DER-31 / Green and Sustainable Remediation

New York State Department of Environmental Conservation

DEC Program Policy

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I. Summary

~~This document identifies~~ This policy document is issued pursuant to Sections 7(2) and 7(3) Climate Leadership and Community Protection Act (CLCPA, or the 2019 Climate Act), and Article 75 of the New York State Environmental Conservation Law (ECL), by the New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER~~)~~). This document outlines the requirements for green and sustainable remediation, climate resiliency analyses, impact analyses, and development of renewable energy systems, in support of achieving holistic remedial decisions on DEC regulated sites.

This document identifies DEC's approach to ~~remediating sites~~remedial decisions in the context of the larger environment, a concept known as green and sustainable remediation~~. "Green Remediation" (or greener cleanups) can be~~ (GSR). For purposes of this policy, GSR is defined in this document as "*~~the practice of considering~~remedial practices which consider all environmental effects ~~of remedy implementation and incorporating~~at all stages of the remedial process, and which incorporate options ~~to~~that minimize the environmental footprint and increase the resiliency of cleanup actions.*" ~~It is intended to be a holistic approach which improves the overall sustainability of the cleanups by promoting the use of more sustainable practices and technologies. Such practices and technologies are, for example, less disruptive to the environment, generate less waste, increase reuse and recycling, and emit fewer pollutants, including greenhouse gases (GHGs), to the atmosphere. The approach also recognizes the potential for positive~~Sustainability, environmental impact, and resiliency of all remedial decisions[1] should be considered and documented in each stage of remediation, from investigation through site management. Remedial decisions should support environmental, economic, and social benefits of site ~~reuse~~remediation and ~~supports~~ coordination of site reuse and remediation ~~to effect the most beneficial and sustainable reuse of the site.~~.

~~This document provides concepts and techniques of green remediation and guidance on how to apply them to DER's remedial programs, but does not specify methods or criteria to be used to quantify the effectiveness of~~

[1] Remedial decisions includes both remedy selection decisions and remedial decisions made during other phases of the environmental cleanup (e.g., site management, remedial system optimizations or other opportunities for ensuring the proposed approach is green, sustainable, and resilient).

~~the various green remediation concepts or remedial alternatives. The concepts will be considered and implemented to the extent feasible, and documented.~~

This policy applies to all ~~phases of the site cleanup process, from investigation through completion of remediation for sites~~remedial decisions in the Spill Response Program, Inactive Hazardous Waste Disposal Site Remedial Program (State Superfund Program), Environmental Restoration Program, Brownfield Cleanup Program, ~~Voluntary Cleanup Program, and the~~ Resource Conservation and Recovery Act (RCRA) Corrective Action Program~~.~~

~~I. POLICY~~

, and any other DER ~~is dedicated to developing and promoting innovative and effective cleanup strategies that restore contaminated sites to productive use, promote~~ environmental ~~stewardship, enhance resiliency, and reduce associated costs while minimizing ancillary~~cleanup program. For the purposes of this policy, a DEC regulated site refers to sites, including historic sites owned and operated by DEC, which are subject to a DEC program (State Superfund, Brownfield Cleanup Program, RCRA, Inactive Solid Waste Landfills, Mining Sites, or other DEC programs) and any site being redeveloped for renewable energy. At a minimum, a work plan, report, or other submission for each phase of an environmental ~~impacts from these~~cleanup, or any redevelopment of a DEC regulated site for renewable energy, will incorporate appropriate GSR best management practices (BMPs), a climate screening and/or climate vulnerability analysis, and GSR metrics tracking and reporting to the extent outlined herein. In addition, most environmental cleanups~~. To ensure equity and inclusion,~~ will be required to include a footprint analysis as part of remedy selection. GSR processes for emergency work (e.g., spill response to an initial incident, interim remedial measures to protect public health) may be limited to BMPs incorporated into standard operating procedures for those emergency actions.

II. POLICY

Consistent with the CLCPA, Commissioner's Policy (CP)-49/ Climate Change and DEC Action, and New York State Executive Order (EO)-22/ Sustainability and Decarbonization, this policy is written to provide guidance for applicants, remedial parties, consultants, contractors, and DEC staff when preparing, submitting, or reviewing GSR and climate resiliency documentation, data, or analyses in support of remedial decisions related to environmental cleanups or for the development of renewable energy systems on DEC regulated sites. This policy requires the consideration of GSR in all phases of remediation.

In accordance with the ~~Climate Act~~CLCPA, New York State will aim to ensure that all communities, but especially populations within disadvantaged communities~~,~~ (DAC), will benefit from ~~the State's investments and opportunities with implementing green remediation with an effort to prioritize and maximize~~ implementation of GSR, in particular prioritizing and maximizing reduction of greenhouse gases (GHG) and co-pollutants. Remedial decisions impacting DAC should comply with Section 7 of the CLCPA which requires that decisions made by state agencies do not disproportionately burden those communities. Section 7 further requires that state agencies prioritize reductions of GHG emissions and co-pollutants in ~~disadvantaged communities. Applying green remediation concepts, such as minimizing energy consumption, reducing GHG emissions, maximizing the reuse of land and the recycling and reuse of materials, and conserving natural resources such as soil, sediment, water and habitat helps to achieve that objective.Green remediation~~

~~concepts will be applied to the existing (ongoing) cleanups, beginning with the investigation phase and continuing throughout the project and including site management, and future cleanup of contaminated properties.~~ those communities.

This policy does not modify or replace existing remedial program goals~~. It is also~~ and objectives, but it seeks to ensure green and sustainable optimization of all phases of site remediation while preventing unacceptable risks to public health and the environment. This policy is not intended to encourage, and does not justify, implementation of a "no action" or lesser remedy based on GSR considerations when a more comprehensive remedy to address contamination is called for, appropriate, and feasible. ~~*The priority remains implementing remedies that are protective of public health and the environment.*~~

DER remains committed to implementing protective remedies in each program~~.~~ above all other considerations. Applying ~~green and sustainable~~GSR principles and technologies to each program, consistent with each program's enabling legislation and regulations, will increase the overall effectiveness, permanence, and cost-effectiveness of ~~the~~ environmental cleanups and will minimize the overall environmental footprint ~~of remediation~~.

~~Consistent with existing laws, including Environmental Conservation Law (ECL) Articles 1 and 3 and the Climate Leadership and Community Protection Act, regulations, DEC policy (e.g., CP-75) and with the growing national trend, this policy establishes an expectation (SectionV) for proactive consideration and/or application of green remediation techniques to all phases of work in existing and future cleanups.~~

~~The procedures set forth in this policy document are intended for the use and guidance of both DEC staff andremedial parties. They~~These requirements are not intended to create any substantive or procedural rights enforceable by any party in administrative or ~~judicial~~civil litigation with DEC. DEC reserves the right to act at variance with these procedures to address site-specific circumstances and to change them at any time.

III. PURPOSE AND BACKGROUND

~~Remediation clearly benefits~~ The CLCPA went into effect on January 1, 2020 (Chapter 106 of the ~~environment at~~ Laws of 2019). The CLCPA includes economy-wide requirements to reduce GHG emissions in New York State by 40% below 1990 levels by 2030, and ~~near~~85% below 1990 levels by 2050 (Environmental Conservation Law (ECL) §75-0107). It requires DEC to specify economy-wide emissions limits that correspond to those reduction requirements, which have been promulgated under 6 NYCRR Part 496, State Greenhouse Gas Emission Limits (Part 496). Additionally, CLCPA establishes a Climate Action Council that finalized the ~~site by making the site protective of public health~~first Scoping Plan in December 2022, which provided recommendations for meeting those limits and ~~the environment~~requires DEC to promulgate regulations on GHG emission sources that will ensure those limits are met (Scoping Plan) (ECL § 75-0109).

Section 7 of CLCPA requires that all state agencies assess and ~~by reducing or eliminating localized contamination. There is~~implement strategies to reduce their GHG emissions and ensure their actions do not disproportionately burden disadvantaged communities, particularly concerning greenhouse gas emissions and co-pollutants. It requires agencies to both avert such burdens and prioritize emission

reductions in these communities. In addition, it requires state agencies to analyze whether their permitting decisions, administrative decisions, and other actions are inconsistent with, or will interfere with, the attainment of the statewide GHG emission limits established in ECL Article 75. Further, a detailed justification, including the identification of alternatives and GHG mitigation measures, must be created to proceed with a decision that would be inconsistent with the requirement. For purposes of the CLCPA, statewide GHG emissions include the total annual emissions of GHGs produced within the state from anthropogenic sources; upstream, out-of-state GHG emissions associated with the generation of electricity imported into the state; extraction, transmission, and use of fossil fuels imported into the state; any downstream emissions attributable to the remedy (ECL § 75-0101(13)); and emissions related to any mitigation measures imposed to meet state GHG emissions limits. 6NYCRR Part 496 adopts limits on the emissions of greenhouse gases from across the State and all sectors of the State economy for the years 2030 and 2050, as a percentage of 1990 emission levels of 60 percent and 15 percent, respectively, as established in the Climate Leadership and Community Protection Act, chapter 106 of the Laws of 2019.

The purpose of this policy is to consider environmental cleanups in a larger context, requiring that environmental cleanups consistently and proactively apply sustainable methods while still protecting public health and the environment, advancing environmental justice, and meeting established cleanup standards. When a cleanup action can be undertaken that results in fewer GHG emissions and conforms with GSR principles while providing the same or more public health and environmental protection, DER will select or require such actions by remedial parties.

This policy requires tracking and reporting of GSR metrics in each step of the remedial process except for site management that demonstrably uses minimal energy or resources. The policy requires a BMP assessment at each step of the remedial process, and a footprint analysis unless the cleanup action is subject to the exceptions detailed in Section V. Finally, this policy includes information related to installation of renewable energy systems and production of renewable energy on DEC regulated sites detailed in Section V(D).

IV. RESPONSIBILITY

DEC is responsible for implementing the review of GSR/climate resiliency procedures on DEC regulated sites as described in this policy. DER, in consultation with the Office of Climate Change, Division of Air Resources and other DEC Divisions, is responsible for review and implementation of GSR procedures on DEC regulated sites. The Office of General Counsel is responsible for advising DEC regarding compliance with this policy.

DEC, applicants, remedial parties, consultants, and contractors are responsible for providing complete green, sustainable remediation and climate resiliency reporting that meets the requirements of this policy with each environmental cleanup submission. DEC, owners, developers, remedial parties, consultants, and contractors are responsible for complying with all regulatory requirements for development of renewable energy systems on DEC regulated sites (See Section V(D) and Attachments 3, 4 and 5).

V. PROCEDURE

The procedures detailed in Section V(B), General Procedure, apply to all phases of an environmental ~~footprint (footprint), however, inherent in remediating sites. A remedy may, for example, require~~ cleanup unless otherwise described in Section V(A), Exceptions to General Procedure, as of the issuance date of this Policy, and to all pending submissions to DER to the extent feasible, including modifications to work plans or reports. In the context of environmental cleanups, CLCPA and this policy are applicable or relevant and appropriate requirements (ARAR) and are addressed in the threshold criteria as part of the Standards Criteria Guidance (SCGs). This means that compliance with CLCPA through this policy should be treated the same as, for instance, selecting a remedy that meets a groundwater or surface water standard for specific contaminants.

A. EXCEPTIONS TO GENERAL PROCEDURE

Certain environmental cleanups are not likely to interfere with the attainment of statewide GHG emission limits and, therefore, do not typically require further analysis beyond a GSR and sustainability best management practice analysis. DEC reserves the right to determine that any cleanup could result in a new source of or an increase in GHG emissions and/or to require additional analysis. This applies regardless of the applicability stated in this section to ensure the attainment of statewide GHG limits are not interfered with or, if the facts surrounding the remedy indicate, that an analysis is warranted. Some examples of these cleanups that will typically not require further analysis outlined herein are as follows:

1. An environmental cleanup involving emergency spill response;

2. An environmental cleanup that is limited in scope (i.e., entire environmental cleanup for the site is limited to a maximum of a 1-acre area and removal of contaminated materials cannot exceed 500 tons) and timeframe (i.e., typical six-month, May-October, single construction season);

3. An environmental cleanup which only provides an alternate water supply consisting of a best available control technology (e.g., granular activated carbon) pursuant to DER-24/Assistance for Contaminated Water Supplies;

4. An environmental cleanup which only provides vapor mitigation consistent with New York State Department of Health Guidance for Evaluating Soil Vapor Intrusion in the State of New York;

5. An environmental cleanup with significant changes to remedial elements in accordance with DER-2/ Making Changes to Selected Remedies that would have no anticipated change in emissions, unless project specific facts support a determination that there is a potential for an increase in GHG emissions. Significant changes that include a new emission source or change in remedial elements that may increase emissions may be subject to further analysis, as outlined herein.

6. An environmental cleanup with minor changes in remedial elements in accordance with DER-2/ Making Changes to Selected Remedies that would have no anticipated change in emissions, unless project specific facts support a determination that there is a potential for an increase in GHG emissions. A minor change that includes a new emission source or change in remedial elements that may increase emissions may be subject to further analysis, as outlined herein.

7. An environmental cleanup in site management where site management demonstrably uses minimal energy or resources.

8. An environmental cleanup in which a DEC regulated site is being reused or redeveloped to generate renewable energy, and ~~material use, and contribute emissions~~no further remediation of ~~carbon dioxide (CO2) and other GHGs to~~ the ~~atmosphere. It~~site is required.

B. GENERAL PROCEDURE

At all phases of site cleanup, GSR should be implemented to the extent practical to reduce the overall environmental footprint of site cleanup. The footprint of a remedy can ~~also~~be characterized as the impact~~, for example, land use and aquifer recharge.~~ of the remedy on the following five core environmental categories: Materials and Waste; Energy; Air and Atmosphere; Water; and Land and Ecosystems. A footprint analysis must be included in submissions to DEC unless the submission falls into the exempted categories described in Section A.

For the purposes of this policy, a "Footprint Analysis" is defined to include all work necessary to provide DEC an approvable submission. This includes the development of an environmental footprint calculation using an acceptable program and reporting of all required qualitative and quantitative analyses of GSR techniques and technologies. An approvable submission may include climate resiliency analyses and/or analysis related to development of renewable energy systems on DEC regulated sites. An approvable submission may require additional components as detailed in the sections below. Remedial decisions made during planning, investigation, design, and implementation of the environmental cleanup affect the magnitude of the footprint. This footprint can extend beyond the site property lines and ~~even beyond~~ adjacent properties to the larger environment~~. The larger environment may include, for example,~~ (e.g., the atmosphere at a significant distance from the site due to the emissions from ~~power generation which provides electricity to operate remedial equipment. Decisions made during the course of planning and implementing the investigation and remediation impact the footprint of the cleanup.~~the generation of power used at the site).

~~Cleanup of our sites must be considered in a larger context, as demanded by issues such as GHG emissions and climate impacts, sprawl, and the effects of energy generation and use. Increasingly, cleanup programs across the nation are considering remedial activities that minimize ancillary environmental impacts by minimizing energy consumption, conserving natural resources, maximizing the reuse of land and recycling of materials. As cleanup technologies and incentives continue to evolve, green remediation strategies offer significant potential for increasing the net benefit of cleanup, cost savings, and the universe of long-term property reuse options without compromising cleanup goals.~~

~~Many of the green remediation techniques such as optimizing remedial system operation or implementing enhanced biological degradation have long been available and have been applied to cleanups in New York to yield greater efficiency, cost savings and reduced impact. The purpose of this policy on green remediation is to consider cleanups in the context of the larger environment and consistently and pro-actively apply more sustainable methods to remediate the site while still protecting public health and the environment and striving to achieve the established cleanup goals. This will result in cleanups that are more sustainable, meet long-term needs of all stakeholders, protect valuable state resources such as soil, water, habitat, and the atmosphere while respecting cost concerns.~~

II. RESPONSIBILITY

The responsibility for maintaining and updating this policy lies with the Bureau of Technical Support in DER. DER program staff are responsible for implementing this policy, with input from other involved DEC divisions.

III. PROCEDURE

A. GENERAL PROCEDURES

The protection of public health and the environment threshold and programmatic requirements must always be met when undertaking investigation and remediation. Green remediation concepts and techniques will be considered during all stages of the remedial program from site characterization through implementation of the remedy, to long-term site management obligations with the goal of improving the sustainability of the cleanup. Specific techniques are provided in Attachment 1. The major green remediation concepts below, and the attached green remediation techniques, will be considered and used to the extent feasible by remedial parties and DEC's staff and contractors.

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term when choosing a site remedy;
- Reducing direct and indirect GHG and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

Opportunities to reduce the footprint and increase the sustainability of site cleanups exist throughout the remedial process. The application of theseMajor GSR concepts and techniques to the investigation, design, construction, operation,and monitoring phases is fairly straightforward. Relevantapplicable, specific techniques should be pro-actively selected from the listconsidered and used to the extent feasible in Attachment 1 or from other sources,all environmental cleanups and during all phases of environmental cleanups. Methods, techniques, and technologies should be combined to form and apply the most sustainable approach for the site and/or remedial phase and applied.. Relevant techniques should be implemented from the list in Attachment 1 and from other sources, including but not limited to the United States Environmental Protection Agency's (EPA) green remediation BMPs. There are a number of GSR techniques and technologies which are, by their nature, easy to implement and either provide cost savings or are minimally more costly when considered in the context of the present worth of an environmental cleanup. Examples include reducing engine idling for trucks and construction equipment; using alternative sampling techniques such as passive diffusion bags or low-flow sampling; and considering, where feasible, lower emission concrete.

~~Additionally, there are a number of green remediation techniques which by their nature are easy to implement, and either save money or are only negligibly more expensive. DEC expects that the techniques identified below will be implemented at sites unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach.~~

- ~~Use of renewable energy and/or the purchase of renewable energy credits (RECs) or a combination of the two techniques to offset 100% of the electricity demand at the site.[1]~~

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[1] ~~Purchase of "green Power" through an energy services company (ESCO) generally costs less than 0.5% of the overall operation and maintenance cost of a remedy. This cost may be off-set by more efficient designs.~~

- Reduce vehicle idling. All vehicles, both on and off road (including construction equipment) will be shut off when not in use for more than 5 minutes, consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition For Heavy Duty Vehicles.
- Design cover systems, to the extent possible, to be usable for alternate uses such as habitat or passive recreation, require minimal maintenance (e.g. less mowing), allow forinfiltration of storm water and/or be integrated with the next use of the site.
- Beneficially reuse materials that would otherwise be considered a waste (e.g. crushedclean concrete as base or fill).from remediated sites
- Use of Ultra Low Sulfur Diesel (ULSD).

B. ROLE OF SUSTAINABILITY IN REMEDY SELECTION

Frequently the greatest benefit to the environment from the application of the green remediation concept can be realized at the remedy selection phase. Many factors are considered when selecting a remedy (e.g. the nine remedy selection criteria in 6NYCRR Part 375). Sustainability/green remediation is an aspect of one or more of the existing criteria. DEC is utilizing these concepts to support selection of the best remedy for a site. The consideration of sustainability in remedy selection is consistent with existing statutes, regulations, and guidance. Remedies will still be selected in accordance with applicable regulations, standards, policies, and guidance documents and all selected remedies shall still, at a minimum:

- protect public health and the environment;
- address source removal and control;
- address groundwater protection and restoration; and
- strive to meet the cleanup goal of the respective program (e.g., pre-disposal conditions forState Superfund sites; pre-release for petroleum spills).

All remedial parties, DER staff, and DER standby consultants and contractors should now consider sustainability/green remediation concepts when assembling and evaluating remedial alternatives.

Remedies selected under programs subject to 6NYCRR Part 375 (i.e., the State Superfund Program, Brownfield Cleanup Program, and Environmental Restoration Program), shall still be selected in accordance with the nine remedy selection criteria set forth at 375-1.8(f). Under Part 375, sustainability is primarily evaluated as part of the long-term effectiveness and permanence criterion and the short-term impacts and effectiveness criterion, but it may affect implementability, cost effectiveness, community acceptance, and land use.

A thorough work plan will include actionable and assessable plans to contribute to the achievement of GSR and Climate Resiliency goals. Approvable work plans must include qualitative or quantitative assessments (as appropriate); BMP analysis including BMPs listed in Attachment 1 to this policy and other guidance included herein; tracking metrics; and climate resiliency. Work plans should present suggestions or techniques that could further reduce the footprint of the overall remedy or phase of the remedy and outline procedures for tracking metrics during implementation of work. Work plans shall not be inconsistent with the CLCPA and will be certified in accordance with section 1.5 of DER-10,

Technical Guidance for Site Investigation and Remediation, as prepared in substantial conformance with this policy.

Thorough proposed remedial action documents, including Proposed Remedial Action Plans (PRAPs) and Alternative Analysis Reports (AARs), must likewise consider the footprint of the proposed remedies and include GSR techniques and technologies unless subject to the exceptions detailed in Section V(A). When a remedial decision (e.g., proposed remedial action) does not appear to be in accordance with the CLCPA, justification for the remedial decision must be provided as outlined below. Additionally, mitigation efforts should be incorporated into the project that result in measurable GHG emissions reduction or sequestration. Mitigation requirements are further outlined later in this guidance. These mitigation efforts must be real, quantifiable, permanent, verifiable, and enforceable.

A justification for a remedial decision (e.g., proposed remedy selection) must be included in the Feasibility Study (FS) Report or AAR to evaluate alternatives and demonstrate consistency with DER-31. This justification should include:

- The alternatives analysis required by 6 NYCRR Part 375, Environmental Remediation Programs (Part 375) and DER-10/Technical Guidance for Site Remediation and Investigation,
- An appropriate environmental footprint analysis, including an assessment of GSR BMPs, for each alternative;
- A damages-based value calculation of the estimated GHG emissions using “Establishing a Value of Carbon, Guidelines for Use by State Agencies”, for each alternative;
- A disproportionate burden analysis when the cleanup is in or within a half mile of a DAC;
- GHG emissions analysis to inform any additional design considerations (i.e., engineering controls such as Granular Activated Carbon (GAC) to reduce emissions from Soil Vapor Extraction (SVE) systems);
- Proposed engineering controls and design measures which are feasible and consistent with the environmental cleanup to be included in the decision document as remedial elements.

The justification may consider that environmental cleanups provide the following benefits which may offset short term impacts during the cleanup:

- Protect human health;
- Protect the environment;
- Improve climate resiliency;
- Address community blight and stigma that may be associated with un-remediated sites; and
- Provide opportunities for redevelopment.

GENERAL PROCEDURE FOR QUALITATIVE AND QUANTITATIVE GSR EVALUATION

Determining which remedial ~~alternative~~alternatives or remedial decisions will have the greatest net benefit to the environment or create the least direct, indirect, or life-cycle impact and which are therefore green, sustainable, and resilient is not always obvious~~,~~ and can be complex. ~~Bothquantitative and qualitative green metrics can help in this determination. However, these~~Qualitative metrics can be difficult to ~~normalize~~compare across technologies and alternatives~~. In order to compare the potential impacts of remedial alternatives, the following specific evaluations will~~; therefore, they should only be ~~included~~used as ~~indicated in alternatives analysis documents (including feasibility and corrective measures studies).~~a screening tool.

~~At a minimum,~~In order to compare the potential impacts of remedial alternatives or remedial decisions, the following specific evaluations will be included as indicated in an alternatives analysis, FS or other analysis:

a) The remedial party will conduct a qualitative assessment of total impacts related to the remedial alternatives or remedial decision being considered ~~(e.g.,~~ and will compare relative impacts of the alternatives as a screening level assessment. This screening assessment will serve to eliminate alternatives that are not in line with the goals of this policy and CLCPA. The list of applicable qualitative metrics and required level of detail will vary and should be determined based on site-specific conditions. Qualitative assessments will be reviewed and approved by DEC. The following are examples of metrics that may be included:

- direct and indirect sources of GHGs and relative scale of the GHGs, ~~material~~including GHGs associated with any mitigation measures implemented;
- materials used on site, materials reused on site ~~or~~, materials recycled, and materials disposed~~,~~ (e.g., water, packaging, personal protective equipment, miscellaneous waste);
- travel required to construct and maintain the remedy~~) will be discussed~~;

~~and relative impacts of the remedies compared. For example, "Alternative A uses significantly less electricity over the anticipated life of the remedy than the other alternatives and therefore results in less indirect emissions of GHGs. However, Alternative A requires the use of more heavy equipment for transportation, resulting in greater direct emissions and fuel use".~~

- ~~If necessary to~~ equipment required to construct and maintain the remedy.

b) When required by this policy, conduct a footprint analysis which considers all applicable information (energy use, materials, labor, etc.) for each cleanup activity using a DEC approved program such as SiteWise™ Evaluation tool and EPA's Spreadsheets for Environmental Footprint Analysis (SEFA) or approved equal. These programs will perform a life cycle analysis and generate metrics that can be used to evaluate the overall impacts of each activity and support decision making. This analysis should be combined with other relevant site cleanup considerations such as implementability, effectiveness, cost, and community acceptance to develop an acceptable environmental cleanup strategy.

~~a)~~c) A remedial party will then differentiate between ~~remedies~~remedial alternatives or remedial decisions that offer equivalent public health and ~~on/near site~~ environmental protection~~, relevant and readily-calculable metrics related to direct and indirect impacts for each alternative should be quantified. DER is not requiring a life-cycle analysis to determine upstream impacts as part of this~~ using the quantitative ~~analysis.~~metrics relating to direct and indirect impacts, which must be calculated and evaluated to compare alternatives. Normalizing appropriate data to a common unit such as tons GHGs or CO2 equivalents ~~may be helpful andwould be acceptable. Quantitative tools for calculating the relative impacts of various remedies are becoming widely available and may be used.~~is required. Projected future footprints and GHG and CO2 emissions for the remedy's 30-year site management phase and any proposed future emissions reduction strategies should be included, if applicable. All relevant metrics should be included in the analysis. The following ~~are~~ is a partial list of examples of the types of metrics that may be included~~.~~:

- Energy or emissions required to construct and operate the remedy. Direct emissions that are most relevant include stationary combustion of fuels (for generation of electricity, heat, etc.) and mobile combustion of fuels (for construction and transportation, including transportation of materials and waste and travel for operation and maintenance). Direct emissions could also include fugitive emissions and emissions from physical and/or chemical processes on site. Indirect energy use or emissions which are most relevant are related to generation of purchased electricity, heat, etc~~.;~~.
- Fuel type and use (e.g~~.~~., gallons of diesel fuel or gasoline~~);~~).
- Volume or weight of material (e.g~~.~~., construction and demolition debris~~) reused~~ reuse of clean organic woody debris and clean habitat substrate, including reuse on site~~;~~).
- Tons of waste disposal~~ avoided;~~.
  - ~~Linear feet of stream bank returned to natural conditions (e.g. from bulkhead to vegetated); and~~
- Volume of locally sourced restoration material, including local native seed and plant material. Any other large direct or indirect ~~imparts~~inputs, emissions or potential emission sources may also be considered.

- ~~Quantification of~~ Reduction of disposable, or nondegradable material.
- Use of recycled, reused, or regenerated products.
- Appropriate recycling of material generated by the remedy.

d) A remedial party will also complete a life-cycle analysis to determine upstream ~~emissions from the extraction, production and transportation of purchased materials and fuels is not anticipated to be required to differentiate remedial alternatives. DEC may consider any voluntary submission of upstream emissions data.~~impacts as part of this quantitative assessment. This analysis~~, if provided,~~ should be completed using widely available and generally accepted tools and techniques~~,~~ ~~and~~ while following generally accepted protocols ~~such as the Climate RegistryGeneral Reporting Protocol. DEC could~~. The analysis will include electricity generated offsite and used onsite, as well as other fuel use associated with the site. DEC reserves the right to request ~~upstream emissions quantification~~ additional information if needed to support ~~remedial~~ decisions.

e) ~~DER will~~Perform a BMP analysis to identify greener cleanup activities that may help minimize the environmental footprint on a site-specific basis. The BMP analysis should consider ~~all sustainability~~both DEC and EPA green remediation BMP fact sheets and it should select appropriate practices to be incorporated into the environmental cleanup. The ASTM Standard Guide for Greener Cleanups provides direction on how to conduct a BMP analysis.

f) Complete a climate resiliency analysis which assesses site and remedy vulnerabilities and evaluate measures to increase resilience of work completed at a site. The first step of assessing climate resilience of a site is to conduct a Climate Screening. A Climate Screening is a high-level assessment of exposure to climate hazards (e.g. extreme temperatures, heavy precipitation, drought, inland flooding, sea level rise, storm surge, wildfire, landslides). If the Climate Screening identifies potential climate-related impacts to the site, a full-scale Climate Vulnerability Assessment (CVA) must be conducted. The CVA should provide in-depth analysis of all potential climate related impacts and present potential measures to be implemented into the environmental cleanup to protect against the identified vulnerabilities. If already completed in a previous phase, the CVA should be updated as necessary throughout the environmental cleanup. For more information ~~presented, including qualitative and quantitative metrics. Energy use, emissions, effect on habitat and site reuse, and othersustainability issues will help to differentiate remedial alternatives that offer the same or similar levelof on/near site environmental and public health protection. The concept of green remediation~~see Attachment 2.

GSR will not be used to justify "no action~~" or,~~" to implement a ~~lesser remedy~~ remedy or make other remedial decisions that are not as protective of human health and the environment when a more comprehensive remedy or better remedial decision is appropriate and feasible. ~~*Sustainability will be considered*~~ GSR BMPs must be considered in the balancing criteria when evaluating alternatives and implemented to reduce the environmental footprint of the selected remedy. An analysis of mitigation measures that sequester, capture, or otherwise reduce the GHG emissions to the same level as the emissions from the alternative with the lowest GHG emissions, not including the no further action alternative, may be required if the proposed remedy or remedial decision is determined to be inconsistent with State emissions limits.

GENERAL PROCEDURE FOR EVALUATION OF GSR IN PART 375 REMEDY SELECTION (BALANCING) CRITERIA

In addition to being an ARAR, the CLCPA and this policy should be considered a balancing criterion in selecting a specific cleanup action with a smaller footprint over one that provides the same protection of public health and the environment but creates more emissions.

Remedial alternatives should be evaluated in accordance with the nine remedy selection criteria set forth in Part 375-1.8(f). Under Part 375, GSR is primarily evaluated as part of the long-term effectiveness and permanence criterion and the short-term impacts and effectiveness criterion, but it may affect implementability, cost effectiveness, community acceptance, and land use. The following are examples of ways that GSR concepts and techniques could be incorporated into the balancing criteria:

- Short-term impacts and effectiveness: include how GSR methods reduce emissions and waste generation at the site during remedial action or how implementation of GSR methods results in a less disruptive remedy due to reduced construction timeline or scope.
- Long-term effectiveness and permanence: include how the installation/use of renewable energy on-site to power remedial systems could create a more reliable source of power for long-term operation of remedial systems. Discuss how the proposed methods could enhance the resiliency of a remedy, bolster the permanence of long-term operations, and reduce the need for optimizations or repairs.
- Implementability: include discussion of sustainable sourcing of local materials, which can reduce long lead times and remedy delays while also reducing emissions generated. Include GSR elements to result in a remedy that can be more readily implemented.
- Cost effectiveness: discuss whether the incorporation of GSR elements results in cost savings via reduced energy usage, transportation and disposal, shipping distances, etc. It is important to note that while GSR methods may have higher capital costs, these could be offset by future benefits, such as cost reductions in the Operation and Maintenance (O&M) phase.
- Community acceptance: consider whether the inclusion of GSR elements will result in a remedy that the community would find more favorable due to reduced impacts. Consider whether the remedy may advantageously or disproportionately affect historically overburdened communities.
- Land Use: discuss the inclusion of GSR elements which may result in a remedy with a reduced environmental footprint or impact. Measure the impact of the remedy on natural resources and ecosystem services.

GENERAL PROCEDURE FOR COMPLETING AN IMPACT ANALYSIS AND DISPROPORTIONATE BURDEN ANALYSIS

An evaluation ~~*of an appropriateremedy*. Alternatives with the following characteristics will~~will be required when a remedy is located in or within a minimum half mile of a DAC. This CLCPA requirement states that all state agencies:

> "In considering and issuing permits, licenses, and other administrative approvals and decisions, including but not limited to the execution of grants, loans, and contracts, pursuant to Article 75 of the environmental conservation law, all state agencies, offices, authorities, and divisions shall not disproportionately burden disadvantaged communities as identified pursuant to subdivision 5 of section 75-0101 of the environmental conservation law. All state agencies, offices, authorities, and divisions

shall also prioritize reductions of GHG emissions and co-pollutants in disadvantaged communities as identified pursuant to such subdivision 5 of section 75-0101 of the environmental conservation law."

This evaluation will be in accordance with DEC policy and guidance and may include identification of DACs in the vicinity of the project site, a preliminary screening of the potential impacts (potentially related to air quality or air-related health effects) resulting from elements of remedial alternatives considered during the FS phase of the project. Projects subject to this policy include sources and activities of a continuing nature associated with any new GHG emission sources that would result in actual increases of GHG and co-pollutants (e.g., traffic, on site emissions from treatment systems).

Where an action likely ~~be the greenest:~~to affect a DAC is identified by the preliminary screen, a disproportionate burden analysis may be required in accordance with DEC policy and guidance.

- ~~Fewer short-term and long-term ancillary impacts to the environment;~~

- ~~Fewer GHG emissions;~~
- ~~Smaller environmental footprint;~~
- ~~Achieves the remedial action objectives more sustainably;~~
- ~~Allows for the greenest reuse;~~
- ~~Achieves a complete and permanent cleanup; and~~
- ~~Permanently and significantly reduces the toxicity, mobility or volume of contamination.~~

DOCUMENTATION OF ~~GREEN REMEDIATION~~GSR EFFORTS

All ~~green remediation~~GSR efforts will be documented ~~by the project lead (State, RP, etc.). DER is not requiring that the green remediation~~ in work plans, reports, or other submissions which are submitted for DEC review. DEC reserves the right to request additional GSR documentation ~~conform~~prior to ~~a particular format at this time.~~approving any submissions.

Work plans, reports, or other submissions include, but are not limited to, Site Characterization and Remedial Investigation work plans and reports, Alternative Analysis reports and FS, Basis of Design reports, Design documents, RAWPs, Construction Completion Reports, Final Engineering Reports, Site Management Plans, Periodic Review Reports (PRR), Annual Reports, and Corrective Measure/Remedial Site Optimization (RSO) work plans and reports, and certain change-of-use submittals for DEC regulated sites. The required information may be included in the document text~~, included~~ as an appendix~~,~~ or submitted and referenced as a separate, supporting document such as a sustainability analysis report. Metrics must be submitted in an electronic format that DER specifies, which may include electronic data deliverables (EDDs).

- ~~In general, since green remediation/sustainability concepts are to be considered and/or implemented in all phases of site investigation and cleanup, any report of work duringthese phases which is submitted to DEC should describe the green remediation/sustainability efforts.~~

- ~~All remedial alternatives analysis and decision documents will describe the green remediation principles considered in the evaluation and/or selection of the remedy, will present or reference any qualitative and/or quantitative sustainability information generated in support of remedy selection, and will discuss how the impacts can be minimized during implementation. Decision documents will also require that green remediation and sustainability efforts be implemented to the extent feasible in the designand implementation of the remedy.~~

- ~~Corrective action modules for new Hazardous Waste Management Permits or Permit renewals issued under 6 NYCRR 373-2 (the RCRA Program) shall include conditions which require the Permittee to consider green remediation principles in all phases of theremedial process and to document their evaluation.~~

- ~~In addition to statutory and regulatory requirements, final engineering reports must include a discussion of the green remediation practices/technologies employed throughoutthe remedial program.~~

- ~~Green remediation principles must also be considered during each periodic review and remedial system optimization review conducted during the site management phase. The reports of reviews~~

~~will discuss the green remediation principles employed duringthe past reporting cycle and any associated quantitative or qualitative reductions in impacts to the environment and will make recommendations that can be employed during the next reporting cycle.~~

The following guidance should be applied and documented, as relevant, to all phases of work during remediation:

IMPLEMENTATION AND TRACKING

GSR metrics shall be tracked throughout the environmental cleanup to assess progress towards GSR goals. Examples of items to be tracked include:

- trucking on and off-site and disposal quantities;
- GHG Emissions and air pollutants;
- total energy use – and type of energy (renewable vs. nonrenewable sources);
- water use and impacts to water resources;
- materials management and waste reduction;
- land management and ecosystems protections;
- mitigation impacts;
- and other relevant site-specific metrics.

Implementation of metrics should be included with work plans and reports. For metrics meant to be tracked across multiple phases, the content and format of documentation should be as consistent as possible with that of previous phases. Tracked metrics should be reported. Progress reports, including PRRs during Site Management, should include tracking of metrics and an ongoing footprint analysis to ensure optimization of the environmental cleanup and any redevelopment.

REPORTING

Reports must summarize all GSR actions, including BMPs, climate resilience, and mitigation methods that were implemented during remedial work. Reports must include tracking of any metrics pertaining to waste generation or disposal, emissions and mitigation efforts, deviations from the work plan, and any recommendations for future optimization of GSR techniques at the site.

C. FURTHER ANALYSES BEYOND GENERAL PROCEDURE

Some environmental cleanups may be considered inconsistent with or may interfere with the attainment of the statewide GHG emission limits, and therefore, require additional justification and/or measures to mitigate GHG emissions. The following environmental cleanups are likely to require a determination whether such action is inconsistent with or may interfere with the attainment of the statewide GHG emission limits and determine if mitigation is required in addition to the implementation of GSR BMPs, engineering controls, and green and sustainable design measures:

- An environmental cleanup which may result in extended project durations with the potential for increases in GHG emissions (e.g., energy intensive remedies such as thermal remediation, more than three years to achieve a certificate of completion, site management involving onsite remedial systems, etc.);
- An environmental cleanup which will require state air pollution control permitting or compliance with substantive requirements;
- An environmental cleanup which may:
  - not conform with the Scoping Plan or regulations designed to achieve compliance with the statewide emission limits established in ECL Article 75 and reflected in Part 496;
  - create or enable a significant new source of GHG emissions;
  - be directly responsible for a significant increase in demand for a known source of GHG emissions;

- directly reduce the market demand for, or access to, GHG emissions reduction technologies or strategies;
- prevent or make it more difficult or expensive for the State to reduce GHG emissions;
- facilitate the expanded or continued use of fossil fuels through new infrastructure development; and/or
- interfere with the attainment of the zero-emissions electric generation sector by 2040 requirement.

When the above circumstances exist, DER may request additional strategies to ensure an appropriate mitigation of GHG emissions from the site. Strategies and reasons for such additional strategies include:

- to help further the reduction of GHG emissions, lower energy costs, improve air quality and public health, and help achieve economic development goals;
- use of green power electricity produced from renewable resources, such as solar, wind, geothermal, biomass, and low-impact hydro, that will assist DEC in reducing its carbon footprint and communicate its leadership to key stakeholders;
- implementing and identifying strategies for improving supply chains, using materials more efficiently, and reducing waste that may be a possible approach to offset GHG emissions;
- increasing fuel efficiency in transportation and logistics, including fleet improvements, furthering the State's overall efforts in reducing GHG emissions; and
- any other project specific considerations DER identifies which necessitate the need for additional strategies.

DEC may require appropriate mitigation for those environmental cleanups that comply with CP-49 Climate Change and DEC Action. DEC would work with the entity to develop appropriate mitigation and to prioritize direct emission reductions.

DER may select a different alternative where that alternative satisfies the conditions set forth in Section V(B).

D. RENEWABLE ENERGY PROJECTS ON DEC REGULATED SITES

DEC has developed guidance and requirements to facilitate the installation and operation of renewable energy projects in a green and sustainable manner which maintains the protectiveness of environmental cleanups. Renewable energy projects on DEC regulated remediation sites will be required to comply with DEC's model Order or agreement, Technical Guidance for the Development of Renewable Energy Projects on DEC regulated sites, and the pre-notification readiness form (refer to Attachments 3-5). In addition, solar development projects must comply with the Division of Materials Management Policy (DMM)-4 / Guidance For Photovoltaic Solar Projects At Closed Solid Waste Landfills, if applicable. Site-specific requirements will be determined on a case-by-case basis. Entities involved in renewable energy projects on DEC regulated remediation sites are required to provide a change of use at least sixty days prior to initiating any project related activities, including but not limited to: requests for proposals, permit pre-application meetings, or other substantive actions to advance the project.

VI. RELATED REFERENCES

~~WEB SITES:~~

~~NYSDEC Mission and Issue Priorities~~

~~NYSDEC Environmental Cleanup and Brownfields~~
~~EPA Green Remediation~~

~~ASTSWMO Greener Cleanups Information Resources~~

~~DOCUMENTS:~~

~~EPA Green Remediation Primer: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites. EPA 542-R-08-002. April 2008.~~

~~EPA Draft Green Revitalization Think Piece. December 26, 2007.~~

~~Smart Energy Resources Guide (SERG). EPA/600/R-08/049. March 2008.~~

~~Introduction to Energy Conservation and Production at Waste Cleanup Sites.~~NYSDEC Environmental Cleanup and Brownfields

Disadvantaged Community Assessment Tool

Responding Climate Change in New York State (ClimAID) - NYSERDA

Maps & Geospatial Information System (GIS) Tools For Environmental Justice - NYSDEC

NYSDEC Index Of Standards, Criteria And Guidance (SCGs) For Investigation And Remediation Of Inactive Hazardous Waste Disposal Sites

Statewide Greenhouse Gas Emissions Report - NYSDEC

Superfund Green Remediation | US EPA

USEPA Superfund Climate Resilience: Vulnerability Assessment

ASTM. May 2016. E2893 Standard Guide for Greener Cleanups (astm.org), ASTM E2893-16e1.

NYS. 2019. Climate Leadership and Community Protection Act, S6599 NYS, June 2019 (S6599 (nysenate.gov)) .

NYS. 2025. New York State Climate Impacts Assessment: *Understanding and Preparing for Our Changing Climate.*

NYSDEC. 2008. Division of Water. Better Site Design.

NYSDEC. 2022. Commissioner Policy (CP)-49/Climate Change and DEC Action.

NYSDEC. 2023. Division of Materials Management (DMM-4)/Photovoltaic Solar Projects at Closed Solid Waste Landfills. NYSDEC, Division of Materials Management.

NYSDEC. 2025. Establishing a Value of Carbon: Guidelines for Use by State Agencies.

USEPA. 2004. Introduction to Energy Conservation and Production at Waste Cleanup Sites. EPA Engineering Forum Issue Paper. EPA 542-S-04-001. May 2004.

Better Site Design. NYSDEC, Division of Water. April 2008.

EPAUSEPA. 2008. EPA Green Remediation Primer: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites. EPA 542-R-08-002.

USEPA. 2008. Recover Your Resources: Reduce, Reuse, and Recycle Construction and Demolition Materials at Land Revitalization Projects. EPA 560-F-08-242.

USEPA 2009. Case Study: @ A Construction and Demolition Waste Reduction Success Story A Construction and Demolition Waste Reduction Success Story ". EPA 560- F-09-001. January 2009.

Recover Your Resources: Reduce, Reuse, and Recycle Construction and Demolition Materials at Land Revitalization Projects. EPA 560-F-08-242. April 2008.

Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements. NYSDEC Commissioner Policy, Office of Air, Energy and Climate. July 15, 2009.

CP-49/Climate Change and DEC Action. NYSDEC Commissioner Policy. October 2010.

Air Force Center for Engineering and the Environment Sustainable Remediation Tool (SRT™)

Navy/Army Corps/Battelle SiteWise™ Tool

Protocols for life-cycle GHG emissions estimation:

- EPA's Climate Leaders Program Design Principles Guidance and Climate Leaders Basic Information
- Climate Registry General Reporting Protocol

VII. QUALITATIVE ASSESSMENT TOOLS:

SITEWISE™:

Library - Sustainable Remediation Forum

SEFA:

EPA Spreadsheets for Environmental Footprint Assessment

VIII. DEFINITIONS AND ACRONYMS

A. DEFINITIONS

Balancing Criteria: criteria used when more than one remedial alternative meets the performance standards. The six primary balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; land use, and cost.

Core Elements (of environmental footprint): total energy use and renewable energy use, air and atmospheric pollutants and GHG emissions, water use and impacts to water resources, materials management and waste reduction, land management and ecosystem services. (Green Remediation Best Management Practices: An Overview (epa.gov))

Climate Projection Model: also known as general circulation models or GCMs, use mathematical equations to characterize how energy and matter interact in different parts of the ocean, atmosphere, land. (Climate Models | NOAA Climate.gov)

Climate Resilience: the capacity of a system to maintain function in the face of stresses imposed by climate change and to adapt the system to be better prepared for future climate impacts (https://www.epa.gov/climate-adaptation/climate-adaptation-and-epas-role).

CLCPA Analysis: documentation showing the alignment of planned work with the 2019 Climate Leadership and Community Protection Act (CLCPA), particularly the emissions reductions limits

Co-Pollutant: hazardous air pollutant produced by GHG emissions sources.

DEC regulated site: refers to remedial sites regulated any DEC, including historic sites owned and operated by DEC which are subject to a DEC program (State Superfund, Brownfield Cleanup Program, RCRA, Inactive Solid Waste Landfills, Mining Sites, or other DEC programs) and any site being redeveloped for renewable energy.

Direct emissions: GHG and other pollutant emissions that are produced at the remediation site.

Disadvantaged Communities (DAC): means communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high-concentrations of low- and moderate-income

households, as identified pursuant to section 75-0111 of the Climate Leadership and Community Protection Act.

Downstream: Downstream emissions include emissions of GHG resulting from the transmission and use of products such as renewable natural gas (RNG) or fossil fuels. For example, a landfill that is producing RNG that will be injected into an existing pipeline has downstream emissions associated with the transmission of the RNG to the end user, and a compressor station that is increasing its natural gas transmission capacity has downstream emissions associated with the transmission and combustion of that gas. Downstream emissions do not typically include emissions from the shipment or end-use of commercial goods or products produced for sale.

Emissions: See Greenhouse Gases (GHG)

Environment: means any water including surface or groundwater, sediment, water vapor; any land including land surface or subsurface; air including soil vapor; fish, wildlife, other biota; all other natural resources and humans.

Environmental Footprint: a measurement of the impact, demand, or use of resources at a site related to remediation activities.

Environmental Justice: the fair and meaningful treatment of all people, regardless of race, income, national origin, or color, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. It allows for disproportionately impacted residents to access the tools to address environmental concerns across all of DEC's operations. (Environmental Justice - NYDEC)

Green and Sustainable Remediation (GSR): the site-specific use of products, processes, technologies, and procedures that mitigate contaminant risk to receptors while balancing community goals, economic impacts, and net environmental effects (https://itrcweb.org/teams/projects/green-and-sustainable-remediation).

Greenhouse Gases (GHG): as defined by 6 NYCRR Part 496 Statewide Greenhouse Gas Emission Limits.

Greenhouse Gases Emission Source: any anthropogenic source or category of anthropogenic sources of GHG emissions, determined by DEC, whose participation in the comprehensive regulatory program created by the CLCPA will enable DEC to effectively reduce GHG emissions and that are capable of being monitored for compliance.

Indirect emissions: Indirect emissions are emissions that are a consequence of the activities of the reporting facility but may occur at sources owned or controlled by another entity. For example, a remedy that will increase truck traffic associated with the facility would have indirect GHG emissions associated with that increase.

Indirect GHG Source: emissions that occur off site but are associated with the remediation.

Life Cycle (Impact) Analysis (LCIA): is the evaluation of potential impacts to any system as a result of some action. LCIAs generally classify the consumption and loading data from the inventory stage to various impact categories. Characterization methods are then used to quantify the magnitude of the contribution that loading or consumption could have in producing the associated impact. (Chapter 3 of Desktop Computer Displays: Life Cycle Assessment; Volume 1 (epa.gov))

Mitigation: actions or activities that limit emissions of GHGs from entering the atmosphere and/or reduce their levels in the atmosphere. Mitigation includes reducing the GHGs emitted from energy production and use (e.g., that reduces use of fossil fuels), and land use, and methods to mitigate warming, for example, by carbon sinks which remove emissions from the atmosphere through land-use or other (including artificial) mechanisms.

Selection Criteria: Criteria used to screen proposed remedies for suitability. Criteria includes overall protection of public health and the environment; conformance of the remedy to Standards, Criteria, and Guidance; reduction in toxicity, mobility, and volume of hazardous waste; long-term effectiveness and permanence; short-term effectiveness and potential impacts during remediation; implementation and technical reliability; compliance with statutory requirements; cost; land use; and community acceptance.

Sustainability: To create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations (Learn About Sustainability | US EPA)

Renewable Energy: Renewable energy is energy produced from unlimited, naturally replenished resources, such as the sun, tides, and wind. Renewable energy can be used for electricity generation, space and water heating and cooling, and transportation.

Renewable Energy Credits/Certificates (RECs): A renewable energy certificate, or REC, is a market-based instrument that represents the property rights to the environmental, social, and other non-power attributes of renewable electricity generation. RECs are issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource.

Upstream Impacts: Greenhouse gas or fossil fuel emissions that are related to, but occur upstream, of the remedy attributed to production, transmission, and use of fossil fuels or imported electricity.

B. ACRONYMS

6 NYCRR Part 375 Environmental Remediation Programs	Part 375
6 NYCRR Part 496 Statewide Greenhouse Gas Emission Limits	Part 496
Alternative Analysis Report	AAR
Applicable or Relevant and Appropriate Requirement	ARAR
Best Management Practice	BMP
Climate Leadership and Community Protection Act or 2019 Climate Act	CLCPA
Climate Vulnerability Assessment	CVA
Corrective Measure/Remedial Site Optimization	RSO
CP-49/Climate Change and DEC Action	CP-49
Department of Environmental Conservation	DEC
DER-2/Making Changes to Selected Remedies	DER-2
DER-10/Technical Guidance for Site Remediation and Investigation	DER-10
DER-24/Assistance for Contaminated Water Supplies	DER-24
Disadvantaged Communities	DAC
Division of Environmental Remediation	DER
Division of Materials Management	DMM
DMM-4/Guidance for Photovoltaic Solar Projects at Closed Solid Waste Landfills	DMM-4
EO-22/Sustainability and Decarbonization	EO-22
Enhanced Attenuation of Chlorinated Organics	EACO
Explanation of Significant Difference	ESD
Feasibility Study	FS
Granular Activated Carbon	GAC
Green and Sustainable Remediation	GSR
Greenhouse Gas	GHG
Life Cycle Impact Analysis	LCIA
Monitored Natural Attenuation	MNA
Operation and Maintenance	O&M
Periodic Review Report	PRR

Permeable Reactive Barriers	PRB
Proposed Remedial Action Plan	PRAP
Remedial Action Work Plan	RAWP
Resource Conservation and Recovery Act	RCRA
Soil Vapor Extraction	SVE
Spreadsheets for Environmental Footprint Analysis	SEFA
Standards Criteria Guidance	SCG
Sub-Slab Depressurization Systems	SSDS
United States Environmental Protection Agency	EPA
Volatile Organic Carbon	VOC

IX. ATTACHMENTS

A. ATTACHMENT 1 - EXAMPLES OF GREEN REMEDIATION TECHNIQUES

Examples of Green Remediation Techniques Applicable to All Phases of the Remedial Programs
Conserve and efficiently manage resources and materials.
Reduce waste, increase recycling, and increase reuse of materials which would otherwise be considered a waste.
Foster green and healthy communities and working landscapes which balance ecological, economic, and social goals.
Reduce vehicle idling. All vehicles, both on and off road (including construction equipment), will be shut off when not in use for more than 5 minutes, consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition For Heavy Duty Vehicles.
Reuse and/or repair of equipment instead of purchasing new equipment.
Increase energy efficiency~~/~~; minimize total energy use ~~and direct and indirect CO_2/GHG emissions to theatmosphere~~.
Reduce emissions of air pollutants.
Minimize habitat disturbance ~~and~~; create or enhance habitat or usable land.
Conserve natural resources, such as soil and water; promote the sequestration of carbon through reforestation or ~~afforestation~~creation of new forests.
Minimize ~~fresh~~potable or surface water consumption and maximize water reuse during daily operations and treatment processes.
Prevent long-term erosion, surface runoff, and off-site water quality impacts.
Prevent unintended soil compaction.
Minimize waste or implement beneficial use of materials that would otherwise be considered a waste.

Minimize equipment and truck idling and use sustainably produced biofuels to reduce discharges of pollutants and GHGs to the atmosphere.
Utilize clean diesel (new or retrofitted) equipment to reduce emissions to the atmosphere.
Minimize truck travel for disposal to save energy, reduce emissions, reduce localized noise, vibration, and wear and tear on roads.
Minimize use of heavy equipment to save energy and reduce emissions.
Use energy efficient sampling techniques such as passive-diffusion bags, or low flow sampling.
Choose products with recycled and biobased contents.
Limit single-use materials where possible (e.g. using rumble grate mats instead of HDPE lines).
Minimize Investigation Derived Waste (IDW).
Select service providers, product suppliers, and analytical laboratories from the local area and consolidate the service and delivery schedules.
When possible, specify USEPA methods involving procedures that need relatively low volume of samples or solvents and generate less waste, such as solid phase micro extraction, pressurized fluid extraction, microwave extraction, and supercritical fluid extraction.
Examples of Green Remediation Techniques Applicable to the Remedial Investigation/Remedy Selection~~, Design and/orConstruction Phases~~ Phase
Consider impacts of climate change in the remedy selection process.
Consider impacts to DACs during the remedy selection process.
Consider the environmental impacts of treatment technologies and remedy stewardship over the long-term when choosing a site remedy.
~~Maintain,~~Integrate the remedy with the end use~~, mimic or enhance natural processes~~ where possible ~~to effect remediation~~and encourage green and sustainable redevelopment.

Design resiliency into remedies to protect remedial infrastructure from the effects of climate change.
Encourage development and evaluation of low energy alternatives such as enhanced bioremediation, phytoremediation, permeable reactive barriers (PRBs), source removal with monitored natural attenuation (MNA), enhanced attenuation of chlorinated organics (EACO), engineered wetlands, and remediesy which can be driven to MNA or monitoring only (e.g., remedies which will not need external power indefinitely~~)~~).
Design a comprehensive sampling plan with appropriate scope and equipment to ensure the collection of all necessary data to avoid the need to remobilize.
Schedule activities for suitable seasons to reduce the amount of fuel needed for heating or cooling equipment and supplies.
Use dynamic work plans involving real time field measurements, which can immediately provide data to determine the next activity during a given sampling event.
Use in-situ data loggers to monitor water quality parameters.
Employ non-invasive or minimally invasive technologies: direct sensing equipment such as the membrane interface probe, x-ray fluorescence sensors, field test kits, and cone penetration tests.
When appropriate, use a mobile lab or portable analytical equipment.
Incorporate GSR methods into all proposed remedies; use a BMP analysis to ensure that all applicable methods are incorporated.
Consider the impact of each remedy's proposed GSR elements under the existing, threshold, and balancing criteria.
Consider selecting an in-situ remediation remedy vs. excavations where truck traffic etc. generates higher amounts of GHG.
Examples of Green Remediation Techniques Applicable to the Design Phase
Beneficially reuse materials that would otherwise be considered a waste (e.g. crushed clean concrete as base or fill).
Maximize habitat value and create habitat when possible.

~~Use renewable energy if possible, or purchase Renewable Energy Credits~~To the extent possible, design cover systems to be usable for alternate uses such as habitat or passive recreation, require minimal maintenance (e.g. less mowing), allow for infiltration of storm water, and/or be integrated with the next use of the site.
Integrate remedial design with contemplated reuse of site.
Design cover systems to be usable (e.g., habitat, recreation, renewable energy generation, bio-fuel crop production).
Design storm water management or cover systems to manage water appropriately and to encourage uncontaminated recharge.
Design for efficiency (e.g., size motors optimally) to reduce indirect emissions of electricity production.
Design adaptable systems (e.g., systems that use less energy as the site cleanup).
Maintain, use, or mimic natural processes where possible to enhance remediation.
Evaluate if a remediation system could be protective with an intermittent energy supply (e.g., pumping or venting only during daytime or adequate winds~~)~~).
Encourage the use of remediation technologies that permanently destroy contamination to reduce impacts associated with long-term site management.
Address sources more aggressively to reduce long-term operation and maintenance of treatment or containment systems.
Incorporate green building design.
Plan for reuse of uncontaminated water where possible for activities like dust suppression.
Examples of Green Remediation Techniques Applicable to the Construction Phase
Reuse existing buildings and infrastructure to reduce waste.
Reuse and recycle construction and demolition (C&D) debris and other materials.
Maximize beneficial use of materials that would otherwise be considered waste.
Use native vegetation requiring little or no irrigation.

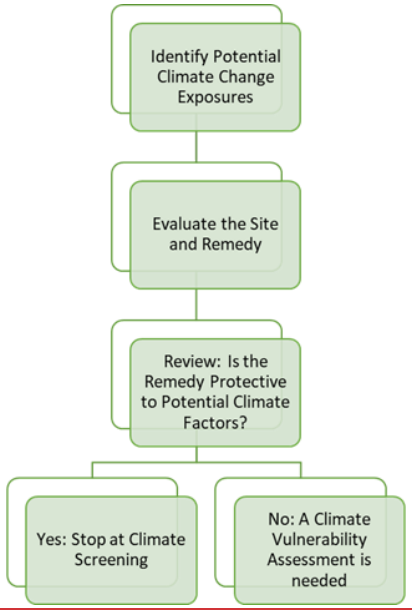
Reclaim treated water for beneficial use such as process water or irrigation.
Allow for solids to dewater prior to shipping off-site to minimize transportation weight.
Minimize volumes going to hazardous waste landfills.
Reuse on-site materials or approved materials from other sites for backfill.
Utilize renewable energy where possible (e.g. solar, wind, geothermal).
Minimize land disturbances to extent possible.
For off-site disposal, select the closest waste receiver and utilize alternative shipping methods (i.e. rail).
Examples of Green Remediation Techniques Applicable to Site Management
Reduce O&M visit frequency by improving reliability of engineering controls.
Install telemetry systems or other remote controls for systems.
Combine visits to multiple sites into one trip.
Evaluate the possibility of switching to renewable energy either directly (generated on site, off-grid or grid-tied) or indirectly through a utility (green power purchase program).
Complete the Remedial Site Optimization Process, potentially combined with a footprint analysis, to identify opportunities to reduce energy and waste with existing systems or other remedial technologies that may be implemented.
Use Periodic Review Reports to assess tracked emissions, energy and water use, and waste generation.
Assess if an energy intensive remedy is still the best remedy for the site.
Evaluate the possibility of monitored natural attenuation (MNA) for sites where this was not originally considered.

B. ATTACHMENT 2- CLIMATE SCREENING AND VULNERABILITY ASSESSMENT

When to conduct a Climate Screening vs. Climate Vulnerability Assessment

Remedies implemented at remedial sites have the potential to be impacted by climate change. To mitigate this potential risk, a climate screening must be conducted. If potential impacts from climate hazards are identified, a climate vulnerability assessment (CVA) must be conducted. Below is the Climate Screening procedure which should be followed to determine if a CVA is required for a site.

Part A: Conduct a Climate Screening



Prior to performing a CVA, a climate screening must be performed. A climate screening should ideally be completed during the remedy selection phase; however, it can be completed at any point during the remedial program. A climate screening is a high-level review of available data to identify potential future climate exposures. At many sites, publicly available climate screening tools will provide the necessary information to assess potential exposures to changes in climate hazards.

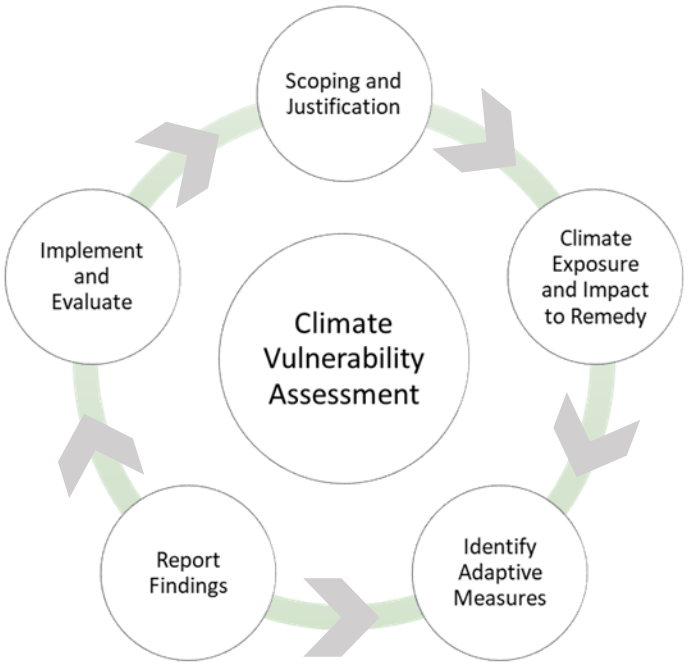
The first step of a climate screening is to identify the Climate Region, using New York State Climate Impacts Assessment: *Understanding and Preparing for Our Changing Climate* or other approved tools. At this time, it is also necessary to determine if the site is located in or proximate to a DAC. If the site is in one of these areas, the site and remedy may potentially be more susceptible to the impacts of climate related impacts due to the quality of local

infrastructure and historical underfunding. A proper climate screening will indicate whether the site is in one of these areas and state how that is considered during the process. This may mean that the threshold for anticipated impact is lowered due to the surrounding infrastructure or that the area itself presents unique climate hazards that must be considered.

The New York State Climate Impacts Assessment: *Understanding and Preparing for Our Changing Climate* can be used to identify climate data and projections for the site-specific location. The available data should be used to identify all climate-related risks at the site. Depending on the site's location, some of the risks identified may not have an impact, but the goal of the screening is to make this determination. The EPA's list of publicly available data tools should be used to identify additional data sources for use in the screening: Superfund Climate Resilience | US EPA When reviewing other data sets, the conservative projection of future climate exposures should be used. To do this, the worst-case emissions scenarios should be considered to assess the greatest potential impact to the site. The projections used should be for an appropriate time frame depending on the anticipated life span of the remedy.

After collecting climate data and projections relevant to the site, the next step is to consider the effect of these exposures on the proposed or existing remedy. If the screening results indicate that the remedy will be or will continue to be protective even if the projected changes occur, then no further action is needed. For example: where power grid unreliability is projected due to increased frequency of severe storms, but the remedy consists only of a cover system which will remain protective during power outages. However, if potential impacts that will affect a remedy's protectiveness are identified during the climate screening, a CVA must be conducted. A CVA will provide an in-depth analysis of climate hazards and recommendations on measures to be implemented to increase resiliency of the remedy. Note, an update to the climate screening may be required following changes in the remedy or site conditions.

Part B: Climate Vulnerability Assessment



The CVA will identify changing climate conditions, how these conditions may affect remedy protectiveness, and recommendations on adaptation measures to be considered to ensure continued protectiveness under future climate conditions. The CVA process follows this sequence: Justification and Scope, Climate Exposure, Remedy Sensitivity and Vulnerability, Identify Adaptive Measures, Report Findings and Next Steps, Implement and Monitor (EPA, 2023).

Step 1: Justification and Scope

CVAs are conducted for:

- Sites for which a climate screening was performed, and it was determined more information and analysis are needed;
- Sites with remedies in a climatologically dynamic environment, such as coastal areas, those near waterways, or those subject to extreme temperature and drought conditions;
- Sites that have or are currently experiencing damage or disruption from climate or severe weather-related hazards;
- Sites that may not have incorporated future climate data into the remedial design;
- Sites requiring documentation of remedy resilience to address community or other site stakeholder concerns; and
- Sites from which a potential release of contaminants caused by climate change would have a disproportionate impact.

The focus of a CVA should be tailored to site specific needs.

Step 2: Climate Exposure and Impact on Remedy

In this step, the site remedy should be evaluated against predicted changes in climate conditions. Items to consider in this phase:

- Timeframe – Climate projections used should match the life span of the remedy.
    - When are the climate impacts anticipated based on the model?
    - How long is the system planned to operate for?
    - What is the projected lifespan of remedy?
- Climate Projection Scenarios – CVAs should assume the worst-case for the most conservative analysis. The selected climate projection model, an approved model by DEC, should be justified based on applicability and/or accuracy.
- Data Sources – ClimAID, USGS, NOAA, FEMA etc.
- Climate Hazards - some examples are:
    - Temperature
    - Precipitation
    - Drought
    - Flood
    - Sea Level Rise
    - Storm Surge
    - Wildfire
- Output of the Analysis – what type of metrics are given for the various changes in climate hazards? How do these translate to quantifiable impacts on the site remedy?
- Nature of the Remedy: The sensitivity of the remedy can depend both on the nature of the contaminants present and characteristics of the remedy itself. When assessing vulnerability, consider the following: Is the site remedy more resilient or susceptible to a particular climate hazard? If so, will there be significant exposure to this hazard under future projection scenarios?
    - e.g., in an extreme precipitation event on a site with a soil vapor extraction system, if system capacity design is for a historic 100-year storm event, that system may no longer be protective during such storm events in the future

Step 3: Identify Adaptive Measures

In this section of the CVA, adaptation measures should be identified and evaluated to determine their capacity to address changes in the climate hazards identified in the previous step. Additional measures and considerations to ensure the continued protectiveness of the remedy should be presented and recommended. An example of this could be armoring a shoreline or raising the existing grade of the site to protect against sea level rise.

Step 4: Findings and Next Steps

The CVA should discuss the climate exposure analysis remedy vulnerabilities identified and recommend changes to be incorporated to increase resilience. Ideally, the CVA would be completed during the remedy selection phase of remediation and the report and supporting documentation should be included as an appendix in the Remedial Investigation/Feasibility Study. However, if a climate screening and CVA has not been completed previously, one can be completed at any phase of the remedial program. CVA's can be incorporated throughout the remedial process.

Step 5: Implementation and Evaluation

Adaptation measures discussed in the CVA are to be included in the remedial design and remedial action workplans. If a CVA is conducted at a later stage of remediation, adaptation measures will be implemented as part of a remedial system optimization or corrective action under a DEC approved work plan. The effectiveness of adaption measures should be evaluated during site management, and findings/recommendations should be presented in Periodic Review Reports. If site conditions change, the CVA may need to be updated to inform new adaptation measures. If site conditions change, DEC may request a re-evaluation of both the climate screening and the CVA.

A future climate screening and CVA checklist has been developed to assist in the completion of these processes.

C. ATTACHMENT 3 - MODEL AGREEMENT FOR RENEWABLE ENERGY PROJECTS ON DEC REGULATED SITES

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STATE SUPERFUND PROGRAM

ECL §27-1301 *et seq.*

~~Design for efficiency (e.g., size motors optimally) to reduce indirect emissions of electricity production~~
~~Design adaptable systems (e.g., systems that use less energy as the site cleans up)~~
~~Incorporate green building design~~
~~Reuse existing buildings and infrastructure to reduce waste~~
~~Reuse and Recycle construction and demolition (C&D) debris and other materials~~
~~Maximize beneficial use of materials that would otherwise be considered a waste~~
~~Integrate remedial design with contemplated reuse of site~~
~~Design cover systems to be usable (e.g., habitat, recreation, renewable energy generation, bio-fuel crop production)~~
~~Design storm water management or cover systems to recharge aquifers/minimize the creation or replacement of impervious surfaces~~
~~Use native vegetation requiring little or no irrigation~~
~~Reclaim treated water for beneficial use such as process water or irrigation~~
~~**Examples of Green Remediation Techniques Applicable to Site Management**~~
~~Focus on optimization to reduce energy use or time to closure~~
~~Increase energy efficiency/minimize total energy use and CO_2/GHG emissions to the air by replacing equipment, altering operation or shutting down unnecessary equipment~~
~~Improve reliability to reduce O&M visit frequency~~
~~Evaluate the possibility of switching to renewable energy either directly (generated on site, off-grid or grid-tied), or indirectly through a utility (green power purchase program)~~

~~Complete~~In the Matter of a Remedial Program for

ORDER ON CONSENT AND ADMINISTRATIVE SETTLEMENT

DEC Site ~~Optimization Process~~**Name: [Site Name]**

DEC Site No.: [xxxxxx]

Site Address: [Address]

Index No. [xxxxxxxxxx]

Hereinafter referred to ~~identify opportunities~~as "Site"

by: [Responsible Party Name]

[Address]

and

[Name]

[Address]

Hereinafter referred to ~~reduce energy and other impacts~~as "Respondents"

~~Incorporate sustainability into periodic reviews to identify opportunities to reduce energy and other impacts~~
~~Assess if an energy intensive remedy is still the best remedy for the site~~
~~Evaluate the possibility of MNA for sites where this was not originally considered~~

1. A. The New York State Department of Environmental Conservation ("Department") is responsible for inactive hazardous waste disposal site remedial programs pursuant to Article 27, Title 13 of the Environmental Conservation Law ("ECL") and Part 375 of Title 6 of the Official Compilation of Codes, Rules and Regulations ("6 NYCRR") and may issue orders consistent with the authority granted to the Commissioner by such statute.

B. The Department is responsible for carrying out the policy of the State of New York to conserve, improve and protect its natural resources and environment and control water, land, and air pollution consistent with the authority granted to the Department and the Commissioner by Article 1, Title 3 of the ECL, and Resource management under Article 27, Title 6 of the ECL Part 360 of 6 NYCRR.

C. This Order is issued pursuant to the Department's authority under, *inter alia*, ECL Article 27, Title 13 and ECL 3-0301, and resolves Respondents' liability to the State as provided at 6 NYCRR 375-1.5(b)(5).

2. "Site" shall mean the entire [SSF/BCP/Landfill/Other site] which totals approximately [insert area] acres as per [insert county] Tax Map. DER Site [insert site number] consists of [insert detailed description of site].

3. Based upon the results of a [insert investigation conducted at the Site] of the Site, the Department selected a remedy for the Site that was described in [insert decision document] , [and an Environmental Easement if one exists, or other IC dated _____]. The remedy consisted of [insert remedy description]. Additionally, the remedy included, [insert detailed description].

4. Respondents and the Department agree that the primary goals of this Order are to (1) continue any ongoing obligations of any and all Respondents related to the Site; and (2) to maintain existing engineering and institutional controls.

5. Respondents consent to the issuance of this Order without (i) an admission or finding of liability, fault, wrongdoing, or violation of any law, regulation, permit, order, requirement, or standard of care of any kind whatsoever; (ii) an acknowledgment that there has been a release or threatened release of hazardous waste at or from the Site; and/or (iii) an acknowledgment that a release or threatened release of hazardous waste at or from the Site constitutes a significant threat to the public health or environment, except as governed by any other agreement, consent order, consent decree, settlement, or other document.

6. Solely regarding the matters set forth below, Respondents hereby waive any right to a hearing as may be provided by law, consents to the issuance and entry of this Order, and agrees to be bound by its terms. Respondents consent to and agree not to contest the authority or jurisdiction of the Department to issue or enforce this Order and agrees not to contest the validity of this Order or its terms or the validity of data submitted to the Department by Respondents pursuant to this Order.

NOW, having considered this matter and being duly advised, **IT IS ORDERED THAT**:

I. Real Property

The Site subject to this Order consists of [Site Name and Number, or p/o], which are governed by [insert agency/division], and is approximately [insert area] acres and is further described as follows:

Subject Property Description (A Map of the Site is attached as Exhibit "A")

Section, Block, and Lot: -

II. Respondents' Obligations

a. Respondents shall continue any respective obligations under any and all agreements, orders, decrees, plans, governing documents, regulations, and statutes.

b. All engineering controls ("ECs"), now on site or placed on the site in the future, must be operated and maintained, and inspected at a frequency and in a manner as specified in the Site's SMP.

c. All environmental or public health monitoring must be performed as defined in the Site's SMP. All data and information must be reported at the frequency and in the manner as defined in the Site's SMP. All activities that may affect the remedy in any fashion must be conducted in a manner not to diminish the effectiveness of the remedy in any way.

d. Respondent shall ensure that no actions by any entity accessing, working, or otherwise at the Site diminish the effectiveness off, damage, interfere with, or in any way negatively affect the remedy.

e. All activities that may affect any part of the remedy must be conducted in accordance with the Site's SMP.

f. Respondent shall ensure that the Department is made aware of any activities at the Site thirty (30) days prior to said activities.

g. Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner.

i. The Department, its employees, other representatives shall have access to and be able to observe any and all activities at the Site, including but not limited to those related to renewable energy infrastructure, generation, development, transmission, and other activities.

ii. Access by the Department, its employees, or other representatives shall be provided for the implementation of response actions at and near the Site under applicable federal and state law, including but not limited to all activities authorized under ECL §§ 27-1309(3) – (4) and ECL § 27-1313(8). The Department retains all its authorities and rights, including enforcement authorities thereto, under CERCLA, Article 27, Title 13 of the ECL or pursuant to any other provision of state or federal statutory or common law with respect to such access.

iii. The Department shall coordinate with Respondent related to access to the Site, except in the instance of a response to an imminent or actual threat to public health or the environment at or emanating from the Site, in which case the Department will make reasonable efforts to coordinate with Respondent and will provide notification of access within 24 hours following access, or within 72 hours if such 24 hours is not possible.

h. In addition to and separate from any costs to the state related to damage to or interference with remediation at the Site, Respondents shall pay to the Department all oversight costs related to the development, installation, generation, use or other activities related to renewable energy at the Site

i. Invoices shall be sent to one Respondent at the following address:

[insert Respondent contact information]

ii. Respondent acknowledges that additional charges may be billed at a later date for State Costs incurred.

iii. Within forty-five (45) days after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for State Costs as provided by 6 NYCRR 375-1.5 (b)(3)(i). Failure to timely pay any invoice will be subject to late payment charge and interest at a rate of 9% from the date the payment is due until the date the payment is made.

iv. Costs shall be documented as provided by 6 NYCRR 375-1.5(b)(3). The Department shall not be required to provide any other documentation of costs, provided however, that the Department's records shall be available consistent with, and in accordance with, Article 6 of the Public Officers Law.

v. Each such payment shall be made payable to the "Commissioner of NYSDEC" and shall be sent to:

Director, Bureau of Program Management

Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7012

vi. The Department shall provide written notification to the Respondent of any change in the foregoing address. The Respondent shall provide written notification to the Department (at the foregoing address) of any changes to the invoice contact and address provided under Paragraphs III or IV of the Consent Order.

vii. If Respondent objects to any invoiced costs under this Order, the provisions of 6 NYCRR 375-1.5 (b)(3)(v) and (vi) shall apply. Objections shall be sent to the Department as provided under subparagraph VI.C above.

viii. In the event of non-payment of any invoice within the 45 days provided herein, the Department may seek enforcement of this provision pursuant to Paragraph IV or the Department may commence an enforcement action for non-compliance with ECL 27-1423 and ECL 71-4003.

i. In no way diminishing or contravening Respondents' obligations under law, Respondents are responsible for and agree to remedy and/or pay for any and all responses to conduct that will or may tend to prevent or significantly interfere with a proposed, ongoing, or completed remedial program at the Site, including but not limited to damage to engineering controls. Respondents shall cooperate with the Department and, at Respondents' sole cost and expense, correct any impacts and establish any controls reasonably required in connection with such modifications. Respondent shall develop for Department approval a contingency plan in accordance with DMM-4/ Guidance for Photovoltaic Solar Projects at Closed Solid Waste Landfills. NYSDEC, Division of Materials Management.

j. Respondents agree to immediately stop work upon verbal or written notice from the Department if the Department suspects there are violations of this Order; prevention or significant interference with a proposed, ongoing, or completed remedial program the Site; and/or threats to public health or the environment. If verbal notice is provided, written notice shall follow within 24 hours. This work stoppage will be in place until the Department determines that violations or threats have been cured.

k. Respondent shall provide plans as required in the sub-sections below.

i. Respondents must provide design plans, as well as sufficient information as required under the DMM-4 for review and approval 30 days before the start of any work at the Site. The array structure design should keep a 10-feet radial buffer from any monitoring wells, vents and ports at the site in order to provide access for landfill maintenance and repair. This plan should include techniques and strategies for protecting the remedy, including any cover system, which will not interfere with the function of the existing remedial system, and maintenance if any, as well as not result in increased potential for erosion or unauthorized release of contaminants at or emanating from the Site during solar installation and other on-site activities by the Respondents.

ii. Respondents must provide final as-built plans.

iii. Develop for Department approval a Health & Safety Plan to be in place during and following construction. Respondent shall coordinate with the Department to develop emergency contact information, reporting procedures, and a notification list.

iv. Develop for Department approval a monitoring and maintenance plan for the solar energy gathering, generating, distribution, and other related infrastructure. A monitoring and maintenance plan should be submitted for both during and after construction. Any plan must be submitted at least 30 days prior to the expected completion date of the solar installation.

Alternatively, any existing Operation and Maintenance Plan shall be updated to include this requirement.

l. Ensure all design documents, other reports, or plans at the Site are stamped by a New York State licensed Professional Engineer.

m. The Respondent, their consultant or agent shall provide engineering oversight by a New York State licensed Professional Engineer during the construction of the renewable energy generating infrastructure, including on-site oversight. Such oversight shall include, but not be limited to, adherence to design, conformance to construction plans, on-site monitoring of construction, and confirmation there is no damage to engineering controls or any other component of the remedy.

n. If Respondents propose to convey the whole or any part of Respondents' ownership interest in the Site or becomes aware of such conveyance, Respondents shall, not fewer than forty-five (45) days before the date of conveyance or within forty-five (45) days after becoming aware of such conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed date of the conveyance, and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Consent Order. However, such obligation shall not extend to the granting of any rights under any mortgage, deed, trust, assignment, judgment, lien, pledge, security order, lease or any other right accruing to a party not affiliated with Respondents to secure repayment of money or the performance of a duty or obligation.

Respondents shall require that assignees, successors in interest, lessees and sublessees of the Site shall provide the same access and cooperation with the Department. Respondents shall not be responsible for any such parties' failure to comply. The Respondents shall ensure that a copy of this Order is provided to any current lessee or sublessee on the Site as of the effective date of this Order and shall ensure that any subsequent leases, assignments or transfers of the Site or an interest in the Site are consistent with this Paragraph of this Order.

o. Respondents shall comply with any land use restrictions and institutional controls on the Site in connection with the remedial program for the Site. If Respondents or their successors and assigns propose to change the use of the Site, as defined in ECL 27-1317 and 6 NYCRR Part 375-2.2(a), Respondents must comply with the notice requirements of 6 NYCRR Part 375-1.11(d).

p. Upon sale or other conveyance of the Site or any part thereof, Respondents shall notify, in writing, any grantee, transferee or other holder of an interest in the Site or any part thereof of the requirement that they must and shall provide access and cooperation to the Department, its authorized officers, employees, representatives, and all other persons implementing the remedial program for the Site under the Department's oversight. Respondents shall require that each grantee, transferee or other holder of an interest in the Site or any part thereof shall comply with any land use restrictions and institutional controls on the Respondents' portions of the Site in connection with the remedial program for the Site.

III. Communications

Respondents shall

a. Coordinate with DEC regarding the installation of [renewables infrastructure], including, but not limited to, phone calls, conference calls, and site visits.

b. Communicate to the Department if the Respondents and/or any of their contractors encounter anything unexpected, unusual, or questionable at the Site, and provide said notices as soon as encountered, but no later than 24 hours after discovery, to the Department.

c. All written communications required by this Consent Order shall be transmitted by electronic means, whenever possible. Paper copies should be provided upon request.

d. Communication from Respondents shall be sent to:

[insert agency/s contact information]

e. Communication from the Department to Respondents shall be sent to:

[insert respondent's contact information]

f. The Department and Respondents reserve the right to designate additional or different contacts and/or addresses for communication on written notice to the other. Additionally, the Department reserves the right to request that the Respondents provide more than one paper copy of any work plan or report.

g. Each party shall notify the other within ninety (90) days after any change in the addresses listed in Paragraphs III or IV. See Appendix A Paragraph VI.D for instruction on notification of invoice contact and address changes.

IV. Miscellaneous

a. Penalties

i. Respondent's failure to comply with any term of this Order constitutes a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a)(4). Nothing herein abridges Respondent's right to contest any allegation that it has failed to comply with this Order.

ii. Payment of any penalties shall not in any way alter Respondent's obligations under this Order.

1. Respondent shall not suffer any penalty or be subject to any proceeding or action in the event it cannot comply with any requirement of this Order as a result of any Force Majeure Event as provided at 6 NYCRR 375-1.5(b)(4). Respondent must use best efforts to anticipate the potential Force Majeure Event, best efforts to address any such event as it is occurring, and best efforts following the Force Majeure Event to minimize delay to the greatest extent possible. "Force Majeure" does not include Respondent's economic inability to comply with any obligation, the failure of Respondent to make complete and timely application for any required approval or permit, and non-attainment of the goals, standards, and requirements of this Order.
2. Respondent shall notify the Department in writing within five (5) Days of the onset of any Force Majeure Event. Failure to give such notice within such five (5) Day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall be deemed to know of any circumstance which it, any entity controlled by it, or its contractors knew or should have known.
3. Respondent shall have the burden of proving by a preponderance of the evidence that (i) the delay or anticipated delay has been or will be caused by a Force Majeure Event; (ii) the duration of the delay or the extension sought is warranted under the circumstances; (iii) best efforts were exercised to avoid and mitigate the effects of the delay; and (iv) Respondent complied with the requirements of Subparagraph IV.B.2 regarding timely notification.
4. If the Department agrees that the delay or anticipated delay is attributable to a Force Majeure Event, the time for performance of the obligations that are

affected by the Force Majeure Event shall be extended for a period of time equivalent to the time lost because of the Force Majeure Eevent, in accordance with 375-1.5(4).

5. If the Department rejects Respondent's assertion that an event provides a defense to non-compliance with this Order pursuant to Subparagraph IV.B, Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and Respondent's position prevails.

b. Respondent shall indemnify and hold the Department, the State of New York, the Trustee of the State's natural resources, and their representatives and employees harmless as provided by 6 NYCRR 375-2.5(a)(3)(i) and for any and all work related to [renewable energy, including its infrastructure, generation, and transmission].

c. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any provisions of this Order.

d. The terms of this Order shall constitute the complete and entire agreement between the Department and Respondent concerning the implementation of the activities required by this Order. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order. In the event of a conflict between the terms of this Order and any Work Plan submitted pursuant to this Order, the terms of this Order shall control over the terms of the Work Plan(s). Respondent consents to and agrees not to contest the authority and jurisdiction of the Department to enter into or enforce this Order.

e. Except as set forth herein, if Respondent desires that any provision of this Order be changed, Respondent shall make timely written application to the Commissioner with copies to the parties listed herein.

f. If there are multiple parties signing this Order, the term "Respondent" shall be read in the plural, the obligations of each such party under this Order are joint and several, and the insolvency of or failure by any Respondent to implement any obligations under this Order shall not affect the obligations of the remaining Respondent(s) under this Order.

g. If Respondent is a partnership, the obligations of all general partners (including limited partners who act as general partners) under this Order are joint and several and the insolvency or failure of any general partner to implement any obligations under this Order shall not affect the obligations of the remaining partner(s) under this Order.

h. Respondent's obligations under this Order represent payment for or reimbursement of response or oversight costs and shall not be deemed to constitute any type of fine or penalty.

i. Respondent and Respondent's successors and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent shall in no way alter Respondent's responsibilities under this Order.

j. This Order may be executed for the convenience of the parties hereto, individually or in combination, in one or more counterparts, each of which shall be deemed to have the status of an executed original and all of which shall together constitute one and the same.

k. This order shall terminate upon written agreement by all parties that no solar energy infrastructure remains at the Site, and that no obligations of the parties remain.

l. The effective date of this Order is the 10th day after it is signed by the Commissioner or the Commissioner's designee.

DATED: _____

[_____]

COMMISSIONER

NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

By:

_____

[_____], Director

Division of Environmental Remediation

CONSENT BY RESPONDENT

[insert index #]

Respondent, [insert owner name] hereby consents to the issuance of the foregoing order without further notice, waives its right to a hearing herein, and agrees to be bound by the terms, provisions, and conditions contained herein.

[insert owner name]

By [Signature]: _____

Name [Print]: _____

Title: _____

Date: _____

Email: _____

Acknowledgment

STATE OF _____)

) ss:

COUNTY OF _____)

On the _____ day of _____, in the year _____, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____

Notary Public

_____

CONSENT BY RESPONDENT

152052-24-02

Respondent, **[Insert Solar or Renewable Energy Developer]** hereby consents to the issuance of the foregoing order without further notice, waives its right to a hearing herein, and agrees to be bound by the terms, provisions, and conditions contained herein.

[Solar/Renewable Energy Developer]

By [Signature]: _____

Name [Print]: _____

Title: _____

Date: _____

Email: _____

Acknowledgment

STATE OF _____)

) ss:

COUNTY OF _____)

On the _____ day of _____, in the year _____, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____

Notary Public

EXHIBIT "A"

Map

D. ATTACHMENT 4 – TECHNICAL GUIDANCE FOR THE DEVELOPMENT OF RENEWABLE ENERGY PROJECTS ON DEC REGULATED SITES

GENERAL SCOPE:

REFERENCES:

A. NYSDEC Policy DER-31 Green Remediation.
B. New York State Solar Guidebook (NYSERDA).
C. Policy DMM-4 Guidance for Photovoltaic Solar Projects at Closed Solid Waste Landfills - NYS Dept. of Environmental Conservation (NYSDEC).
D. Executive Order-22 Sustainability and Decarbonization EO 22.pdf (ny.gov).
E. 6 NYCRR Part 375 - Environmental Remediation Programs (NYSDEC).
F. Chapter IV- Quality Services - NYS Dept. of Environmental Conservation 6 NYCRR Part 363 – 9.7 Solid Waste Programs (NYSDEC).
G. Technical Guidance for Site Investigation and Remediation (DER-10) - NYS Dept. of Environmental Conservation.
H. Solar-Panel-Construction-Stormwater-Permitting-and-SWPPP-Guidance.pdf (NYSDEC).
I. Chapter I – Fish and Wildlife – NYS Dept. of Environmental Conservation 6 NYCRR Part 182 - Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern; Incidental Take Permits (NYSDEC).
J. Chapter V – Resource Management Services – NYS Dept. of Environmental Conservation 6 NYCRR Part 608 – Use and Protection of Waters (NYSDEC).
K. Chapter X – Division of Water – NYS Dept. of Environmental Conservation 6 NYCRR Part 663 - Freshwater Wetlands Permit Requirements (NYSDEC).
L. Chapter X – Division of Water – NYS Dept. of Environmental Conservation 6 NYCRR Part 664 - Freshwater Wetlands Maps and Classification (NYSDEC).
M. Regulations Implementing Section 94-c of the Executive Law – Office of Renewable Energy Siting Chapter XVIII, Title 19 of NYCRR Part 900 (Subparts 900-1 – 900-15) (ORES).
N. Handbook on Siting Renewable Energy Projects While Addressing Environmental Issues | US EPA.
O. New York Education Law Section 7209 - Special Provisions (public.law).
P. Best Practices for Siting Solar Photovoltaics on Municipal Solid Waste Landfills | US EPA.

DEFINITIONS:

The following definitions are used in this section:

RESPONDENT: The property owner (whether private or government), responsible party, and/or developer seeking review and approval of the installation of a renewable energy system, as defined under administrative settlement and/or memorandum of understanding on a site.

DEVELOPER: Owner, lessee, or coordinating entity of the development project and party to a Memorandum of Understanding (MOU) or Order on Consent (CO) with the RESPONDENT

DEC or NYSDEC - Department of Environmental Conservation, Division of Environmental Remediation (DER); Division of Materials Management (DMM); Division of Fish and Wildlife (DFW)

ENGINEER: RESPONDENT'S authorized representative responsible for providing technical certified documents on behalf of the RESPONDENT; Certified to practice Professional Engineering in the State of New York in accordance with Section 7209 of the New York Education Law

SITE MANAGEMENT, ENGINEERING, AND INSTITUTIONAL CONTROLS: Definitions set forth in 6 NYCRR Part 375 Section 1.2 (6 NYCRR Part 375 – Environmental Remediation Programs) and Attachment A.

PRE-NOTIFICATION REQUIREMENTS

RESPONDENT proposing to install a renewable energy system on a DER site shall submit a written request to DEC at DERSiteControl@dec.ny.gov.

DEC sites regulated under 6 NYCRR Part 375 will be required to initiate a 60-Day Change of Use Notifications - NYS Dept. of Environmental Conservation as required by regulation (6 NYCRR Part 375-1.11(d)). A DEC project manager will be assigned to the Site. The project manager will be responsible for the interagency coordination and review of the technical documents. Coordination will begin with RESPONDENT's submittal of a Pre-Notification Readiness Form (Exhibit B- 1)

Both the 60-Day Prior Notification and the Pre-Notification Readiness Form shall be transmitted electronically to DERSiteControl@dec.ny.gov and the designated DEC Project Manager.

RESPONDENT proposing to install a renewable energy system on a Division of Materials Management (DMM) site shall submit a written request in accordance with 363-3.1.

RESPONDENT SUBMITTALS:

The RESPONDENT shall provide the following technical documentation to support review of the proposed development:

Modification of any existing Post-Closure Monitoring and Maintenance Manual and/or Site Management Plan for the site to address any necessary or desired changes to the maintenance and monitoring of the institutional or engineering controls resulting from construction of the renewable energy system. The modified manual must detail how maintenance of any final cover system, including vegetation around all structures, will be addressed, including measures for replacement of cap components, including vegetative cover, should the installation cause erosion or damage due to shading or concentrated water flow from system components. The modified manual must also include a plan for maintenance of the renewable energy system and increased site monitoring that may be associated with the secondary use. Sites that do not have a Post-Closure Monitoring and Maintenance Manual and/or Site Management Plan must submit a report that includes sufficient information to demonstrate that cover integrity, vegetation, drainage and drainage structures, gas venting structures, and any other related system will be maintained after construction and during operation of the renewable energy system.

Submission of an engineering report consisting of construction level drawings and plans, including cross section details of the renewable energy system which provide sufficient detail to allow for evaluation of the design which includes, but is not limited to, support frames, electrical equipment and components, rubber and concrete sleepers, ballast anchoring system, electrical conduit, etc., as they relate to the final cover system. The drawings should also provide locations of all temporary and/or permanent access roads. Submission of an engineering report addressing at a minimum:

a. Renewable energy system design. The report must include a detailed description of the system, including the number of panels and rows, design of the rack and ballast system, proposed wiring conduit systems, and project specifications. Grounding electrodes must be located outside of the site footprint. Design of the array system must allow for continuous maintenance of the final cover system for the life of the project. These maintenance tasks include vegetation maintenance and mowing, gas system repair, and site monitoring and inspections. Aggregate materials imported to the site must meet the allowable constituent levels for imported fill and soils in accordance with testing frequency in DER-10 - Section 5.4 Table (e), for the site's intended use designation.
b. Settlement, slope failure, and slippage. The report must include a stability analysis demonstrating that the proposed placement of the Renewable energy system will be geotechnically stable. The report must include calculation of the maximum anticipated load from the renewable energy system. The stability analysis must include any additional load of items utilized during construction, such as heavy equipment. The settlement analysis must take into

account placement of concrete pads and racking systems on the site cover system. To the extent feasible a self-leveling surface, pour in place ballasted ground systems should be considered. The report must address potential differential settlement which is a particular risk to array piers, footings, and electrical conduits and can alter the position of renewable energy system components, including solar panels in relation to the sun.

c. A stream and wetland delineation report summarizing the stream and wetland characteristics including: NYS water quality classification of mapped streams, the Fisheries Index Number (FIN) or Waterbody Index Number (WIN), a description of stream flow (perennial, intermittent, or ephemeral), Cowardin classifications of all federal, state, and locally regulated wetlands, the wetland class consistent with 6 NYCRR Section 664.1 (if applicable), a summary of all field data collected, and ArcGIS compatible spatial data of the field delineated stream and wetland features. DEC will review the stream and wetland delineation reports and will provide to the respondent jurisdictional determinations pursuant to ECL Article 15 and ECL Article 24, respectively. Jurisdictional determinations are valid for a period of five years from the date of issuance. After five years, determinations and delineations will be considered expired and subject to change until a new delineation is conducted and DEC issues a new jurisdictional determination. The respondent shall also seek wetland and stream jurisdictional determinations from the U.S. Army Corps of Engineers. To the maximum extent practicable, proposed construction work should avoid disturbance to ecological resources as defined in DER-10 including within state-jurisdictional wetlands and/or the regulated adjacent area, or protected surface waters and endangered or threatened species occupied habitat.

d. Stormwater Pollution and Prevention Plan (SWPPP). The design must consider heavy precipitation events addressing at a minimum the precipitation from a 100-year 24-hour storm event for the site location. Storm water runoff calculations should be included for drainage ditches, swales, and retention ponds. The report must also include a discussion of any changes in storm water management practices as a result of construction.

e. Landfill gas management. The report must address potential gas migration pathways and the impacts, if any, of the array on the landfill's gas management system. Buildings, electrical equipment, and subsurface utility conduits can become landfill gas receptors and accordingly all buildings must be designed to prevent the accumulation of gas within the structure. Utility lines near the landfill should be located above ground when feasible. Buried utilities should be designed to minimize the potential for landfill gas to enter the conduit and create a safety (explosion, fire) or health hazard. An updated gas survey must also be provided.

f. Wind and snow. The report must include wind uplift calculations to confirm the ballast design will prevent components from blowing over and damaging the final cover system. Wind and snow accumulation increase the loads placed on components and can increase the stress applied to the support structures. Designs at sites that are located in areas prone to significant wind or snowfall may need to consider the use mounting systems that are certified for higher mechanical loading.

g. Construction techniques. The report must include a discussion of construction techniques which will be utilized to protect the final cover system and specifications for equipment used during construction to ensure that loads do not exceed 10 psi. If loads greater than 10 psi cannot be avoided during construction, the report must include a demonstration that the cover system can withstand the increased loading without damage. The report should also address the use of temporary roads, utilization of boot systems for punctures that cannot be avoided, flagging of gas vents and monitoring wells, utility burial precautions, etc. For conduits placed aboveground, placement of conduits on stone to inhibit vegetative growth should be considered to reduce maintenance efforts in mowing and trimming vegetative growth. It is DEC's experience that placement of invertors at the end of rows while running all wires on racks minimizes the number of conduits on or underground and may also minimize maintenance efforts.

h. Design of final vegetative cover systems shall conform to NYS Utility Corridor Pollinator Habitat Guidelines pollinator habitat guidelines (https://agriculture.ny.gov/system/files/documents/2020/06/pollinatorhabitatguidelines_0.pdf).

i. Design of electrical and labeling components shall comply with substantive requirements of the local municipality codes.

j. Contingency plan. The contingency plan in the post-closure monitoring and maintenance operations manual and/or site management plan shall be modified to include responses to potential problems such as erosion or construction-related damage to the final cover system, and detection of unsafe concentrations of explosive gas. If a contingency plan does not currently exist, one addressing these issues must be prepared.

Submission of a copy of the Memorandum of Understanding (MOU) or Consent Order between the RESPONDENT and DEVELOPER. The MOU or Order shall include the substantive requirements set forth in this guidance. DEC shall be notified of the damage and corrective action in accordance with the memorandum of agreements.

In accordance with 6 NYCRR Part 375-1.11 (c), a financial plan shall be provided by the RESPONDENT to establish expenses for future monitoring, inspection, maintenance, and establish means for meeting these costs for the lifecycle of the project. Decommissioning cost should also be provided. Financial assurances may be required when post installation maintenance and monitoring is expected to exceed $5 Million, under consultation with DEC.

DEC REVIEW OF PROJECT SUBMISSIONS:

DEC will review the project submissions to be reasonably assured that construction, operation, and maintenance of the Project will not compromise the engineering controls, including any final cover system of the site, will not interfere with access for site maintenance, will avoid unnecessary disturbance of ecological resources, and will not result in increased potential for erosion, or unauthorized release of landfill gas. DEC will notify the RESPONDENT with a Notice of Complete Application in writing. Written comments and/or approvals will be issued by DEC with 60-days of receipt of a complete package.

Approval will not relieve the RESPONDENT from their obligation to comply with any other applicable federal, state, and local laws and regulation.

DEC shall review the RESPONDENT's proposed plans for development and will coordinate with the RESPONDENT to avoid or minimize impacts to ecological resources to the maximum extent practicable and inclusion of any permitting requirements.

EXECUTION

GREEN REMEDIATION PRACTICES

A. Work includes practices related to reducing waste generation; energy usage; emissions including greenhouse gases (GHGs), nitrogen oxides (NOx), sulfur oxides (SOx), particulate matter and hazardous air pollutants (HAPs); water usage; and land and ecosystem disturbance.

B. The RESPONDENT shall implement practices in the performance of the requirements of the Work to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, and protect and preserve natural resources.

C. The RESPONDENT shall utilize concepts and techniques presented in the New York State Department of Environmental Conservation – (NYSDEC) Program Policy DER-31/Green Remediation.

D. The RESPONDENT shall implement practices and procedures to meet the State-wide green-house gas reduction goals and environmental performance goals of DEC

consistent with NYSDEC Program Policy DER31/Green Remediation and Executive Order-22, Sustainability and Decarbonization. In general, such practices and procedures shall include, but are not limited to:

1. Reducing direct and indirect Green House Gas (GHG) and other air emissions.

2. Increasing energy efficiency and minimizing use of non-renewable energy and resources.

3. Conserving and efficiently managing natural resources such as soil, water and habitat, preferential using native plant species and diversity, controlling invasive species, mulching/composting vegetation clippings, and to the extent possible providing habitats for native species.

4. Minimizing waste, increasing recycling, increasing reuse of materials, furnishing materials from local sources, and minimizing the disposal transport distance using local facilities.

5. Maximizing the reuse of land and the reuse/recycling of on-site materials; and

6. Applying green remediation concepts, such as minimizing energy intensive operations.

E. Specifically, RESPONDENT shall consider inclusion of the following provisions:

1. Beneficial reuse of materials that would otherwise be considered a waste (e.g., crushed clean concrete as base or fill (outside of wetlands), mulching or composting vegetation clippings).

2. Establishment of support zone and storage/laydown areas to minimize the disturbance of habitats and vegetated areas outside of the work zone.

3. Include energy saving measures in all proposed structures, facilities, and operating systems to minimize electricity and water consumption/disposal, such as using variable speed drives for motors, incorporating appropriately selected insulation and energy saving fixtures.

4. Reduce vehicle idling. All vehicles, both on and off road (including construction equipment) shall be shut off when not in use for more than 5 minutes, consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition For Heavy Duty Vehicles;

5. Use equipment and vehicles that reduce emissions, specifically from compression-ignition engines, and especially in urban areas.

6. Incorporate the use of blended bio-diesel fuel for all compression-ignition powered equipment.

7. Establish minimally invasive and well-designed traffic patterns for on-site activities to reduce impacts to land and ecosystems.

8. Use native drought resistant species for re-vegetation during site restoration.

9. Control of invasive species to avoid establishment on-site.

F. RESPONDENT shall comply with DEC's policy to utilize, as approved by DEC, recycled content materials, locally manufactured materials, and low-emitting materials.

G. SOLID WASTE MANAGEMENT

1. Develop and implement a waste management program in accordance with ASTM E1609 and as specified herein.
2. Collection: Implement a recycling/reuse program that includes separate collection of waste materials of the following types as appropriate to the project waste and to the available recycling and reuse programs in the project area.
3. Land clearing debris – re-use mulching or composting to the extent practicable.
4. Masonry/Asphalt – sample and re-use or recycle these materials if uncontaminated.

NUISANCE CONTROLS

The RESPONDENT is responsible for developing means and methods as well as accounting for requirements or proposing alternate best management practices which meet the intent of this provision (i.e., minimizing nuisance conditions which may adversely impact the public or the environment through appropriate engineering controls). DEC has zero tolerance for nuisance conditions, including fugitive dust, noise, vibration, turbidity, invasive species, disruptive lighting, or other situations which may give rise to complaints from the community. The point of compliance for fugitive dust, turbidity, vibration, noise, lighting, or other nuisance management issues will be at the limit of the work zone. At the point of compliance, no visible dust (or visible contrast in water clarity) is allowed. The RESPONDENT shall provide advance notification to the community of any work activities that will generate nuisances. The minimum notification period is 48 hours before noisy work is scheduled. Longer notification periods of a week or more may apply to work likely to exceed the local noise regulation or other levels or at the start of a project.

NOTIFICATION:

RESPONDENT shall provide DEC with Notification of construction start 30-days in advance of mobilization. A pre-construction conference will be required to ensure compliance with the Approved Plans. At least 10 days prior to the start of work the RESPONDENT shall provide DEC with a construction work plan including the following elements: primary site contact, schedule and sequencing of work, proposed equipment and materials, and daily inspection monitoring and reporting protocols. DEC retains the right to request modifications should proposed work conflict with the approved Change in Use Engineering Plan Submittal

DEC reserves the retains the right to inspect the facility pursuant to 6 NYCRR 375-1.8.

Landfill and project owners must recognize that disruption of electric generation and project schedule may be required if repair of the cap system is necessary. Work shall be suspended until corrective actions are completed to DEC's satisfaction.

RESPONDENT shall confirm that the site access is maintained for DEC and stormwater controls are maintained in accordance with NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001), including maintenance of Stormwater Pollution and Prevention Plan and accompanying inspections.

RESPONDENT shall notify DEC within 24 hours if the engineering controls are compromised. Corrective actions shall be provided by the RESPONDENT for DEC review in a timely manner. Transmit all notifications in writing.

RESPONDENT shall provide DEC with notification of completion of corrective action in writing.

COORDINATION OF WORK:

RESPONDENT shall provide certified design modifications to DEC for review and approval prior to implementation.

RESPONDENT shall be required to provide certified third-party inspection services of completed work. Corrective actions identified through the progress of work shall be reviewed by DEC on a routine basis.

If RESPONDENT directives conflict with DEC reviewed and approved plans, then the RESPONDENT shall be responsible for notifying and reconciling variances through written notification to DEC, within 14 days of the change. Variances shall be reviewed and approved by DEC prior to Issuance of Final Completion.

RESPONDENTS shall submit monthly progress reports to DEC. Monthly Reports shall include:

Work Progress to date

Projected work (1 month look-ahead)

Design and Construction Quality Assurance and Control – Potential design changes and Construction Corrective Action (s)

PUBLIC INTEREST POST CONSTRUCTION REQUIREMENTS

COMPLETION INSPECTION AND RECORD REQUIREMENTS

RESPONDENT shall provide DEC with Notice of Substantial Completion and provide 30-days for a joint inspection between the RESPONDENT, ENGINEER, and DEC.

RESPONDENT shall provide final record documentation within 60-days of Notice of Final Completion.

Post Closure and/or Addended Site Management Plans and Annual Period Review Reports shall be provided to DEC to ensure compliance with the modifications approved under Part 1.5 (B.) to certify the integrity of the institutional and engineering controls, including site cover, drainage, access, and gas venting systems.

-END-

E. ATTACHMENT 5 – PRE-NOTIFICATION READINESS FORM

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
RENEWABLE ENERGY SITING

PRE-NOTIFICATION READINESS FORM

Completion of this form will help DEC review the proposed project, determine possible permitting requirements, and ensure that all applicable programs attend or provide comments for a mandatory pre-application meeting. Please respond to the questions as completely as possible, noting any areas you are not sure of, and including any information about the project and/or site that might aid DEC's review.[1] Once completed, please submit this Permit Readiness Checklist form electronically to DERSiteControl@dec.ny.gov and the assigned DEC Project Manager.

Please include the following information[2]:

1. Brief narrative description of the proposed project including facility size, its function, and its benefit.
2. Any applicable regulation, or policy, or guidance known prior to the receipt of the application and its impact on the project's feasibility, regulatory, or review process.
3. United States Geological Survey (USGS) map(s) with site boundaries of the proposed project clearly delineated, including the title of the USGS quadrangle sheet from which it was taken;[2]
4. Aerial photos and/or geospatial data regarding the site; including a site map including any known ecological resources (e.g., wetlands, streams, endangered, threatened or special concern species, etc.) and existing culverts with proposed site plans overlain including panel layout, energy storage facilities, access roads, power interconnections (e.g. collection lines), clearing of vegetation (forest, shrub, & herbaceous), other activities and structures integral to the project involving the placement of fill, fencing, grading, grubbing, selective cutting to the extent available;
5. Street map indicating the location of the proposed project.
6. List of any local or regional governments or entities and their historical involvement with this project or site, as well as any other DEC divisions.
7. Identification of existing NYSDEC approved Site Management Plans or operating permits.
8. Contact names and information whose attendance/input would be helpful in facilitating this project (e.g., Soil Conservation Districts, health departments, local zoning officials, etc.).
9. Describe how the project will support goals outlined under New York State Climate and Community Protection Act (CLCPA) New York's Climate Leadership & Community Protection Act - New York's Climate Leadership & Community Protection Act (ny.gov).

A. GENERAL INFORMATION

[1] Please be advised that this form is not a permit application. To receive authorization, approval, or a permit to conduct regulated activities, a formal request must be filed, and authorization must be issued by the appropriate Bureau within the Department prior to the conduct of the regulated activity. This form is used solely for the Department's preliminary review and discussion of this project to determine what permits or authorizations may be needed to conduct the proposed activity. Any guidance offered to the applicant during this process is non-binding on the Department or the applicant and a final response can only be rendered through the actual issuance of permits, approvals, and/or authorizations.

[2] Information is available through DECinfo Locator - NYS Dept. of Environmental Conservation.

1. Name of Proposed Project:
2. Facility Size (Acre/MW):
3. Consultant/Contact Information (if any):

4. Name of Prospective Applicant:
   Address/tel./fax:
   Company name:
   Company address/tel./fax:
5. Does the applicant own the property?

   If the applicant is not the property owner, please provide contact information for the property owner and evidence of having property owner permission to use the property for the proposed project.

6. Does the project have any existing NYSDEC Site #s assigned [V, C, HW]? If yes, please provide:

B. PROPOSED PROJECT LOCATION

1. Street address: Municipality:
   County: Zip Code:
   Impacted Parcels (Block #, Lot #), (Block #, Lot #)…
   Project is located in a DAC: within ½ mile of DAC:
   X Coordinate in State Plane (project centroid):
   Y Coordinate in State Plane (project centroid):

C. PROPOSED ACTIVITY

1. Estimated Schedule: Date permits needed or desired by, proposed beginning anticipated construction date; construction completion, and proposed operation of facility date:

2. Funding Source: Is any Federal Funding being used for this project?
   State Funding over one million dollars? Is funding secured at this time?
   Is funding conditional? If yes, on what?

3. Is the project contingent on receiving the identified funding?
   If yes, please explain:

4. Which NYSDEC permits do you think you will need for this project (DEC will confirm this through the checklist review process)?

5. Does this project qualify as a State Environmental Quality Review (SEQR) Type 1 or Type 2 Action?

6. Which, if any, Department(s), Bureau(s), and/or DEC staff have you already contacted regarding the proposed project?

7. Are there any existing DEC controls (e.g., site management plan) that will need to be modified because of this project?
   If yes, please explain and identify the project reviewer of the requirements to be modified.

8. Please identify any pre-permit actions or modifications you have applied for or obtained from DEC or other state agencies for this project:

Permit Readiness Checklist Submitted By:

Signature Date

Print Name