 and 29.

COMMENT 36: Will there be restrictions on the use of the impacted off-site properties?

RESPONSE 36: Implementation of the remedy will not impose any land use restrictions on the impacted off-site properties.

COMMENT 37: How will this remedy affect property values?

RESPONSE 37: Local property values are beyond the scope of this ROD.

COMMENT 38: Will there be easements placed on my property?

RESPONSE 38: See RESPONSE 18.

COMMENT 39: How will the monitoring network be installed and how will you get access to the off-site properties.

RESPONSE 39: Additional groundwater monitoring wells will be installed utilizing standard drilling techniques. Also see RESPONSE 18.

COMMENT 40: What kind of financial assurances are available to insure that in 15 or 20 years Kodak will be able to follow through with the ICs?

RESPONSE 40: See RESPONSE 24.

COMMENT 41: Is there a mechanism to shorten the implementation time of the remedy?

RESPONSE 41: The Department believes that six months to implement the remedy is a reasonable time frame.

COMMENT 42: If DEC modifies the G2 remedy or selects a different alternative how will the public be notified?

RESPONSE 42: See RESPONSE 14.

(IV) <u>Other Issues</u>

COMMENT 43: DEC should also advise whether the site would be eligible for the Brownfields Cleanup Program so a new developer can take advantage of tax credits for developing this site under the restrictions and controls to be imposed, and off set the costs associated with them.

RESPONSE 43: The BCP program addresses contamination due to contaminant sources on a given property. Unless the off-site areas had contaminant sources located on them, they would not be eligible for the BCP.

COMMENT 44: The PRAP fails to make it clear that most, if not all, of the lands within OU-2 - the "off-site" area where the subsurface contaminant plume has migrated from the hazardous waste landfill (a/k/a, “OU-l”) -- are not owned by the Responsible Party ("RP”) for the regulated "site", 360 North Pastoria Environmental Corporation ("NPEC”), a wholly owned subsidiary of Eastman Kodak Co., but rather, by private landowners.

RESPONSE 44: Section 5 of the PRAP document noted that, “the groundwater plume has impacted a number of off-site private property parcels” .

COMMENT 45: As a relevant aside the lack of visible NPEC representation and input in the recent Public Information Meeting at the East Greenbush Community Library on January 24, 2009 is of concern and emblematic of the RP's non-communicative and non-cooperative approach to the landowners within OU-2.

RESPONSE 45: Based upon the meeting sign-in sheets there was a representative from NPEC/Kodak present. However, the public meeting was a Department activity to present the Department’s proposed remedy and solicit comments as part of the citizen participation for the site, not a NPEC activity.

COMMENT 46: It appears that the predominant ethyl ether problem was caused or exacerbated by the Department's remedial activities at OU-l performed by NPEC

particularly an ineffective or improperly designed carbon filtration system which did not remove the ethyl ether contaminant but actually spread it to the current OU-2 plume under discussion. It seems reasonable and equitable in this instance that a mess made by the cleanup of OU-l should not be pushed on to other parcels outside the regulated "site" as a more or less permanent solution to the overall site contamination.

RESPONSE 46: The groundwater plume migrating from the landfill to the off-site areas was originally discovered during the Phase I and II investigations in the 1980s. The primary source of the contaminants in the plume were the wastes disposed in the landfill. The groundwater treatment system (GWTS) was started in 1996 and utilizes air stripping and granular activated carbon polishing to remove the contamination. Although these systems removed a large percentage of the ethyl ether, they were not 100 % efficient for the removal of this compound. Thus the GWTS discharge represents a secondary source.

COMMENT 47: What is the status of the groundwater treatment system now and will Kodak be allowed to once again discharge ethyl ether to the groundwater?

RESPONSE 47: Operation of the OU-01 GWTS was discontinued in April of 2007 due to flooding. Upon restart, there was mechanical failure of the air stripper component of the system. Based upon this and the results of the long term monitoring the RP requested to permanently discontinue operation of the groundwater extraction and treatment system. Since this time the Department has been evaluating this request by analyzing the data from the semi-annual and biennial monitoring events. If, in the future, the Department approves the request, then the implementation of alternative G5 as a contingency plan to provide further active groundwater treatment for the landfill area will be evaluated. Implementation will be based upon the results of the long term monitoring. If the GWTS is restarted, discharges to groundwater above the UOC ethyl ether standard of 50 ug/L will not be allowed.

COMMENT 48: What is the status of the landfill cap and why hasn't it been capped yet?

RESPONSE 48: The remedial objectives outlined in the 1992 ROD for the contaminated subsurface soils at OU-01specified that the vapor extraction treatment system (and subsequent air sparging system) would operate until specific contaminant levels were achieved or until performance data indicates that the system was no longer effective. Once it was determined that a significant mass of contamination had been removed, the containment portion (landfill capping) of the selected alternative for OU-01 would be implemented. This determination was made in November of 2007, at which time the Department directed that the landfill capping phase of the remedy be implemented.

NPEC recently completed a study to further delineate the exact extent of the fill materials at OU-01. This information is being incorporated into a revised landfill cap design.

NPEC Inc. 3800 Dewey Avenue, #317 • Rochester, NY 14616-2579

January 28, 2009

Mr. Randy Hough
NYSDEC, Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7013

Dear Mr. Hough:

Re: Comments Regarding the New York State Department of Environmental Conservation's (NYSDEC's) Proposed Remedial Action Plan, Operable Unit 2 Sterling Site 3, East Greenbush, New York

Sterling Drug Site 3 consists of two operable units and is located in East Greenbush, Rensselaer County, New York. Operable Unit 1 (OU1) consists of the inactive Sterling Drug Site 3 landfill owned by NPEC, Inc. Operable Unit 2 (OU2) consists of the groundwater plume that extends from the western boundary of the inactive Sterling Drug Site 3 landfill (OU1) in a northwesterly direction. NPEC Inc. has reviewed the NYSDEC's Proposed Remedial Action Plan (PRAP) for Sterling Drug Site 3; Operable Unit 2 (OU2) dated January 2009. NPEC's comments on the PRAP for OU2 are presented below.

Comments Regarding the NYSDEC PRAP Dated January 2009

1. Section 1 of the PRAP states that wastes have impacted the groundwater at the site and have resulted in "a significant threat to the groundwater environmental resource associated with its best use as a Class GA source of drinking water." Based upon background groundwater quality as measured at well MW-4B and MW-5B, the groundwater at the Site is not suitable as a Class GA source of drinking water. The groundwater concentrations of total iron range from 3.45 to 47.9 mg/L and dissolved iron range from 0.375 to 43 mg/L in wells upgradient of OU1 and OU2 based on 2001 to 2005 data for monitoring wells MW-4B and MW-5B. These iron concentrations are above the aesthetic drinking water standard of 0.3 mg/L for a Class GA source of drinking water, as presented in the NYSDEC Division of Water and Operation Guidance Series (TOGS 1.1.1) (NYSDEC, 1998).

   Based upon a search of the Water Well Information on the NYSDEC web site, there are no known water wells downgradient of OU1. The location of OU2 within the floodplain of the Hudson River would restrict the potential installation of a potable water supply well as such a well would have to be protected from seasonal surface water inflows. The ambient groundwater quality in the vicinity of OU2 (i.e. iron concentrations above the drinking water standard) would render the installation of a well for a potable water supply

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unlikely. Any requirements established to address treatment or alternative sourcing of water for impacted off-site properties should be based on a reasonable use of the existing groundwater and NPEC's responsibility will be associated with any incremental increase in cost of treatment or alternative sourcing of water (if any) that might be caused by ethyl ether and the pharmaceutical related compounds related to OU-1 found in the off-site groundwater.

2. The risk assessment presented in the Focused Feasibility Study Report (CRA, 2008) indicates that the exposure to ethyl ether in OU2 groundwater for the hypothetical future resident is within acceptable limits. The State has not shown that there is a significant threat to human health. Although ethyl ether concentrations in OU2 groundwater are above the 50 ppb (μg/L) MCL for Unspecified Organic Contaminant (UOC), under 10NYCRR Part 5, the UOC level is not chemical-specific or site-specific. Concentrations above the UOC level of 50 ppb do not constitute a significant threat to human health as none is exposed to or drinking the groundwater within OU2.

   In May 2008, the USEPA developed new risk-based screening criteria for ethyl ether of 7,300 μg/L for a residential tap water scenario. A property-specific target concentration of 1,460 μg/L for ethyl ether can be calculated for a groundwater (drinking water) scenario using the methodology provided in 6NYCRR Part 602. NYSDEC should use compound-specific criteria for chemicals of concern including ethyl ether.

3. It is unlikely that vapor intrusion would be of concern for potential future receptors within OU2 based upon the location within the 100-year floodplain of the Hudson River. The floodplain location would likely limit the types and methods of building construction to industrial buildings that are slab on grade. Any requirements established to address vapor intrusion at impacted off-site properties should be reasonable and clearly limited to common construction practices.

4. The impermeable cover system for the landfill area is currently being redesigned to minimize the geographic footprint and meet other requirements at the site. It is recognized that prolonged negotiations with the property owners could delay implementation of the cover system and that any installation schedule would be dependent the requirements and approval of the property owner.

If you have any further questions regarding this information, please feel free to contact Mr. Robert Call at (585) 477-2012 or myself.

Yours truly,

cc: M. Komoroske, NYSDEC
M. Schuck, NYSDOH
R. Call, Quantum Management

APPENDIX B

Administrative Record

Administrative Record

Sterling Drug Site 3
Operable Unit No. 02
Site No. 442011

1. Proposed Remedial Action Plan for the Sterling Drug Site 3, Operable Unit No. 02, dated January 2009, prepared by the Department.

2. Order on Consent, Index No. 437T072382, between the Department and Sterling Drug Inc., executed on August 6, 1982.

3. Amendment to the Order on Consent, Index No. T061485, between the Department and Sterling Drug Inc., executed in 1986.

4. Order on Consent, Index No. A4-0281-92-04, between the Department and Sterling Winthrop Inc., executed on March 29, 1993.

5. Order on Consent, Index No. A4-0404-9911, between the Department and North Pastoria Environmental Corporation (NPEC), executed on May 16, 2000.

6. "Sterling Drug Inc. Site Number 3, I.D. Number 442011, Record of Decision", March 1992, prepared by the NYSDEC Division of Hazardous Waste Remediation.

7. "Focused Feasibility Study Report, Sterling Site 3, East Greenbush, New York", September 2008, prepared by Conestoga-Rovers & Associates.

8. "Biennial Groundwater Sampling Program", June 2008, prepared by Conestoga-Rovers & Associates.

9. Fact Sheet: Proposed Remedial Action Plan and Citizen Participation process for the Sterling Drug Site 3, Operable Unit No. 02, January 5, 2009.