Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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December 30, 2011

Robert Bersin, Director of Public Works
Town of Brewster
201 Run Hill Road
Brewster, Massachusetts 02631

and

Eric T. McLean, P.E.
American Capital Energy
15 Tyngsboro Road, Suite 4A
North Chelmsford, Massachusetts 01863

RE: Approval with Conditions
Application for: BWP SW 36 Post-Closure Use - Major
Solar Photovoltaic Array
Transmittal #: X238602

AT: Brewster Landfill
201 Run Hill Rd.
Brewster, Massachusetts
Facility ID#: 132270, Regulated Object#: 39111

Dear Mr. Bersin and Mr. McLean:

The Massachusetts Department of Environmental Protection, Solid Waste Management Section (MassDEP), has completed its Administrative and Technical review of the referenced Post-Closure Use permit application (Application) for the Brewster landfill (Landfill). The Application was prepared and submitted on behalf of the Town of Brewster and American Capital Energy (the Applicants) by Weston & Sampson Engineers, Incorporated (Weston or Engineer) of Peabody, Massachusetts.

MassDEP has determined the Application is administratively and technically complete and hereby **Approves** the Post-Closure Use of the Landfill for a 1.2 megawatt (MW) solar photovoltaic (PV) array subject to conditions as specified herein.

I. SUBMITTALS:

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* (Manual). The Application consists of the following:

A. The permit transmittal, application forms for Post-Closure Use - Major (BWP SW 36), narrative describing the proposed use, engineering calculations, six engineering drawings and documents received by MassDEP on November 3, 2011.

B. A letter report dated December 16, 2011, prepared by Weston & Sampson and received by MassDEP on December 16, 2011.

C. Supplemental Application information, prepared by Weston & Sampson, consisting of a report dated December 16, 2011, engineering drawings, engineering calculations and documents received by MassDEP on December 20, 2011.

The Application is signed and stamped by Duane C. Himes, Massachusetts Professional Engineer No. 32336.

II. SITE DESCRIPTION & INVESTIGATIONS:

The Brewster landfill occupies approximately 16 acres of an approximately 49 acre parcel of land which is owned and operated by the Town (Site). A Town operated transfer station has been constructed in the southern and central portion of the Site. The Brewster Department of Public Works (DPW) is located on the Site and has several buildings including a salt storage shed and a highway garage with offices for DPW personnel. The Landfill is shielded by dense, wooded vegetation that exists within the Site boundary. The Site is generally abutted by single-family homes to the west; single-family homes and a pond to the north; Run Hill Road to the south; Great Fields Road to the northeast; and residential properties (developed and undeveloped) to the east. The Landfill operations began in the 1940s and ceased accepting waste in 1998.

Existing Final Cover System Design: On October 13, 1998 and May 18, 1999, MassDEP approved two Corrective Action Design (CAD) permit applications for the Landfill. The final cover system was completed by September 1999. The closure consisted of final cover construction for four distinct adjacent areas of the Site:

- Old Landfill
- New Landfill
- Area 1
- Area 2

The Old Landfill is an unlined 5 acre area that was used by the Town of Brewster (Town) for disposal until 1980. The New Landfill is an unlined 8 acre area that was used by the Town for disposal from 1980 until closure. During final cover system construction for the New and Old landfills areas, two ash and wood waste material areas were discovered in the area near the swap shop which is referred to as Area 1. Area 1 was capped using pavement, an alternative cover system, due to the inert nature of the waste material. Additional municipal solid waste was also

encountered near the transfer station and this area, referred to as Area 2, was capped with a flexible membrane liner (FML)/pavement alternative cover system. The pavement component of Area 2 was necessary to maintain access to the transfer station.

Old Landfill and New Landfill Final Cover System: The Old and New Landfill final cover systems were installed with a minimum top slope of 5% and side-slopes no greater than 3:1. The Old and New Landfill final cover system was constructed of the following components from bottom to top:

- a minimum six-inch subgrade layer,
- a 6-inch sand gas venting layer with a minimum hydraulic conductivity of 1×10^{-3} cm/s)
- a textured 40-mil thick High Density Polyethylene (HDPE) FML barrier layer,
- a 12 inch thick course sand drainage layer with a minimum hydraulic conductivity of $7x10^{-3}$ cm/sec,
- a 12-inch thick topsoil layer

The Town submitted a closure certification report to the MassDEP on February 7, 2000. On December 29, 2011**,** MassDEP issued an approval with conditions for the construction certification report.

The closure design for the Old and New landfills incorporated a passive gas venting system consisting of 18 vertical gas vents. Three of the 18 gas vents are connected to horizontal trenches. The vertical gas vents were installed in 24 inch diameter bore holes advanced to the bottom of waste or groundwater table which ever was higher and back filled with clean stone. Each horizontal gas venting trench is connected to a passive gas vent.

Existing Post Closure Use Approvals: On September 28, 1999, MassDEP approved a post-closure use permit application for the following activities at the Landfill: operation of a compost area over the western portion of the New Landfill final cover system; operation of a swap shop and scrap metal drop-off area located in the southwest corner of the Site referred to as the Area 1; operation of a transfer station/recycling in the area designated Area 2; and, the DPW operation outside the limits of the Landfill's final cover systems.

Post-Closure Environmental Monitoring: An Initial Site Assessment for the Landfill was prepared by SEA Consultants, Inc. in August 1994 and approved by MassDEP on December 23, 1994. A Comprehensive Site Assessment was prepared by SEA in January 1998 and approved by MassDEP on September 14, 1998.

Post closure environmental monitoring (groundwater, surface water and soil gas monitoring) is currently conducted by the Town. The Town has not proposed any changes to the post closure environmental monitoring plan based on the proposed post-closure use.

III. POST-CLOSURE USE PROPOSAL SUMMARY:

American Capital Energy (ACE or Developer), through an agreement with the Town of Brewster (Town) and Cape and Vineyard Electrical Cooperative, Incorporated (CVEC), proposes to develop 1.2 MW solar photovoltaic installation on the Site. Hereinafter, the Town of Brewster,

American Capital Energy and all construction and maintenance personnel associated with the Town's Landfill shall be referred to as the "Applicants' Contractors". ACE in conjunction with the Town is proposing to construct and maintain a PV array on the Old Landfill and New Landfill final cover systems, consisting of the following components:

- Temporary access roads, as needed;
- Approximately 1,000 precast concrete ballasts (70 inches x 40 inches by 14 inches thick) will be placed on the sand drainage layer of the Old Landfill (West array), and New Landfill (North array). Additionally concrete ballasts will be placed contiguous but outside the limits of the New Landfill final cover system;
- 500 panel support racks (SunLink Groundmounted System) installed on the concrete ballasts;
- Approximately 4,600 PV modules (Yingli Solar Modules) will be placed on the PV panel support racks;
- Two electrical equipment concrete pads, one off the Landfill's final cover system and one on the Old Landfill's final cover system, will support the electrical equipment, including inverters, transformers, switchboards and switchgear;
- The PV panel racks will be interconnected using above grade cables except at temporary access road crossings;
- The inverters/transformer located on the electrical equipment concrete pad adjacent to the North array are connected to the Western array inverter/transformer electrical equipment concrete pad using both above grade and below grade cables;
- Switching gear and recording meter (25 KV switch and REC meter) will be mounted on a concrete pad in Area 1 and will convey electrical power off the Landfill via an electrical cable buried in a conduit duct bank, beneath paved areas of the transfer station, to a new utility pole to be installed west of the transfer station main building.

Temporary access roads will be constructed, if needed, during construction to minimize impact to the Landfill final cover system. The temporary access roads will be constructed by placement of a woven filter fabric over the vegetative support layer, and 18 inches of compacted dense graded crushed stone, as needed in accordance with GSE Lining Technology LLC design manual for soil thicknesses over liners, to maintain the required protection on the FML. If temporary access roads are to be used by heavy equipment traffic additional dense graded crushed stone will be added to provide a 36 inch separation between the FML and the road surface. The temporary access roads will be removed within six months of completion of construction and the road areas will be restored to meet the specification of the final cover system.

Most of the array will be on areas of the Landfill with a slope of less than 5% (2.9 degrees) but the edges may expand into areas there is up to a 15% slope (8.5 degrees**)**.

The solar array will utilize PV modules (3.25-foot by 5.42-foot) mounted on galvanized steel, aluminum, or stainless steel framed racks attached to the precast concrete ballast. The racking system will hold the panels at a fixed tilt of 20 degrees from horizontal. The PV array will use monocrystalline PV modules mounted on racks consisting of nine modules in a single row (panel layout 1 x 9) with two ballasts per rack. Each panel support rack or assembly will utilize a fully ballasted mounting system with no penetrations of the low permeability layer of the final cover system. The modules and the associated racking will be approximately 3 feet high in the front

and 5 feet high in the rear. The Landfill contours are not aligned with the east-west axis of the PV racks, therefore the rows will be at a slight cross slope angle.

The existing elevation and grade of the Landfill will not be altered. The proposed design will impact limited portions of the topsoil layer of the final cover systems. The impacts result from: construction of temporary access roads; the installation of PV rack ballasts; installation of the two inverter/transformer concrete pads, and one switchgear pad, and installation of above and below grade electrical wiring.

The ballast will be precast concrete slabs and will be brought into Site via pickup trucks or lightweight all-terrain forklifts. To install the precast concrete ballast, the vegetation and organic topsoil below each of the array ballast will be removed. The excavations will not extend to a depth beyond the thickness of topsoil layer which is 12 inches thick. After excavating, a layer of geotextile will be placed onto the existing final cover systems sand drainage layer and then a layer of gravel will be placed and compacted in preparation for the placement of the concrete ballasts. The gravel will be installed such that the maximum slope on the concrete ballasts will be 5% or less.

The PV support racks will house all wiring between the modules. The electrical transmission wiring will run within cable conduits above grade, mounted on the rack assemblies where applicable, or mounted on conduit supports (block assemblies) above grade to keep the cables off the ground surface. At temporary access road crossings the electrical wiring will run below ground. The electrical wiring that will be placed below these temporary access roads will be placed in 4 inch fiberglass reinforced epoxy (FRE) cable conduits, at a minimum depth of 1 foot below the road surface.

The northern electrical equipment concrete pad is proposed adjacent to a paved access road off of the Landfill final cover system. The western electrical equipment concrete pad is proposed on the Old Landfill final cover system. The northern electrical equipment concrete pad is connected to the western electrical equipment concrete pad using above grade and below grade electrical wiring cable conduits. Additionally, the northern electrical pad is proposed to be connected to the North array using below grade electrical wiring cable conduits that run below an existing paved access road. There are no subsurface penetrations at the inverters/transformers and switchgear concrete pads. Electrical wiring cable conduits will not enter the concrete pads from beneath the pad. Conduits will run into the side of the inverter/transformers and other equipment with the use of flexible gas tight connections. The off final cover system underground conduits are proposed to be "… backfilled with sand or other material in accordance with applicable code requirements." All underground cables will be sealed, have gas tight fittings and will include flexible connections at transition points. Additionally, the electrical wiring cable conduits, between the two electrical concrete pads, will be also mounted on block assemblies (pedestals) above grade on the Landfill final cover system. All electrical work will be designed for the most recent version of the Massachusetts Electrical Code (MEC) which includes and incorporates the requirements of the National Electric Code (NEC). Prior to construction, an electrical permit will be obtained from the local building department official, and the project will incorporate any additional electrical requirements stipulated by the building department official (**refer to condition #17**).

The two concrete electrical equipment pads for the transformers/inverters will either be precast offsite or formed on site. The area beneath the concrete electrical pad for the western electrical equipment concrete pad will be prepared by excavating the 12 inch topsoil layer and backfilling with a minimum of 12 inches of compacted crushed gravel or stone. The northern concrete electrical pad for the northern array is located off the final cover system and the area will be prepared in a similar fashion to the western electrical equipment concrete pad by excavating the topsoil and backfilling with compacted crushed gravel in the area where the concrete is to be placed (**refer to condition #11**).

A single concrete pad mounted 25 KV switch and recording meter will be mounted on a concrete pad in Area 1 (alternative pavement cap) and will convey electrical power off the Landfill using below grade electrical wiring cable conduits. The below grade electrical wiring cable conduits are proposed in Area 1 (alternative cap) and beneath paved areas of the transfer station (off of the final cover system), to a new utility pole to be installed west of the transfer station main building (**refer to condition #18**). The concrete pad will either be precast offsite or formed on-site. The area beneath the switching and recording meter pad is pavement. The concrete pad will be directly placed on the pavement and there shall be no penetrations at the base of the concrete pad. The switchgear pad is located over Area 1 alternative final cover system. Final pad design (dimensions) for both the electrical equipment pad for the inverter/transformer pad and the switchgear pad will be determined based on the final equipment selection and approval by electrical inspector and/or utility representative. The inverter/transformer pad and switchgear pad will be designed such the conduits feeding the switches will enter the pad above grade (**refer to condition #13 and #17**).

The output from the PV array will be conveyed via below grade electrical wiring cable conduits, from the west array and will transition to overhead wiring for transmission of electricity, via several new utility poles (outside the limits of waste), to the existing overhead NSTAR primary system off of Run Hill Road (**refer to condition #17**).

Geotechnical Evaluation: The Application included a geotechnical evaluation for the installation of the PV array and supporting structures on the final cover system.

The Application included an analysis of the foundations for the PV array that will bear directly on the final cover system and has considered the dead load, snow load and wind loading. The results of the geotechnical evaluation are as follows;

- The PV modules, panel support racks, and ballasts do not exceed loading criteria for the Landfill cover system.
- The electrical equipment concrete pads (inverter/transformer) do not exceed the recommended loading criteria for the Landfill cover system.
- The PV array will not cause adverse Landfill settlement.
- The Engineer determined the potential vehicle loading on the temporary access roads would not produce unacceptable loading stresses to the Landfill cover system.
- The PV array is stable on a slope up to 15%.

- The 4 inch FRE electrical cables conduit proposed to be buried under the temporary access road(s) and under the existing paved access road (off cap underground conduit detail at road) will support the applied vehicle loads.

The anticipated maximum loading scenario racking system (ballasts, racking system, and modules) and the electrical equipment concrete pad on the Landfill surface will result in a bearing pressure ranges between 203 and 370 pounds per square foot. The bearing pressure ranges are all less than allowable 1,000 pounds per square foot (less than 7 psi).

The estimated settlement resulting from the static load increase of the PV array concrete ballasts was 0.57 inches for the Old and New landfill final cover system. The Engineer has stated the FML of the final cover system can undergo this distortion without impacting the integrity of the liner.

A sliding stability evaluation was performed for the concrete ballasts. A maximum slope of 15% was evaluated. The Engineer determined the factor of safety for sliding of the PV ballasts on the underlying soils was approximately 1.5 on a 15% slope.

Storm Water: The Engineer performed storm water calculations using Hydro CAD modeling software (TR-20) analysis for the 24-hour, 25 year storm and under the 24-hour, 100 year storm. The PV array will modify run-off characteristics by the addition of impervious surfaces (i.e. ballasts and concrete pads) which represent less than 5% of the closed Landfill surface. The capacity of various elements of the Landfill storm water conveyance system were reviewed including, swales, stoned line ditches, storm water piping and detention basins. The Engineer concluded there will be adequate capacity to properly manage the post-closure development at the Landfill and that there is no need to modify the existing storm water management system.

Post Closure and Post-Closure Use Operations and Maintenance: The Town currently implements the Landfill's post closure monitoring and maintenance plan. The Town is to continue to perform all post closure environmental monitoring (groundwater, surface water and soil gas monitoring) for the Landfill. Operations and maintenance for the Landfill for the area where the PV array is located up to a distance of 10 feet away from the edge of the PV array will be performed by the project developer: American Capital Energy. The Town will maintain responsibility for the remainder of the Landfill outside the 10 foot buffer around the PV array (**refer to condition #1**).

There are no proposed changes to the post closure operation and maintenance plan for the area to be maintained by the Town and not used for the PV array. Currently, the Landfill is mowed twice annually with semiannually final cover system inspections by the Town.

A post-closure use operation and maintenance plan for the post-closure use area used for the PV array was submitted with the Application. The Developer proposes to provide: site security; electrical maintenance; module cleaning; and final cover system maintenance including but not limited to, mowing, undergrowth control, pest control, and erosion control. The Developer proposes to conduct monthly inspections to check the landfill cap for erosion and changes in

vegetative growth following the first year of construction of the PV array (**refer to condition # 15**).

The Application included a Health and Safety Plan for operation and maintenance activities to be performed by employees at the Brewster landfill solar project for the operation and maintenance of the proposed PV array. The Application did not include a health and safety plan for the construction of the proposed PV array (**refer to condition #7**).

Site Security: The Landfill currently has two access points: Run Hill Road and Great Fields Road. The Landfill is fenced and gated if these entrances. If unauthorized access proves to be a problem, additional security measures will be considered including additional fencing and closed-circuit TV cameras for monitoring the Site.

Decommissioning Plan: Decommissioning and site restoration will include dismantling and removal of all panels and supporting equipment, transformers, overhead cables and foundations and restoration of the roads, and modules sites to substantially the same physical condition that existed before construction of the PV array.

National Heritage and Endangered Species Program Mapped Priority Habitat: The proposed PV array is located within a National Heritage and Endangered Species Program (NHESP) mapped priority habitat area of the Eastern Box Turtle. A species-specific protection plan has been developed to address the construction and operation of the PV array within this area. On December 16, 2011 National Heritage & Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife stated they had reviewed a "… Notice of Intent and site plans (dated 11/2011) submitted in compliance with the rare wildlife species section of the MA Wetlands Protection Act Regulations (310 CMR 10.59). The NHESP also reviewed the MESA Review Checklist and supporting documentation for review pursuant to the MA Endangered Species Act Regulations (321 CMR 10.18)."

The Massachusetts Division of Fisheries and Wildlife determined that the project "… will not adversely affect the actual resource area habitat of the state protected rare wildlife species" and this project "… meets the state-listed species performance standard for the issuance of an Order of Conditions." Additionally, Massachusetts Division of Fisheries & Wildlife required "… the protective measures outlined in the submitted document entitled Species-Specific Plan, CVEC Solar Installation, Brewster Closed Municipal Landfill, 201 Run Hill Road, Brewster, MA 02631-2375, NHESP Tracking No. 11-29956, September 2011 and the long-term habitat maintenance activities referenced in the plan entitled Brewster Landfill, Ground Mounted PV Facility, Proposed NHESP Management Areas (dated 11/11) shall be implemented" (**refer to condition #19**).

IV. PERMIT DECISION:

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 **APPROVES** the Post-Closure Use of the Brewster Landfill for a Solar Photovoltaic Array subject to the conditions identified herein.

V. GENERAL PERMIT CONDITIONS:

1. Permit Limitations: The issuance of this approval is limited to the proposed Solar Photovoltaic Array at the Barnstable landfill as detailed in the Application and does not relieve the Applicants from their 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 the Town, 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.

2. Regulatory Compliance: The Applicants, Engineers and Applicants' 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".

3. 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. Any area repaired should be surveyed and the location marked on a plan with the pond value. Any future settlement should be recorded cumulatively. If/when the total settlement reaches 12-inches, the area will be considered to have suffered major settlement and appropriate repairs to eliminate ponding 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 Applicants 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, 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 Applicants reports the settlement to MassDEP and states their intent to perform repairs and provides MassDEP with final survey results and a summary write up.

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.

4. Notification of Construction: The Applicants shall notify MassDEP in writing (e-mail is acceptable) when the post-closure use construction commences and is completed.

5. Oversight and Certification Report: 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. Within seven (7) months of completing the installation of solar photovoltaic array, MassDEP shall be provided with a certification report. 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. At a minimum, the report shall include as-built drawings depicting all pertinent site features, equipment used etc.

6. Preconstruction Work: Prior to commencement of construction activities all landfill gas passive vents, 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.

7. Health and Safety: The Applicants, Engineers and Applicants' 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 copy of the site specific health and safety plan for the post-closure use CONSTRUCTION phase, shall be submitted to MassDEP (for its files) prior to the beginning of any construction work. The health and safety plan shall include as a minimum;
   - protocols for monitoring of landfill gas (i.e. methane, hydrogen sulfide, etc.) as needed,
   - protocols for modifying work practices if landfill gas is detected at levels deemed unsuitable.

8. Vehicles Operating on the Landfill Final Cover System: Vehicles operating on the Landfill final cover system shall only operate on the designated permanent and temporary access roads, except for low-pressure construction equipment (with ground pressures of **7 psi** or less) in accordance with the remaining conditions of this permit. Low-pressure construction equipment operating off the access road shall limit turning on the vegetative support layer as

much as possible. If MassDEP determines the use of excavation equipment is creating the potential for damage to the FML, 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 low ground pressure equipment used and the pressure rating of each vehicle shall be indicated in the certification report required in condition #5.

9. Permanent and Temporary Roads and Low Ground Pressure Equipment: Low ground pressure 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 construct ramps as necessary.

10. Construction Precautions: All necessary precautions shall be taken to protect the Landfill storm water control system, environmental monitoring network and the Landfill gas vents. All operators of vehicles entering the area should be clearly instructed by the on-site engineer and/or the Applicants' 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 cover system. If any damage occurs to the any Landfill components, the Applicants' Engineer shall notify MassDEP within 24 hours and provide a written plan with a schedule for repairs.

11. 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 the sand drainage layer during construction, including staking for concrete forms, or during operation and maintenance of the PV array without written approval by MassDEP. The Engineer and Applicants' Contractors shall ensure that vehicles operating on the Landfill surface do not compromise the integrity of the Landfill final cover system.

12. Personnel Training: The Applicants, Engineers and Applicants' Contractors shall instruct all 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. Proposed Inverter/Transformer Concrete Pad (PowerStation) and Interconnection Equipment: The Applicants stated within the permit application that manufacturers "cut sheets" for the electrical equipment were included in Appendix B for informational purposes only and were only representative of equipment that is proposed. Final equipment selection may vary based on availability and other factors at the time of construction.

    If the Applicants propose to change the electrical equipment a copy of the final design for the inverter/transformer pad and any other electrical pads and protective switchgear (interconnection equipment) proposed on-site shall be submitted to MassDEP for review and

approval. The Applicant, Engineers and Applicants' Contractors are responsible to ensure that utilities/structures will not accumulate landfill gas during construction and operation. There shall be no penetrations (utility, conduits or other) at the base of any concrete pads or foundations. There shall be no penetration of any kind of the impermeable layer of the final cover system.

14. Landfill Gas Notification Requirements:

    a. As specified in solid waste management regulations at 310 CMR 19.132 (4) (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/operator shall:

        1. *Take immediate action to protect human health and safety;*
        2. *Notify the Department within two hours of the findings; and*
        3. *undertake the actions specified under 310 CMR 19.150, Landfill Assessment 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 Applicants or Applicant's contractors shall notify MassDEP's Bureau of Waste Site Cleanup-Emergency Response Section (508) 946-2714 within two (2) hours of the exceedance as per 310 CMR 40.0321(1) (a) of the regulations.

15. Post-closure Use Operation and Maintenance Plan: During the first year after completion of construction of the PV array, inspections of the Landfill final cover system shall be performed on a monthly basis. Monthly inspection reports shall be submitted to MassDEP within fourteen (14) days of completion. Following the first year of operation of the PV array, and if no problems have been documented, inspections of the Landfill shall be performed on a quarterly basis and shall be submitted to MassDEP within **fourteen (14)** days of completion. Pursuant to 310 CMR 19.142(6) inspections shall be conducted by a third-party consulting Massachusetts Registered Professional Engineer, or other qualified solid waste professional. The Applicants, Engineers and Applicants' Contractors shall monitor the effectiveness of 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, settlement, security problems or other issues observed at the Landfill shall be reported to MassDEP and repaired immediately.

16. 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.

17. Proposed Underground Electrical Conduits and Trenches: All belowground wiring that is proposed in close proximity to the edge of waste shall be designed to be explosion proof, and the conduits and associated trenches shall be designed so they do not act as a pathway for landfill soil-gas migration.

18. Area 1 Alternative Pavement below Grade Conduit Detail: The Applicants shall provide a detail for the underground electrical conduit proposed beneath the Area 1 final cover system within 90 days of the date of this letter. The underground electrical conduit is depicted on drawing # C-2 and connects the proposed disconnect switch and recording meter to "Proposed New Pole#2".

19. National Heritage Endangered Species Program: The Applicants shall comply with Division of Fisheries and Wildlife December 16, 2011 determination.

20. 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.

    This approval pertains only to the Solid Waste Management aspects of the proposal within the Site and 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.

RIGHT OF APPEAL

Right to Appeal – This approval has been issued pursuant to M.G.L. Chapter 111, Section 150A, and 310 CMR 19.037: Review Procedures for Permit Modifications, Permit Renewals and other Approvals, of the "Solid Waste Management Regulations". Pursuant to 310 CMR 19.037(5), any person aggrieved by the issuance of this determination may file an appeal for judicial review of said decision in accordance with the provisions of M.G.L. c. 111, § 150A and M.G.L. c. 30A not later than thirty (30) days following receipt of the final permit. 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 remain effective or become effective at the conclusion of the thirty (30) day period.

Notice of Appeal - Any aggrieved person intending to appeal a grant of a permit to the Superior Court shall first provide notice of intention to commence such action. Said notice of intention shall include the Department transmittal number X238602 and shall identify with particularity

the issues and reason why it is believed the permit decision was not proper. Such notice shall be provided to the Office of General Counsel of the Department and the Regional Director for the regional office which processed the permit application at least five days prior to the filing of an appeal.

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

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

No allegation shall be made in any judicial appeal of a 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 a 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) 946-2833 or to Mark Dakers at (508) 946-2847, or Dan Connick (508) 946-2884 or write to the letterhead address.

Very truly yours,

David B. Ellis, Chief
Solid Waste Management Section

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