Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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July 7, 2017

Paul Zensky
Solten Randolph 4500, LLC.
c/o Soltage LLC
66 York Street, 5th Floor
Jersey City, NJ 07302

RE: **Final Decision**
Approval with Conditions
Application for: BWP SW 36 Post-Closure Use - Major
Ground Mounted Solar Photovoltaic (PV) Array
Transmittal No. X273212

AT: Republic Services
BFI Randolph Landfill
2 Johnson Drive
Randolph, MA 02368
Facility ID No. 210892 Regulated Object No. 319865

Dear Mr. Zensky:

The Massachusetts Department of Environmental Protection, Solid Waste Management Section (the "MassDEP"), has completed its Administrative and Technical review of the referenced Post-Closure Use permit application (the "Application") for the Randolph Landfill (the "Landfill") located at 2 Johnson Drive, Randolph, Massachusetts.

MassDEP has determined the Application, including the supplemental submittals, is administratively and technically complete and hereby issues this Decision regarding the Post-Closure Use of the Landfill for a 4.8 megawatt ("MW") DC (3.96 MW AC) solar photovoltaic ("PV") array, subject to conditions as specified herein.

This approval supersedes the Final Decision, Approval with Conditions issued by MassDEP on June 16, 2016 (BWP SW 36, Transmittal No. X269530) for a PV array on the Landfill. The Applicant has submitted this new Application to supplement the original PV array application due to modifications to the design of the proposed PV array.

I. SUBMITTALS:

The Application consists of twenty-eight 36" by 24" electrical drawings and a bound report entitled:

"Major Post Closure Use Application
Republic Services Randolph Landfill
2 Johnson Drive, Randolph, MA 02368
Prepared for Solten Randolph 4000, LLC,
December 2016"

The Application was received by MassDEP via e-mail on December 23, 2016, and via Fed-Ex on December 29, 2016, containing:

1) A cover letter dated December 22, 2016, prepared by Tetra Tech ("Engineer") signed by John Scaramuzzo;
2) A completed BWP SW 36 Post Closure Use – Major application form signed by John Zensky, Soltage LLC. Project Manager and sealed and signed by John Scaramuzzo, Massachusetts Registered Environmental Engineer No. 41349;
3) A project narrative prepared by Tetra Tech;
4) Manufacturer's equipment catalogs;
5) Solar Array structural calculations prepared by Schneider Structural Engineers and sealed and signed by Ronald H. Schneider, Massachusetts Registered Structural Engineer, No. 45127;
6) Three Racking System structural Drawings by Schneider Structural Engineers and sealed and signed by Ronald H. Schneider, Massachusetts Registered Structural Engineer, No. 45127;
7) A Geotechnical Analysis by Design Consultants Inc. prepared by Michael F. Clark, Massachusetts Registered Professional Civil Engineer No. 34818;
8) A MassDEP Wetlands Program Checklist for Stormwater Report, prepared by Tetra Tech sealed and signed by Sean Patrick Reardon, Mass. Registered Civil Engineer No. 41062;
9) An Interconnection Service Agreement between Massachusetts Electric Company (doing business as National Grid) and Soltage;
10) An "Operations and Maintenance Plan for the Randolph Landfill Solar Facility"; and
11) A letter issued by Republic Services dated February 16, 2016, supporting the proposed project.

The twenty-eight electrical drawings were prepared by Whitman, Cranberry, New Jersey, electrical engineering consultants, and sealed and signed by Jeffrey Thoens, Massachusetts Registered Professional Electrical Engineer No. 50652.

Supplemental information was submitted on April 18th and June 8, 16 and 19, 2017.

II. APPLICATION REVIEW AND DECISION PROCESS:

The Application was submitted and reviewed pursuant to the provisions of 310 CMR 19.029(2): Applicable Permit Procedures and 310 CMR 19.033: *Permit Procedure for an Application for a Permit Modification or Other Approval*. According to these review procedures, MassDEP's decision regarding the proposed activities shall be either: a "Provisional Decision" pursuant to 310 CMR 19.033(4)(a); or a non-provisional decision pursuant to 310 CMR 19.033(4)(b). Given that the Application supplements a previous permit application and this permit supersedes the previous MassDEP permit (BWP SW 36, Transmittal No. X269530) and provides limited revisions to the original project proposal, MassDEP has determined that a non-provisional decision is appropriate for this Application.

MassDEP has reviewed the Application pursuant to 310 CMR 19.000: *Solid Waste Regulations*, 310 CMR 19.143: *Post-Closure Use of Landfills* and MassDEP's *Landfill Technical Guidance Manual*, *May 1997* (the "Manual").

III. SITE DESCRIPTION:

The Randolph Landfill property covers approximately 295 acres, of which approximately 81 acres were landfilled. The Landfill ceased accepting waste in 1995 and in 1998 a final cover system was constructed consisting of 12-inches of top soil, 9-inches of drainage sand, a 40 mil textured High Density Polyethylene (HDPE) low permeability barrier layer, placed over a 4-inch to 6-inch layer of sandy silt.

An active landfill gas collection system was installed at the Landfill consisting of vertical gas extraction wells with above grade controls and lateral landfill gas conveyance pipes installed beneath the final cover system geomembrane. The collected Landfill gas is currently combusted in two enclosed flares that are permitted to operate pursuant to a Non-Major Comprehensive Plan approval issued on November 25, 2003, by MassDEP's Northeast Regional Office Air Permitting Section.

IV. POST-CLOSURE USE SOLAR ARRAY PROPOSAL SUMMARY:

Republic Services ("Owner") is the owner of the Landfill and prepared a February 16, 2016, correspondence stating their support for Soltage, LLC ("Soltage") to construct the ground solar photovoltaic array at the Landfill. Solten Randolph 4500, LLC ("Solten") is a special purpose entity that is owned by Soltage along with other investors and is managed by Soltage. Solten has assumed ownership of the permitting rights for the Randolph Landfill PV array. Hereinafter, Solten shall be referred to as the "Applicant". The Applicant and all construction and maintenance personnel associated with the solar photovoltaic installation on the Landfill shall be referred to as the "Applicant's Contractors".

The Applicant previously proposed and MassDEP previously approved a 4.85 MW DC solar photovoltaic ("PV") array installation on approximately 30 acres of the top and 3 to 1 side slopes of the 81 acre Landfill. The Applicant submitted a new Application due to modifications to the design of the proposed PV array including: using string inverters, smaller transformers to be located on top of the Landfill and new ballast block sizing.

The solar array layout was designed by Schletter, Inc. based on site specific information and total array size of 4.8 MW DC. Schneider Structural Engineers provided drawings and structural calculations signed and stamped by Ronald H. Schneider, Registered Structural Professional Engineer No. 45127, based on the Schletter design. Various load combinations and factors of safety for the panel mounting system were designed and calculated for uplift, overturning and sliding stability as required by the Massachusetts Building Code. RISA-3D 14.0 was used to determine the reactions when the rack was tilted at 5, 10 and 15 degrees along Landfill side slopes up to 20 degrees.

Given this basis of information for the system and the Landfill final cover system construction certification reports, Design Consultants, Inc., ("DCI") Michael Clark, Registered Civil Professional Engineer No. 34818 determined the appropriate crushed stone to keyed concrete block coefficient of friction to be 0.81, an appropriate sand/geomembrane coefficient of friction to be 0.67 (36.6 degrees) and calculated a factor of safety against sliding of 1.81. The Applicant stated that the proposed construction will be stable since the safety factor is above 1.3.

The stability of the existing Landfill final cover system was analyzed during the PV array design and it was determined that the drainage component of the final cover system should be enhanced prior to installation of the PV array on the Landfill side slopes. The Applicant submitted a BWP SW 11 Landfills – Major Modification application (Transmittal No. X272258) to MassDEP on September 23, 2016, proposing to modify the 9 inch sand drainage layer of the Landfill final cover system to improve the drainage capacity and corresponding stability of the final cover system. MassDEP approved the permit on April 14, 2017. The drainage improvement consists of the installation of intermediate drain pipes within the existing sand drainage layer to reduce the water levels in the sand, which can impact the veneer stability of the cover system. DCI performed a series of stability calculations the most recent being those submitted on June 19, 2017 due to changes in the racking system. DCI determined that, with a 70-foot pipe spacing, the maximum head on the side slope of 7.46 inches within the 9 inch sand drainage layer. DCI used an interface friction angle of 26.6 degrees and calculated saturated drainage layer factor of safety of 1.597, which exceeded the 1.5 factor of safety deemed by the Applicant to be adequate. DCI calculated a seismic condition factor of safety of 1.3, which exceeded the 1.0 factor of safety deemed by the Applicant to be adequate.

Based on the anticipated maximum loading of the ballasts, racking system and modules on the landfill surface, a bearing pressure of 310 pounds per square foot (psf) was calculated. The maximum loading of the equipment pads was calculated as 386 psf. Each of these values is below the maximum soil bearing capacity calculated to be 1,200 psf (with a 2.0 safety factor) and the Applicant stated the landfill cover will support the proposed PV array system.

As proposed, the PV array consists of the following components pending final selection of array components:

- Approximately 14,346 - HANWAH Q CELLS 335 W-PV modules;
- 132 SMA SUNNY TRIPOWER 30kW – string inverters;
- Six 540 kVA transformers;

- One 720 kVA transformer;
- Approximately 2,391 Schletter Inc. PV Minim Ground Mount System support racks;
- Approximately 4,782 concrete ballast blocks 31 to 41 inches wide by 7 feet long by 1 foot high;
- New reinforced concrete equipment pads located off the Landfill final cover system for transformers, inverters, reactors and AC subpanels; and
- Seven new utility poles located off the Landfill final cover system.

PV Array Design: The solar array will consist of approximately 14,346 photovoltaic modules (335 Watts each), which will be divided into 7 sub arrays. There will be 132 solar PV inverters in which the panel wiring will be connected to a fuse and converted to alternating current ("AC"). From the inverters the energy will be transmitted to the 22 electrical sub panels and then to 7 electrical transformers and reactors. All of the conductors feeding each piece of equipment will be run above the Landfill surface in conduit, except for road crossings. Where conduits cross the existing on-Landfill access road, the conduits will be installed in precast concrete trenches with H-20 rated road grade covers. The low voltage cable conduits will be mounted on the rack assemblies of each array. Where conduits cross the Landfill in areas where clear space has been maintained between PV arrays to provide vehicle access to active landfill gas wells, the conduits will transition from electrical metallic tubing ("EMT") to rigid galvanized steel ("RGS") and be covered with a minimum of 6 inches of clean gravel.

As the conduits run between arrays and traverse the Landfill to the inverters/sub panels/transformers, they will be installed above grade. Medium voltage cable conduits will run in accordance with the local electrical inspector and National Electrical Code (NEC).

The PV array will be located on the Landfill surface on areas with a 3 horizontal to 1 vertical (3:1, 33%, 18.4º) slope or less. The system consists of solar equipment mounted on concrete ballast foundations that will bear on a ¾" crushed stone pad excavated up to 3 inches into the vegetative support layer. The top of the crushed stone pad will be level to a slope no greater than 15º. Once the ballasts are installed, the vegetative cover surrounding each ballast foundation will be restored.

The solar array will utilize PV modules (39.4 inches by 78.5 inches) mounted on aluminum framed racks attached to the precast concrete foundations. The PV array will use polycrystalline PV modules laid out in panels, 1 module high and 6 modules long (panel layout 1 by 6), mounted on racks of 6 modules each with two ballast blocks per rack. The modules and associated racking will be approximately 53 inches above grade in the rear and 25 inches in the front (south side). The rows of solar panels will be spaced approximately 10 feet between rows. A 20 foot radius will be maintained between the solar modules and gas collection extraction wells.

Energy will be collected via electrical conduit to a load center and transformer, and inverter. The resulting power will then be transmitted into the National Grid local distribution system.

Ballast blocks size will depend upon the Landfill slope and the 110 mph design wind speed. Flat bottomed ballast blocks 84" long by 33 inches wide by 12" high will be used in Landfill areas with a ground tilt of between 0 degrees and 5 degrees. A crushed stone leveling pad will be

constructed to level the ballast block in both directions. Key bottomed ballast blocks 84" long by 34 inches wide by 12" high will be used in landfill areas with a ground tilt of between 6 degrees and 10 degrees. Key bottomed ballast blocks 84" long by 45 inches wide by 12" high will be used in landfill areas with a ground tilt of between 10 degrees and 20 degrees. Key bottomed ballast blocks will have 3" by 3" keys on the entire length of the 2 short (transverse) sides and along the uphill, 84" (longitudinal) side of the ballast block. Where the Landfill slope exceeds 15 degrees, the narrow (45 inch) side of the ballast blocks will set a maximum slope of 15 degrees by raising the downslope block with a crushed stone base. The surface of the crushed stone below the upslope and downslope blocks will be set at 15 degrees from horizontal along the block narrow side. A geotextile fabric will be laid over the Landfill's vegetative support layer. Minimal stripping of the top soil from beneath the ballast may be required. The longitudinal side of the ballast block will be set level.

As a condition of this Permit, prior to the installation of any ballast blocks at slopes greater than these design slopes (84" side level, 45" side at a maximum of 15 degrees on crushed stone, 20 degree maximum side slope), supplemental design information must be submitted by a Massachusetts Registered Professional Engineer including an analysis of the maximum loading on the racking system at the proposed racking system orientation, slope stability, and an analysis of the ballast block design for overturning and sliding. (Refer to Condition No. 4)

Concrete pads/blocks will be placed on the Landfill final cover system to support the electrical equipment, consisting of 132 blocks for the inverters (approximately 2'-0" by 4'-0" by 1'-0" high), 22 blocks for the sub panels (approximately 3'-8" by 4'-0" by 1'-0" high),), 7 blocks for reactors (approximately 5' 7" by 7' 4" by 1'-0" high) and 7 precast slabs (approximately 13'-2" by 13'-2' by 10" high) for the transformers. Conduits with flexible connections will enter the slab above grade. None of the electrical equipment will be enclosed within a building, therefore combustible gas alarms will not be necessary. Switchgear units will be pole-mounted and will not require concrete pads. In any location where the conduit penetrates the Landfill ground surface, explosion proof fittings will be utilized.

Approximately 7 new riser poles leading to an existing utility pole will be installed outside the limits of the Landfill final cover system to support overhead wires, a gang operated air break, a recloser, and a customer meter.

As a condition of this permit, if any revisions are made to the electrical drawings, the revised final details of all electrical work must be submitted to MassDEP. All electrical work must be designed in accordance with the most recent versions of the Massachusetts Electrical Code. All electrical permits must be secured from the local building official. (Refer to Condition No. 2)

Solar Glare Analysis/Remediation: Within the original PV array application, the Applicant submitted a discussion document regarding the reflectivity of solar panels and the potential for adverse glare impacts. The Applicant included the results of a site specific glare analysis using the USDOE Solar Glare Hazard Analysis Tool, based on a panel tilt angle of 20 degrees and an array orientation of 160 degrees and determined that the proposed array presented a "low potential for temporary after image" on Route 24. The Applicant stated that the developer will take responsibility to modify or remove any problem array areas that are identified.

As a condition of this permit the Applicant is required to confirm the assumption of a 20 degree tilt angle and a 160 degree orientation of the PV array by measuring these parameters as the racking system is installed. Should the tilt angle and/or orientation change significantly from the stated values, the Applicant is required to perform a revised glare analysis prior to installation of the panels on the racking system. The Applicant is also required to monitor the glare from the panels as they are installed to confirm that no glare issue develops and to take remedial actions if a glare problem develops. (Refer to Condition Nos. 19 and 24)

Landfill Access: As described in the Application and as a condition of this permit, during construction of the PV array, only low ground pressure vehicles (<7psi) will be permitted to travel over the Landfill final cover surface. Throughout all stages of construction, the Landfill final cover system must continually be monitored for any signs of damage or stress. A final inspection of the Landfill surface must also be performed at the conclusion of the PV array construction project and any areas of concern must be repaired. (Refer to Condition No.14)

Storm Water: The Landfill's surface level stormwater control system consists of rock-lined drainage swales, a perimeter swale lined with grass cover and/or rip rap erosion protection, and detention basins.

The potential stormwater impacts of the placement of solar panels over the landfill final cover system surface were evaluated using HydroCAD modeling of the pre-development and post-development runoff conditions for the 2-year, 10-year, 25-year, and 100-year storm events. The results of the stormwater analysis indicate that the proposed Landfill Solar Project does not increase the storm water flow.

Site Security: There are no proposed changes to the security fencing at the Landfill. Pursuant to 310 CMR 19.130(23) the Owner is required to provide sufficient fences or other barriers to prevent unauthorized access to the Landfill. The Owner must continually monitor and evaluate the potential for unauthorized access and institute all appropriate measures to prevent unauthorized access during the closure and post-closure period.

Post Closure and Post-Closure Use Operations and Maintenance: There are no proposed changes to the post closure operation and maintenance plan for the area to be maintained by Republic Services and not used for the PV array. The Applicant will be responsible for vegetation maintenance within 10 feet of the solar array components. Republic Services will retain responsibility for maintainance of the remainder of the Landfill.

As a condition of this permit, MassDEP is requiring that, during the first year of operation of the PV array, inspections of the Landfill final cover system in the array area be performed on a monthly basis and thereafter quarterly, at a minimum. (Refer to Condition No. 20)

Health and Safety: As stated in the Application and as a condition of this permit, MassDEP is requiring that a Solar Array Construction Period Health and Safety Plan and a Post Closure Operations and Maintenance Health and Safety Plan be submitted and that personnel training be provided for employees who access the solar array areas of the Landfill. (Refer to Condition Nos. 11 and 12)

Decommissioning Plan and Financial Assurance Mechanism: As a condtion of this permit, the Applicant is required to establish a Financial Assurance Mechanism in order that sufficient funds are available to properly decommission the solar PV array system and all of its appurtenant structures and features, and to properly restore the Landfill to its original condition. (Refer to Condition No. 22)

V. PERMIT DECISION WITH CONDITIONS:

MassDEP, having determined the information in the Application is satisfactory and in accordance with its authority granted pursuant to M.G.L. c.111, s. 150A, and 310 CMR 19.000, hereby issues this Final Decision regarding the Post-Closure Use of the Randolph Landfill for a Solar Photovoltaic Array subject to the conditions identified herein.

1. Permit Limitations: The issuance of this approval is limited to the proposed Solar Photovoltaic Array at the Landfill as detailed in the Application and does not relieve the Applicant from the responsibility to comply with all other regulatory or permitting requirements. Post-Closure Use construction shall proceed in complete compliance with the approved plans, MassDEP's regulations and requirements, the Manual or as required by this Approval. This approval does not relieve Republic Services, as the owner of the Landfill, from its responsibility to comply with all post closure monitoring and maintenance requirements for the entire Landfill. There shall be no deviation from this Approval without prior consent from MassDEP. MassDEP shall be consulted prior to any deviation from the approved design. MassDEP may require a permit modification application for significant design modifications.

2. Pre-Construction submittals: Prior to construction, the Applicant shall submit the following to MassDEP for its review and approval at least 60 days prior to commencing construction activities, unless otherwise approved by MassDEP:

   a) If any revisions are made to the general layout and details of the PV array support system, a final PV array layout plan with an accompanying statement that the engineering assumptions regarding stability, sliding, and the potential for glare impacts made in the Application, or as revised in the supplemental submittals, are consistent with the final PV array layout shall be submitted to MassDEP.

   b) If any revisions are made to the general layout and details of any PV modules, electrical conduits, conduit supports, electrical equipment, equipment pads, utility poles, etc., revised electrical drawings shall be submitted to MassDEP. All electrical drawings must be stamped by a Massachusetts Registered Electrical Engineer.

   c) A Construction Phase Health and Safety Plan and an Operations and Maintenance Phase Health and Safety Plan (for MassDEP records only). (refer to Condition No. 11)

3. Landfill Final Cover System Modification: Prior to installation of any component of the PV array on the side slopes of the Landfill, or on any area of the Landfill that would impact

modification of the drainage layer on the side slopes of the Landfill, the construction work to modify the Landfill side slope final cover drainage system, as proposed in the BWP SW 11 Landfills – Major Modification application (Transmittal No. X272258) and approved by MassDEP, must be completed in that area of the Landfill.

4. PV Array Installation: As submitted within the Application including supplemental information, the PV array racking system foundations have been designed to be installed with the long (84") side of the ballast block set level and the short (45") side of the ballast block installed up to 15 degrees from horizontal on Landfill side slopes up to 20 degrees. Prior to the installation of any ballast blocks at slopes greater than these design slopes, supplemental design information must be submitted by a Massachusetts Registered Professional Engineer including an analysis of the maximum loading on the racking system at the proposed racking system orientation, slope stability, and an analysis of the ballast block design for overturning and sliding.

5. Enclosures and Combustible Gas Alarms: Any enclosures that that allow human entry shall have a landfill gas monitor that is fully operational at all times. The monitor shall be calibrated to a methane standard; have an audible and a lighted beacon. At a minimum, the alarm shall be set to sound when the concentration of explosive gases exceeds 10% of the Lower Explosive Limit (LEL).

6. Regulatory Compliance: The Applicant, Engineer and Applicant's Contractors shall fully comply with all applicable local, state and federal laws, regulations and policies, by-laws, ordinances and agreements. This includes but is not limited to, 310 CMR 19.142: *Post-Closure Requirements*, 310 CMR 19.143: *Post-Closure Use of Landfills*, and 310 CMR 19.043: *Standard Conditions*. Applicable federal regulations include, but are not limited to, 29 CFR Part 1910, OSHA standards governing employee health and safety in the workplace and all applicable local, state and federal electrical codes and permits, including National Electrical Code (NEC), 2011 Edition, Article 690-"Solar Photovoltaic (PV) Systems", as amended.

7. Inspection and Repair of Settlement Areas: Prior to construction of the PV array, any suspect settlement areas on the Landfill project area shall be surveyed to determine the lowest spot. The surrounding area should be then surveyed to find the "relief point" defined as the lowest surrounding area where ponded water would flow off the cap. The elevation difference is defined as the "pond value". Minor settlement shall be defined as less than a 12 inch pond value. Any Landfill project area that has undergone minor settlement shall be corrected by the placement of additional vegetative support soil to promote runoff and the area shall be reseeded prior to installation of the PV array. Any area repaired should be surveyed and the location marked on a plan with the pond value. Any future settlement should be repaired and recorded cumulatively. If/when the total settlement reaches 12-inches, the area will be considered to have suffered "major settlement" as defined below and appropriate repairs to eliminate ponding on the low permeability layer shall be performed.

Major settlement is defined as a pond value of 12 inches or more. When this occurs, the final cover system must be repaired to prevent water from ponding above the low permeability layer. The Applicant may either:

1. Strip off the final cover soils above the low permeability layer, inspect and repair the low permeability layer if/as necessary, place low permeability soil as necessary to promote runoff, replace final cover soils; or

2. Expose the low permeability soil or geomembrane in a trench around the perimeter of the settled area. Fill the area with soil to form slopes promoting runoff. Cap the area with a new low permeability membrane, geosynthetic clay liner (GCL), or low permeability soil layer that ties into the existing low permeability layer at the identified perimeter. Place new drainage sand and vegetative support material over the new cap area.

Any proposal to repair minor settlement may be done as routine maintenance, provided that the Applicant's report the settlement to MassDEP and state their intent to perform repairs and provides MassDEP with final survey results and a summary report.

Any proposal to do major settlement repair must be submitted within a Corrective Action Design (BWP SW 25) permit application, since disruption of the final cover system will take place and repair details must be submitted and approved by MassDEP.

8. Notification of Construction: The Applicant shall notify MassDEP, Southeast Regional Office solid waste section chief, in writing (e-mail is acceptable) when the post-closure use construction commences and again when construction is completed.

9. Certification Report: Within ninety (90) days of completing the installation of the solar photovoltaic array, MassDEP shall be provided with a certification report for MassDEP's records. All construction work shall be completed under the supervision of a Massachusetts Registered Professional Engineer who shall have sufficient staff on-site to provide quality assurance/quality control (QA/QC) oversight for all construction work at the Landfill. The report shall be signed and stamped by a Massachusetts-registered professional engineer and include, at a minimum, written certification from the supervising engineer that the project was performed in accordance with MassDEP regulations, requirements and the approved Post Closure Use permit application. The report shall include a project narrative, as-built drawings depicting all pertinent site features and photographs representative of the construction processes and completed work. A list of equipment used on the Landfill, the Landfill area accessed by the vehicle, and the pressure rating of each vehicle shall be indicated in the certification report. Should the Applicant desire a formal review and written approval of the certification report, the Applicant must submit a formal BWP SW 43, Landfill Closure Completion permit application.

10. Preconstruction Work: Prior to commencement of construction activities, all Landfill gas extraction wells, remote valves, Landfill soil-gas monitoring wells, groundwater monitoring wells and other existing above ground structures on the Landfill cap and appurtenances shall

be flagged for visibility, and protective barriers shall be placed around such structures, as needed, to prevent damage by vehicles accessing the area.

11. Health and Safety: The Applicant, Engineers and Applicant's Contractors are responsible to ensure all necessary precautions are taken to protect the health and safety of workers and the general public during both the construction phase and during the operation and maintenance phase of the post-closure use.

    A site specific Solar Array Construction Period Health and Safety Plan shall be developed and submitted to MassDEP (for its files) prior to the beginning of any construction work. The Solar Array Construction Period Health and Safety Plan shall include as a minimum;

    - protocols for monitoring of landfill gas as needed,
    - protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable, and
    - training for all workers including the Applicant workers conducting construction activities at the Landfill regarding hazards associated with the landfill gas and the PV array, including electrical hazards.

    A site specific Post Closure Operations and Maintenance Health and Safety Plan for the post-closure use period, shall be developed and submitted to MassDEP (for its files) prior to the beginning of any construction work. The Post Closure Operations and Maintenance Health and Safety Plan shall include as a minimum;

    - protocols for monitoring of landfill gas as needed,
    - protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable, and
    - training for all workers including the Applicant workers conducting maintenance activities at the Landfill regarding hazards associated with the landfill gas and the PV array, including electrical hazards.

12. Personnel Training: The Applicant, Engineers and Applicant's Contractors shall instruct all construction and maintenance personnel regarding the potential hazards associated with landfill gas and shall give on-the-job training involving in any activity authorized by this permit. Such instruction and on-the-job training shall teach personnel how to comply with the conditions of the permit to carry out the authorized activity in a manner that is not hazardous to public health, safety, welfare or the environment.

13. Landfill Gas Notification Requirements:
    a. As specified in solid waste management regulations at 310 CMR 19.132 (5) (g),

    > *"When, at any time, the concentration of explosive gases exceeds 10% of the lower explosive limit (LEL) in any building, structure, or underground utility conduits, excluding gas control, gas recovery and leachate collection system components, the owner or operator shall:*
    >
    > 1. *take immediate action to protect human health and safety;*
    > 2. *notify the Department's Regional Office that covers the municipality in*

which the facility is located within two hours of the findings; and

3. *undertake the actions specified under 310 CMR 19.150, Landfill Assessment Requirements and 310 CMR 19.151: Corrective Action, as required by the Department."*

b. If at any time monitoring detects the presence of any combustible gases at or in excess of 10% of the lower explosive limit at any location within a building or within any utility conduits on site or off-site, the Applicant shall notify MassDEP's Bureau of Waste Site Cleanup-Emergency Response Section (508) 946-2850 within two (2) hours of the exceedance as per 310 CMR 40.0321(1) (a) of the regulations.

14. Vehicles Operating on the Landfill Final Cover System: The Applicant has not proposed to construct permanent or temporary access roads.

    Vehicles operating on the Landfill final cover system shall be low-pressure construction equipment, with fully loaded ground pressures of **7 psi** or less. Site specific engineering calculation must be submitted prior to operation of any equipment with a bearing pressure of greater than 20 psi on the access roads above the Landfill final cover system.

    Construction equipment shall limit turning on the vegetative support layer as much as possible. If MassDEP determines the use of any equipment is creating the potential for damage to the final cover system, the usage of such equipment shall immediately cease upon notification by MassDEP. All operators of the vehicles entering the final cover system area shall be clearly instructed by the on-site engineer and/or the contractor of the requirements of this permit prior to arrival, to avoid damage to the Landfill final cover system components.

    A list of equipment used on the Landfill, the Landfill area accessed by the vehicle, and the pressure rating of each vehicle shall be indicated in the certification report.

15. Permanent and Temporary Roads: Equipment shall not access the final cover system from permanent and temporary roads where the transition will result in excessive pressure and wear on the Landfill vegetative service. The on-site engineer may allow the construction of temporary ramps as necessary.

16. Integrity of the Final Cover System: All disturbances of the Landfill shall be limited to the proposed excavations and installations as depicted and described within the Application and approved plans. Excavations shall be limited to the topsoil layer. No excavations shall penetrate greater than 6 inches without written approval by MassDEP. No grounding rods for the PV array, electrical equipment, office trailers, etc. shall penetrate the Landfill final cover system low permeability layer. The Applicant shall verify the limits of the Landfill final cover system prior to installation of any security fence, utility poles, etc. that are designed to be installed outside the limits of the final cover system. The Applicant, Engineer and Applicant's Contractors shall ensure that vehicles operating on the Landfill surface do not compromise the integrity of the Landfill final cover system.

17. Construction Precautions: All excavations and construction shall be supervised by a Massachusetts Registered Professional Engineer. All necessary precautions shall be taken to protect the Landfill storm water control system, environmental monitoring network and the Landfill extraction wells and other on-site structures. All operators of vehicles entering the construction area should be clearly instructed by the on-site engineer and/or the Applicant's Contractor of the permit requirements to avoid damage to the Landfill components. The on-site engineer shall observe the extent of each excavation performed on the Landfill capping system. If any damage occurs to any Landfill components, the Engineer shall notify MassDEP within 24 hours and provide a written plan with a schedule for repairs.

18. Array Setbacks: The Applicant shall maintain a minimum 20 foot radius buffer between the closest edge of the PV array modules and all Landfill gas extraction wells and a 20 foot radius buffer between the electrical equipment and all Landfill gas extraction wells. The Applicant shall maintain a suitable access way for motorized equipment to access the landfill gas extraction wells.

19. Solar Glare Analysis/Remediation: During installation of the PV array racking system, the Applicant shall measure the panel support members prior to installation of the panels to pre-determine that the resultant tilt angle and orientation of the panels. Should the tilt angle and/or orientation change significantly from the 20 degree tilt angle and 160 degree orientation assumed in the glare analysis, the Applicant shall perform revised glare analyses as appropriate for each new set of conditions prior to installation of the panels on the racking system. Tilt angles shall be measured from a level horizontal plane, which may not coincide with the racking system tilt angles.

    The Applicant shall also monitor the glare from the panels as they are installed to confirm that no off-site glare issues develop. No portion of the array shall cause reflective glare to any motorist in any direction. The Applicant shall take remedial actions if any revised glare analysis indicates a problem will develop if the panels are installed on the racking system or if a problem develops after installation of the panels.

20. Post-closure Use Operation and Maintenance Plan: During the first year of operation of the PV array, inspections of the Landfill final cover system shall be performed on a monthly basis, unless otherwise approved in writing by MassDEP. Inspection reports shall be submitted to MassDEP within fourteen (14) days of the inspection. Following the first year of operation of the PV array, inspections of the Landfill shall be performed on a quarterly basis, or on an annual basis as determined by MassDEP at that time, and inspection reports shall be submitted to MassDEP within fourteen (14) days of the inspection. The Applicant, Engineer and Applicant's Contractors shall monitor the effectiveness of the site security system and the storm water management system which should include; swales, structures and any and all conveyance systems. MassDEP shall be consulted prior to any deviation from the approved storm water design. MassDEP may require a permit modification application for significant design modifications. Any erosion problems, settlement problems, security or other issues observed at the Landfill shall be reported to MassDEP and repaired immediately. When noted, all settlement shall be repaired. (refer to Condition 7)

21. Transfer: No transfer of this permit shall be permitted except in accordance with the requirements of 310 CMR 19.044. The form established by MassDEP for permit transfers is the BWP SW 49 application form.

22. Decommissioning Plan Financial Assurance Mechanism: The lease agreement between Republic Services and the Applicant includes a decommissioning plan that requires the Applicant to remove the permitted improvements from the premises.

    Pursuant to the provisions of 310 CMR 19.051, the Applicant shall establish a Financial Assurance Mechanism ("FAM") in order that sufficient funds are available to properly decommission the solar PV array system, and all of its appurtenant structures and features, and to properly restore the Landfill to its original condition The FAM shall be "in-place" at least thirty (30) days prior to the start of construction. MassDEP has determined that the appropriate amount of the required FAM is $70,000 per megawatt AC for landfills that have an existing FAM that covers landfill maintenance. Accordingly, the required FAM amount for the 3.96 megawatt AC array proposed at the Landfill is $277,200.

23. Entries and Inspections: In accordance with *310 CMR 19.043: Standard Conditions*, MassDEP and its agents and employees shall have the right to inspect the Landfill and any equipment, structure or land located thereon, take samples, recover materials or discharges, have access to and photocopy records, to perform tests and to otherwise monitor compliance with this permit and all environmental laws and regulations.

24. Reservation of Rights: MassDEP reserves the right to require additional assessment or action, as deemed necessary to protect and maintain an environment free from objectionable nuisance conditions, dangers or threats to public health, safety and the environment. MassDEP reserves all rights to suspend, modify or rescind this permit if it determines the solar array compromises the integrity of the final cover system and/or results in a threat to public health, safety or the environment. MassDEP reserves the right to modify and re-issue this permit based on the site specific calculations to be performed for this Landfill.

    This approval pertains only to the Solid Waste Management aspects of the proposal does not negate the responsibility of the owners or operators to comply with any other local, state or federal laws, statutes and regulations or enforcement actions, including orders issued by another agency now or in the future. Nor does this approval limit the liability of the owners or otherwise legally responsible parties from any other applicable laws, statutes or regulations now or in the future.

VI. REVIEW OF DECISION:

Pursuant to 310 CMR 19.033(4)(b), if the Applicant is aggrieved by MassDEP's decision to issue this decision, they may within twenty-one days of the date of issuance file a written request that the decision be deemed provisional, and a written statement of the basis on which the Applicant believes they are aggrieved, together with any supporting materials. Upon timely filing of such a request, the decision shall be deemed a provisional decision with an effective date twenty-one days after MassDEP's receipt of the request. Such a request shall reopen the

administrative record, and MassDEP may rescind, supplement, modify, or reaffirm its decision. If MassDEP reaffirms its decision, the decision shall become final decision on the effective date. Failure by the Applicant to exercise the right provided in 310 CMR 19.033(4)(b) shall constitute waiver of the Applicant's right to appeal.

VII. RIGHT TO APPEAL:

Right to Appeal: This approval has been issued pursuant to M.G.L. Chapter 111, Section 150A, and 310 CMR 19.033: Permit Procedure for an Application for a Permit Modification or Other Approval, of the "*Solid Waste Management Regulations*". Pursuant to 310 CMR 19.033(5), any person aggrieved by the final permit decision, except as provided for under 310 CMR 19.033(4)(b), may file an appeal for judicial review of said decision in accordance with the provisions of M.G.L. Chapter 111, Section 150A and M.G.L. Chapter 30A no later than thirty days of issuance of the final permit decision to the Applicant. The standing of a person to file an appeal and the procedures for filing such an appeal shall be governed by the provisions of M.G.L. c. 30A. Unless the person requesting an appeal requests and is granted a stay of the terms and conditions of the permit by a court of competent jurisdiction, the permit decision shall be effective in accordance with the terms of 310 CMR 19.033(3).

Notice of Appeal: Any aggrieved person intending to appeal a final permit decision to the Superior Court shall first provide notice of intention to commence such action. Said notices of intention shall include MassDEP Transmittal No. X273212 and shall identify with particularity the issues and reason why it is believed the final permit decision was not proper. Such notice shall be provided to the Office of General Counsel of MassDEP and the Regional Director for the regional office which processed the permit application, if applicable at least five days prior to filing of an appeal. The appropriate addresses to send such notices are:

Office of General Counsel
Department of Environmental Protection
One Winter Street
Boston, MA 02108

Regional Director
Department of Environmental Protection
20 Riverside Drive
Lakeville, MA 02347

No allegation shall be made in any judicial appeal of a final permit decision unless the matter complained of was raised at the appropriate point in the administrative review procedures established in 310 CMR 19.000, provided that a matter may be raised upon showing that it is material and that it was not reasonably possible with due diligence to have been raised during such procedures or that matter sought to be raised is of critical importance to the environmental impact of the permitted activity.

Please direct any questions regarding this matter to me at (508) 946-2847 or Dan Connick (508) 946-2884 or write to the letterhead address.

Very truly yours,

Mark Dakers, Chief
Solid Waste Management Section
Bureau of Air and Waste

D/DC

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ec: Republic Services
coctober@repubicservices.com

Randolph Board of Health
jmcveigh@randolph-ma.gov

Randolph Building Department
rlum@randolph-ma.gov

Tetra Tech, Inc.
John.Scaramuzzo@tetratech.com

DOER
Seth.Pickering@state.ma.us

DEP-Boston
ATTN: R. Blanchet
T. Higgins
J. Doucett
E. Fahle

DEP-SERO
ATTN: M. Pinaud
J. Viveiros
M. Dakers
T. Cushing

Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751

Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

1 English:
This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.

2 Español (Spanish):
Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.

3 Português (Portuguese):
Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.

4(a) 中國（傳統）(Chinese (Traditional):
本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。

4(b) 中国（简体中文）(Chinese (Simplified):
本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与MassDEP的多样性总监联系。

5 Ayisyen (franse kreyòl) (Haitian) (French Creole):
Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.

6 Việt (Vietnamese):
Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.

7 ប្រទេសកម្ពុជា (Kmer (Cambodian):
ឯកសារនេះគឺមានសារៈសំខាន់និងត្រូវត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងឆ្មោតជានាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។

8 Kriolu Kabuverdianu (Cape Verdean):
Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.

9 Русский язык (Russian):
Этот документ должен быть немедленно. Если вам нужна помощь при переводе, свяжитесь пожалуйста с директором по этике и разнообразие в MassDEP по телефону указанному ниже.

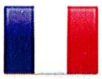
Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY# MassRelay Service 1-800-439-2370. http://www.mass.gov/eea/agencies/massdep/service/justice/
(Version 1.9.17)

10 العربية (Arabic):
هذه الوثيقة الهامة وينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في MassDEPعلى أرقام الهواتف المدرجة أدناه.

11 한국어 (Korean):
이 문서는 중요하고 즉시 번역해야합니다. 당신이 번역이 문서가 필요하면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

12 հայերեն (Armenian):
Այս փաստաթուղթը շատ կարեւոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորեւ.

13 فارسی (Farsi [Persian]):
این سند مهم است و باید فورا ترجمه شده است.
اگر شما نیاز به این سند ترجمه شده، لطفا با ما تماس تنوع مدیر MassDEP در شماره تلفن های ذکر شده در زیر.



14 Français (French):
Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

15 Deutsch (German):
Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.

16 Ελληνική (Greek):
Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.

17 Italiano (Italian):
Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.

18 Język Polski (Polish):
Dokument ten jest ważny i powinien być natychmiast przetłumaczone. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.

19 हिन्दी (Hindi):
यह दस्तावेज महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.

Contact Michelle Waters-Ekanem, Diversity Director/Civil Rights: 617-292-5751 TTY# MassRelay Service1-800-439-2370 http://www.mass.gov/eea/agencies/massdep/service/justice/
(Version 1.9.17)