PROPOSED RECORD OF DECISION AMENDMENT, OPERABLE UNITS 1 AND 2, CHEMICAL SALES CORPORATION (CHEMCORE) SITE

Town of Gates / Monroe County / Registry No. 828086 April 2025

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

SECTION 1: PURPOSE AND SUMMARY OF THE PROPOSED RECORD OF DECISION AMENDMENT

The New York State Department of Environmental Conservation (The "Department" or "NYSDEC"), in consultation with the New York State Department of Health (NYSDOH), is proposing an amendment to the Record of Decision (ROD) for the above referenced site. The disposal of hazardous wastes at this site, as more fully described in the original ROD document and Section 6 of this document, has caused the contamination of various environmental media. The proposed amendment is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This amendment identifies the new information which has led to this proposed amendment and discusses the reasons for the preferred remedy.

NYSDEC has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375 Environmental Remediation Programs. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

On March 31, 2000, the New York State Department of Environmental Conservation signed a ROD for Operable Unit 1 (OU1) selecting steam stripping to remove contaminants from the soil, bedrock, and groundwater. On March 1, 2001, the Department signed another ROD for Operable Unit 2 (OU2), which selected on-site hydraulic containment and monitored natural attenuation of the off-site plume. A fiscal review of the steam stripping remedy found it to be infeasible, so the 2000 OU1 ROD was amended in 2010 to select excavation and off-site disposal of soils impacted with greater than 10 ppm total VOCs along with groundwater extraction and treatment. The 2010 OU1 ROD amendment work elements were not implemented due to the anticipated challenges and costs related to the groundwater extraction and treatment, leading the Department to commission additional investigation. The Department completed a Supplemental Remedial Investigation and Feasibility Study (RIFS) from 2021 through 2023. The results of the additional investigation, which included a groundwater monitoring program and showed significant decreases in the concentration of contamination present at the site, and the time between the 2010 ROD amendment for OU1 and the proposed implementation, supported updating the ROD for both OU1 and OU2 to reflect current conditions and technologies. Based on the results of the supplemental RIFS, the Department proposes soil excavation, in situ chemical reduction, and long-term groundwater monitoring under the Site Management Plan (SMP) with institutional and engineering controls as the amended remedy.

SECTION 2: CITIZEN PARTICIPATION

NYSDEC seeks input from the community on this proposed ROD Amendment. This is an opportunity for public participation in the remedy selection process. The information here is a summary of what can be found in greater detail in reports that have been placed in the Administrative Record for the site. The public is encouraged to review the reports and documents, which are available at the following repository:

Town of Gates Public Library
902 Elmgrove Road
Rochester, NY 14624
Phone: (585) 247 6446
Hours: Monday through Thursday: 9am -8pm
Friday: 9am -6pm
Saturday: 9am -5pm
Sunday: CLOSED

A public comment period has been set for June 2, 2025 to July 1, 2025, to provide an opportunity for you to comment on these proposed changes. A public meeting is scheduled for June 16, 2025 at 1605 Buffalo Road, Rochester, 14624 beginning at 6:00 pm.

At the meeting, a description of the original ROD and the circumstances that have led to proposed changes in the ROD will be presented. After the presentation, a question-and-answer period will be held, during which you can submit verbal or written comments on the proposal. We encourage you to review this summary and attend the meeting.

Written comments may also be sent to:

Kira Bruno, Project Manager
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
kira.bruno@dec.ny.gov

NYSDEC may modify or reject the proposed changes based on new information or public comments. Therefore, the public is encouraged to review and comment on this proposal. Comments will be summarized and addressed in the responsiveness summary section of the final version of the ROD Amendment. This ROD Amendment is NYSDEC's final selection of the remedy for the site.

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Chemical Sales site is located at 190 Lee Road on an approximately 0.86-acre parcel landlocked by a larger 6.6-acre parcel. The site is located in an urban area in the Town of Gates, at the western boundary of the City of Rochester. See Figure 1.

Site Features: Residential, industrial, and commercial properties are located directly to the west and south of the site, along both Lee Road and Person Place. The New York State Barge Canal (Canal) and a paved recreational path are situated to the east and north of the site. The site is currently inactive with an abandoned 9,000 square foot building. The site and surrounding developed areas are serviced by public water supplied by Monroe County. The Canal is designated as a Class B surface water body. Class B Classification indicates its best usage is for swimming and other contact recreation, but not for drinking water.

Current Zoning/Use(s): The 0.86-acre site is currently mostly inactive. The surrounding 6.6-acre parcel and part of the 0.86-acre site is currently utilized as a storage yard for heavy construction equipment and materials by a transportation contractor. Both parcels are zoned as General Industrial by the Town of Gates. The nearby surrounding parcels to the north, and west, which include primarily developed properties, are zoned for General Business, One-Family Residential, and General Industrial purposes. There are four census tracts within a half-mile vicinity of the site that meet the criteria of disadvantaged communities (DACs) and potential environmental justice area (PEJAs) under the Climate Leadership and Protection Act (CLCPA).

Historical Use(s): The site is the location of a former solvent repackaging company that operated at this location from 1976 to approximately 1997. Assorted chemicals, primarily flammable and chlorinated solvents, were purchased in bulk and repackaged into smaller containers for resale. These operations resulted in the release of chlorinated solvents and other solvents at the site, some of which migrated from the site to surrounding areas, including groundwater. site contaminants include VOCs, including chlorinated solvents, some petroleum-related contaminants, as well as some non-halogenated solvents.

Operable Units: In January 2000, the NYSDEC determined that contamination from the site should be addressed in two operable units. OU1 includes the area west of the Canal, consisting of the Chemical Sales property, contaminated portions of the surrounding properties, groundwater west of the Canal, and a drainage ditch between the site and the Canal. OU2 consists of groundwater beneath the off-site area east of OU1 and the Canal.

Site Geology and Hydrogeology: The following geologic units underlie the site from the surface down: urban fill; unconsolidated silt, sand, clay, and gravel (glacial till); and bedrock. The thickness of the overburden east of the Canal varies, but in general ranges from a few feet to approximately 7 feet thick. Beneath this, the bedrock consists of dolomite and shale. Overburden groundwater is present at depths of a few feet below ground surface and generally flows easterly and northeasterly towards the Canal.

SECTION 4: LAND USE AND PHYSICAL SETTING

NYSDEC may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. The Chemical Sales Corporation site is currently zoned for General Industrial use and is located in an area of mixed business and residential use.

SECTION 5: 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.

PRPs documented to date, include:

- Chemcore (the former Chemical Sales)
- 190 Lee Road, Inc

Chemcore declined to implement the RI/FS at the site when requested by the NYSDEC. After the remedy was selected, the PRP was contacted to assume responsibility for the remedial program. Chemcore, Inc was declared bankrupt in Case No. 94-12639B and the Department received $283,428.38 under the bankruptcy settlement.

The PRPs are subject to legal action by the State for recovery of all response costs the State has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of Environmental Assessment

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

The initial on-site RI was conducted between 1998 and 2000, with off-site testing occurring in 2000. These studies concluded that the contamination from the Chemical Sales site should be addressed in two operable units; with OU1 consisting of the area west of the Canal, including the Chemical Sales property, contaminated portions of the surrounding property, groundwater west of the Canal, and a drainage ditch between the site and the Canal. OU2 consists of groundwater beneath the off-site area east of OU1 and the Canal. In 2022, additional soil, groundwater, and surface water sampling was completed as part of a supplemental RI.

Soil and groundwater have been analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), PFAS, and pesticides. Based on investigations conducted to date, the primary contaminants of concern for OU1 and OU2 include chlorinated volatile organic compounds (CVOCs), benzene, toluene, ethylbenzene, and xylenes (BTEX). SVOCs are also a contaminant of concern for OU1 surface soils.

Soil – Several SVOCs exceed their respective soil cleanup objective for commercial use in the surface soils within the eastern side of OU1 with the maximum concentration 36 mg/kg (benzo(a)fluoranthene). These exceedances are limited to three sample locations. No contaminants of concern exceeded their respective soil cleanup objective (SCO) for commercial use in subsurface soils. The following contaminants exceeded their SCO for protection of groundwater: 1,3,5-Trimethylbenzene, Isopropylbenzene, n-Propylbenzene, Toluene, and 1,2,4-Trimethylbenzene, Ethylbenzene, Methyl ethyl ketone, Xylene, Chrysene with a maximum concentration of 415 mg/kg (xylene). Data does not indicate off-site impacts in soil related to this site.

Groundwater – Within the overburden groundwater, the following contaminants exceeded their respective Class GA standards: 1,1-DCA, 1,4-dioxane, benzene, ethylbenze, total Xylenes, 1,1,1-trichloroethane (1,1,1-TCA), cis-1,2-DCE, 1,1-DCA, chloroethane, methylene chloride, and vinyl chloride (VC) with a maximum concentration of 18,000 µg/l (chloroethane). Within the shallow, intermediate, and deep bedrock aquifers TCE and its associated degradation products as well as BTEX compounds are present exceeding their respective Class GA standards with a maximum concentration of 20,000 µg/l (cis-1,2-DCE, shallow), 71,000 µg/l (1,1,1-TCA, intermediate), and 210 µg/l (benzene, deep). Groundwater seeps were also sampled during investigations and the following contaminants exceeded their respective Class GA standards: 1,1-DCA, 1,1,1-TCA, 1,2-DCA, cis-1,2-DCE, benzene, ethylbenzene and VC. The maximum concentration was vinyl chloride at 780 µg/l.

Sediments – Due to the proximity to the Erie Canal sediment samples were collected with the approval from the New York State Canal Authority at seven locations, all of which were tested for TCL VOCs +10, TCL SVOCs +20 TICs and 1,4-dioxane, TCL Pesticides, TCL PCBs, TAL Metals, Mercury, Cyanide, and Total Organic Carbon (TOC). The following contaminants exceeded their Class A Freshwater Sediment Guidance values: PCBs, chromium, mercury, cadmium, copper, lead, nickel, and zinc with the maximum concentration of 390 mg/kg (zinc). However, exceedances of metals and PCBs do not appear to be site related and are likely attributable to other point discharges into the Canal from off-site sources. No contaminants exceeded their Class C Freshwater Sediment Guidance values.

Soil Vapor and Indoor Air: SVI results indicated that no actions were needed to address off-site exposures related to SVI. However, soil gas was screened during investigations and found to be contaminated with VOCs. Since there is soil contamination at the site, soil vapor is a medium of concern in the future use scenario if structures are built. Thus, soil vapor and indoor air will be evaluated as part of Site Management if a building is everconstructed and occupied on-site. Data does not indicate any off-site impacts in soil vapor related to this site.

6.2: Interim Remedial Measures

There were no IRMs performed at this site during the RI.

6.3: Summary of Human Exposure Pathways

Access is not restricted and people who enter the site could contact contaminants in the soil by walking on it, digging or otherwise disturbing the soil. People will not come into direct contact with contaminated groundwater unless they dig below the ground surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater and/or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The on-site building is unoccupied so inhalation of site contaminants in indoor air via vapor intrusion is not a current concern. However, the potential exists for inhalation of site contaminants due to soil vapor intrusion for any future on-site development. In addition, sampling indicates soil vapor intrusion [as a result of this site] is not a concern for off-site buildings. People may come in contact with contaminants present in the Erie Canal sediments while entering or exiting the Erie Canal during recreational activities.

SECTION 7: SUMMARY OF ORIGINAL REMEDY AND PROPOSED AMENDMENT

7.1 Original Remedy

A ROD Amendment was issued in March 2010 which modified the remedy selected in the 2000 OU1 ROD. The remedy selected in the March 2010 ROD amendment for OU-01consisted of excavation and off-site disposal of an estimated 11,000 cubic yards of soil with impacts greater than 10 ppm VOCs, a cover system over contamination on the site above 10 ppm VOCs if any remains, a pump and treat system for groundwater impacted at above 10 ppm total VOCs, an environmental easement, and continued site management. The OU2 remedy in the March 2001 ROD required on-site hydraulic containment and monitored natural attenuation of the off-site plume. The OU2 reedy did not change in the 2010 ROD Amendment.

7.2 Elements of the Remedy Already Performed

No elements of the remedy have been performed.

7.3 New Information

In the time between the 2001 OU2 ROD, the 2010 OU1 ROD amendment, and now, the technologies available to remediate the site have advanced. In addition, conditions, including contaminant concentration in groundwater, had changed sufficiently that the Conceptual Site Model (CSM) required revision.

The 2000 OU1 ROD selected in-situ steam stripping as the remedy to address contamination in the soil, bedrock, and groundwater below the site. The pilot study to gather data for the full implementation only garnered one bid, which was much higher than the engineer's estimate. It was concluded that steam stripping would not be feasible due to cost. The 2010 OU1 ROD amendment modified the selected remedy to excavation and offsite disposal of contaminated soil along with extraction and treatment of contaminated groundwater. The 2001 OU2 ROD still requires hydraulic containment to cut off the migration of contaminated groundwater across the canal and monitored natural attenuation of the off-site plume.

The additional investigation conducted at the time of the 2010 OU1 ROD amendment showed that the nature and extent of the contamination related to the site had changed in the decade since the 2000 OU1 ROD. Because the 2010 OU1 ROD amendment was not implemented due to the anticipated challenges and costs related to the groundwater extraction and treatment, and the amount of time that went by, the Department commissioned additional investigation. The additional RIFS was completed in 2021 through 2023 to update the CSM and update the nature and extent of contamination.

Also, since the initial OU1 ROD in 2000, the OU2 ROD in 2001 and 2010 OU1 AROD, the Green and Sustainable Remediation guidance document, DER-31, was published. DER-31 encourages assessment and implementation of GSR, and GSR techniques and technologies were assessed as part of the RIFS. This included a footprint analysis of the proposed remedies to quantify the footprint of each potential remedy. This footprint was used as a threshold criteria and in the evaluation of balancing criteria. In addition to assessing the footprint of the potential remedies, the location of the site was assessed per the Climate Leadership and Community Protection Act (CLCPA), section 7, for proximity to Disadvantaged Communities (DACs) and Potential Environmental Justice Areas (PEJAs) for the remedy's potential to

impact those nearby communities.

According to the CLCPA, disadvantaged communities (DAC) are identified based on a combination of environmental, economic, and health criteria. An evaluation was conducted for the Chemical Sales site to determine the proximity of the site to a DAC and whether the proposed remediation places a disproportionate burden on a DAC. Based upon this evaluation, the Chemical Sales site is located in and directly adjacent to DACs. The remedial design will incorporate elements to minimize the environmental footprint generated associated with the implementation of the required remedy and therefore reduce the associated overall environmental burden that may affect the identified DACs located near the site. This includes incorporation of many sustainable design elements including local sourcing of materials for backfilling, minimizing the of use of virgin natural resources, and reducing truck traffic and the impact of truck traffic as much as possible. Additionally, while the majority of the environmental burden will occur within a relatively short time frame, the long-term benefits—such as the reduction of exposure to hazardous wastes and the creation of new wetlands and habitat areas—are expected to bring lasting, positive effects to the surrounding communities.

In addition to updating the CSM, the supplemental RIFS updated the implementable technologies proposed in the various remedies. Extraction and treatment of groundwater is a long-term treatment and has significant energy costs associated with it. Groundwater sampling results for the site indicated that natural attenuation was occurring on the site and that biological or chemical enhancement of the already occurring processes would be a more effective and greener option to consider.

7.4 Proposed Changes to the Original Remedy

A summary of the changes to the original and Amended RODs as proposed in this document are shown in the Table on the following page:

SUMMARY OF PROPOSED REMEDY CHANGES
Chemical Sales (No. 828086) Record of Decision Amendment

Media:	2000 and 2010 OU1 ROD	2001 OU2 Amended ROD	2025 OU1 & OU2 Amended ROD
Groundwater	2000 OU1 ROD: (1) Long term monitoring 2010 OU1 ROD: (1) Groundwater extraction and treatment to capture groundwater with total VOC concentrations greater than 10 ppm (Pump and Treat) (2) Environmental Easement to restrict GW use	(1) On-site hydraulic containment through the use of pumping wells to isolate the off-site plume from the on-site remedy and cut off the migration of contaminated groundwater across the canal (2) Monitored Natural Attenuation of the off-site plume east of the canal	(1) In-Situ Chemical Reduction (ISCR) in the area bounded by the 10 ppm groundwater total VOC contour. See Figure 2. (*new*) (2) As part of the remedial design program, to evaluate the groundwater remedy with respect to green and sustainable remediation principles, the project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program. *(new)* (3) Long term monitoring *(no change)* (4) Environmental Easement to restrict groundwater use *(no change)*

Soil and Bedrock	2000 OU1 ROD: (1) In Situ steam stripping/extraction and off-site disposal of recovered contamination (2) Removal of approximately 150 yards of contaminated surface soils and off-site disposal 2010 OU1 ROD: (1) No implementation of the In-Situ steam stripping/ extraction (2) Excavation and off-site disposal of soil with total VOC concentrations greater than 10 ppm (3) Cover system installation (4) Environmental Easement to restrict land use to commercial use	N/A	(1) Excavation and off-site disposal of approximately 10,500 cubic yards of soil which exceed the protection of groundwater soil cleanup objectives (PGWSCOs) as defined by NYCRR Part 375-6.8. See Figure 3 for highlighted excavation area. It is assumed that, prior to excavation, the on-site building would be demolished and the remaining slab removed. See Figure 3. A cover system is not needed on the site due to removal of contamination. *(modified)* (2) Amendment of the bottom two feet of the excavation with approximately 1% by weight of Daramend or similar product to promote ISCR at the bedrock interface. *(new)* (3) In accordance with the DAC evaluation, specifically to address and minimize the truck traffic and further reduce the environmental footprint and the associated environmental burden on nearby disadvantage communities locally sourced materials should be used for infilling and for the

			cover system. In addition, given the location of the site with residences to the west and a bike path that runs along the canal, enhanced CAMP will be implemented during ground intrusive work. *(new)* (4) As part of the remedial design program, to evaluate the soil and bedrock remedy with respect to green and sustainable remediation principles. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program. *(new)* (5) Environmental Easement to restrict land use to commercial use *(no change)*

Soil Vapor/Indoor Air	2000 OU1 ROD: N/A 2010 OU1 ROD: (1) Continued evaluation of potential for SVI as part of Site Management	N/A	(1) No changes to the soil vapor remedy via this amendment.
Sediment	2000 & 2010 OU1 ROD: N/A	N/A	N/A

SECTION 8: EVALUATION OF PROPOSED CHANGES

8.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD and the first ROD Amendment. The goals selected for this site are:

- *Eliminate, to the extent practicable, off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*
- *Eliminate, to the extent practicable, exposures to volatile organic compounds in the surface soils.*
- *Eliminate, to the extent practicable, the migration of volatile organic compounds into the New York State Barge Canal.*
- *Eliminate, to the extent practicable, migration of LNAPL and DNAPL through removal and hydraulic management.*
- *Eliminate, to the extent practicable, exceedances of applicable environmental quality standards related to releases of contaminants to the waters of the state.*
- *Eliminate, to the extent practicable, the exposure of fish and wildlife to levels of volatile organic compounds above standards/guidance values.*

In addition to the goals identified in the original ROD and the first ROD amendment, the remedial goals are also updated to comply with DER-31 and the 2019 Climate Act. This includes incorporating Green and Sustainable Remediation (GSR) in the selected remedy.

- *Eliminate or reduce, to the extent practicable, the environmental footprint of the remedy and impact to nearby Disadvantaged Communities (DACs).*
- *Additionally, incorporate green remediation principles and techniques to the extent feasible.*

In accordance with NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation, the remedial goal for the site eliminates or mitigates all significant threats to human health and/or the environment, to the extent practicable, caused by contaminants present due to the release of various chemicals from the former chemical repackaging on-site.

8.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the

remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the original Feasibility Study.

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

1. Protection of Public Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment. Excavation and disposal of the soils with greater than 10 ppm total VOC and additional In- Situ Chemical Reduction (ISCR) treatment of the area with groundwater impacts above 10 ppm total VOCs provides protection of public health and the environmental by eliminating and treating the source of contamination, and implementation of the ISCR injection program addresses the plume area following excavation. This alternative would permanently reduce groundwater contamination in the significantly contaminated wells and reduce migration of contamination away from the site.

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 NYSDEC has determined to be applicable on a case-specific basis. Some important SCGs are listed below. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html.

- 6 NYCRR Part 375 – Environmental Remediation Programs, including the Inactive Hazardous Waste Disposal Site Remedial Program
- DER-10 – Technical Guidance for Site Investigation and Remediation
- DER-31 – Green Remediation
- NYSDEC Division of Water TOGS 1.1.1 – Ambient Water Quality Standards and Groundwater Effluent Limitations

Excavation and disposal of the soils with greater than 10 ppm total VOC and additional ISCR treatment of the area with groundwater impacts above 10 ppm total VOCs complies with SCGs. The groundwater is being treated to address contaminants above the Class GA standards and the soil exceeding protection of groundwater SCOs will be removed and properly disposed of off-site. In addition, the proposed amended remedy is anticipated to comply with CLCPA, as the proposed remedy meets the threshold criteria and is anticipated to have the lowest or smallest footprint as calculated with SiteWise. The proposed remedy also complies specifically with Section 7 (3) of CLCPA by including a DAC analysis.

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

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

The proposed amended remedy, excavation and disposal of the soils with greater than 10 ppm total VOC and additional ISCR treatment of the area with groundwater impacts above 10 ppm total VOCs, will

remove 10,500 cubic yards of soil. Thereby reducing the overall time needed to achieve the cleanup objectives and thereby increasing the short-term effectiveness and will complete the construction phase in a similar or shorter timeframe. Although the excavation component may result in short-term increases in truck traffic and the potential for airborne exposures, the short duration of the excavation, combined with standard control measures and monitoring (CAMP), will minimize the short-term impacts. In addition, the ISCR component will enhance the rate of the natural attenuation known to be taking place at the site and reduce the time needed to achieve remedial objectives.

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

The proposed remedy will permanently reduce groundwater contamination in the significantly contaminated wells and reduce migration of contamination away from the site. Monitoring would be required, and environmental easements would be required to prevent groundwater ingestion at the site and limit site use to commercial or industrial. This proposed remedy is similar to the long-term effectives and permanence of the additional alternatives; however, this alternative is preferred because of its use of both ISCR, Daramend backfill, and excavation to their respective extents. This remedy reduces the likelihood for future remedial action and is therefore an effective and permanent remedy.

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

The proposed remedy utilizes ISCR to reduce the toxicity, mobility, and/or volume of contaminants in groundwater after the soil with concentrations of total VOC exceeding protection of groundwater is excavated and disposed of. The excavation of 10,500 cubic yards of contaminated soil rapidly reduces the volume of contaminant present on the site which in turn reduces the overall toxicity and mobility. The ISCR, paired with the 2 feet of treated (1% by weight using Daramend) backfill will enhance the natural reduction that is already occurring on the site to further reduce all three components.

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

The proposed remedy is implementable. The equipment and materials needed for the proposed remedy are commercially available. Air monitoring will be critical during the excavation phase of the project. Environmental easements will have to be implemented to ensure that the use of the site is restricted to protect human health and the environment. Groundwater monitoring would be required after completion of the remediation.

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

The proposed remedy is the most cost effective for the level of protectiveness. Although some of the other alternatives are less costly, they will not be as protective of human health and the environment. The proposed remedy removes more of the contamination for only a minor increase in costs per alternative. In addition, removing more of the contaminant mass reduces the likelihood for future remedial actions costing additional monies.

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

8. Community Acceptance. Concerns of the community regarding the proposed changes are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which NYSDEC will address the concerns raised. If the final remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 9: PROPOSED AMENDED REMEDY

NYSDEC is proposing to amend the Record of Decision (ROD) for the Chemical Sales Site. The changes to the selected remedy are summarized in Section 7.3 above.

The estimated present worth cost to carry out the amended remedy is $10,117,205. The estimated present worth to complete the original remedy is $3,100,000. However, as discussed in the initial 2010 ROD Amendment, that estimate was made with little practical experience in implementing the selected remedial technology in fractured bedrock. The cost estimate included in the April 2009 FS to perform thermal remediation similar to the original remedy was approximately $21,300,000 which made clear that the original March 2000 ROD estimate was much lower that the actual cost to implement a thermal remedy. The 2010 AROD remedy would be estimated to cost at least $11,700,000. The cost to construct the proposed amended remedy is estimated to be $6,163,351 and the estimated average annual cost for 30 years is $25,175 per year and $385,870 total. The proposed remedy's social cost of carbon[1], is $155,660.70.

The elements of the proposed amended remedy for Operable Units 1 & 2 are listed below and identified as *unchanged, modified or new* when compared to the March 2010 OU-01 Amended remedy and the March 2001 OU-02 remedy:

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

1 The social cost of carbon is an estimate, in dollars, of the present discounted value of the future damage caused by a metric ton increase in emissions of a specific greenhouse gas into the atmosphere in that year or, equivalently, the benefits of reducing emissions of that gas by the same amount in that year. It is intended to provide a comprehensive measure of the net damages—that is, the monetized value of the net impacts—from global climate change that result from an additional ton of emissions. *(National Academies of Sciences, Engineering, and Medicine. 2017. Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide. Washington, DC: The National Academies Press. https://doi.org/10.17226/24651.)*

remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise(TM) (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

(*Modified)*

2. The existing on-site building(s) will be demolished and materials which cannot be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy. Excavation and off-site disposal of contaminant source areas, including soil containing total VOCs exceeding 10 ppm. Approximately 10,500 cubic yards of contaminated soil will be removed from the site. Backfill will be amended in the lowest two feet of excavations with Daramend or similar at a rate of 1% by weight. GSR BMPs will be implemented to reduce the footprint of the excavation

and off-site disposal. VOC emissions will be reduced by covering exposed soils and tarping haul vehicles and implementing dust suppression and a no visible fugitive dust policy, to the extent practicable. Implementation of more extensive Community Air Monitoring Program (CAMP) will be included if total organic vapor levels exceed 5 ppm above background, work activities shall be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. Background data will be collected prior to work commencing, to assess whether mitigation is needed.

(Modified)

3. In-situ chemical reduction (ISCR) will be implemented to treat VOCs in groundwater. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in an area bounded by the 10 ppm groundwater VOC contour to enhance reductive dichlorination that has been observed at the site. The method and depth of injection will be determined during the remedial design. Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. GSR BMPs will be implemented to reduce the footprint of the injections. Such as use of low emission and/or ultra-low sulfur diesel for equipment and vehicles used on site for transport and selection of fuel-efficient vehicles for transport, if possible. Use of concentrated treatment materials may be used to minimize shipping volumes and frequencies.

(New)

4. Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

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

(Unchanged)

5. A Site Management Plan is required, which includes the following:
    1. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

        Institutional Controls: the Environmental Easement discussed in Remedy Element 4 above.

        This plan includes, but may not be limited to:
        - an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
        - descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and NYSDEC notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

2. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
    - monitoring of groundwater to assess the performance and effectiveness of the remedy;
    - a schedule of monitoring and frequency of submittals to the NYSDEC;
    - monitoring for vapor intrusion for any future buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

(Modified)

6.0 NEXT STEPS

As described above, there will be a public meeting and comment period on the proposed changes to the selected remedy. At the close of the comment period, NYSDEC will evaluate the comments received and prepare a responsiveness summary which will be made available to the public. A notice describing NYSDEC's final decision will be sent to all persons on the site mailing list.

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

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