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Admitted in: MA

January 31, 2022

Via Electronic and U.S. Mail

Board of Health
Town of Bourne
24 Perry Avenue
Buzzards Bay, MA 02532-3441

Attn: Terri Guarino, Health Agent

RE: Public Hearing on Application for
Major Modification of Site Assignment
Application No. 21-SW38-0001-APP
Applicant: Department of Integrated Solid Waste Management

Dear Ms. Guarino and Members of the Board of Health:

On behalf of the Applicant, the Department of Integrated Solid Waste Management (ISWM), please accept this letter in response to the comment letter submitted by the Conservation Law Foundation (CLF).

On January 26, 2022, CLF provided the Board of Health with a copy of a letter submitted to the Massachusetts Department of Environmental Protection (MassDEP) dated November 3, 2021 by CLF and several other organizations. The CLF letter urged MassDEP to issue a negative Site Suitability Report.

The CLF letter does not evaluate the application for modification of a site assignment (Application) in terms of the suitability criteria in the site assignment regulations. Rather, the CLF comment letter describes various environmental policy issues and how MassDEP should apply them to the Application. Therefore, submission of the same comment letter to the Board of Health is misplaced.

By letter dated November 22, 2021, ISWM submitted to MassDEP a response to various comments on the Application, including the CLF comment letter. As the Board of Health is aware, MassDEP issued a positive Site Suitability Report and rejected the CLF comments.

Although ISWM does not believe most of the CLF comments are relevant to the Board's decision on the Application, ISWM provides the following responses.

WASTE DISPOSAL AND CAPACITY

ISWM has a permitted annual disposal capacity of 219,000 tons. As outlined in the CLF letter and the Application, 189,000 tons is utilized for municipal solid waste combustor ash

from SEMASS and the remaining 30,000 tons are utilized mostly for municipal solid waste (MSW), primarily from within the Town of Bourne and the Town of Falmouth. The towns of Bourne and Falmouth do not utilize all of the remaining 30,000 tons. Some of that remaining capacity is used to support local utilities such as drinking water and wastewater treatment facilities. ISWM provides a critical role in providing disposal capacity for these often overlooked waste streams. Without the ISWM Facility these utilities would have limited, local access to needed disposal capacity to support their processes that are critical to infrastructure and human health.

Daily and Intermediate Cover

The Landfill Operations and Management Plan approved by MassDEP requires daily and intermediate cover be utilized to control vectors and nuisances such as blowing litter, birds, odors and fugitive emissions. Daily cover is applied to the operating face after the completion of each working day, while intermediate cover provides a long term cover in areas that are not going to see operation or final cap materials for a longer period of time. As an operational rule of thumb, 20% of the total daily disposal tonnage is used for daily cover. ISWM receives approximately 70,000-80,000 tons of fly ash and 100,000-110,000 tons of bottom ash for disposal and an additional 43,800 tons of bottom ash for cover and other uses, annually. Bottom ash is utilized not only for daily cover for MSW, fly ash and other miscellaneous waste streams, but also for maintaining internal landfill roads and bulking difficult-to-manage materials as its aggregate-like properties make it useful for other needs. No ash of any kind can be used for intermediate cover and therefore, additional material is required.

Areas that receive intermediate cover include completed outside slopes of the landfill or slopes that fall against adjoining future phases. Bottom ash, which is used for daily cover, cannot be used for intermediate cover on outside slopes. Areas requiring intermediate cover require thicker layers of material to prevent gas migration out of the landfill and to prevent unwanted water infiltration into the landfill. ISWM utilizes low level contaminated soils approved under MassDEP Policy COMM# 97-001 soil reuse policy for intermediate cover.

The operational needs for these soils vary from year to year, based on the geometry of the landfill and other operational factors. The MassDEP solid waste regulations require a minimum 1-foot layer of intermediate cover in addition to six inches of daily cover in areas that will not see operation within 30 days, however, ISWM's policy has been to install intermediate cover in thickness greater than 2-feet to prevent gas migration and water infiltration. Furthermore, it is the general operating practice at ISWM to not place MSW too close to an outside slope of the landfill to further mitigate the possibility of gas migration. Generally, areas within ten feet of the outside slopes are filled with bottom ash which provides an increased buffer for fugitive emissions. All outside slopes that have reached final grade have received intermediate cover that is composed of cover soils that are approximately two feet in thickness.

ISWM generates revenue from nearly all of the waste streams that enter the landfill, as the efficient use of airspace is paramount. Cover materials such as bottom ash that are used for daily cover and soils used for intermediate cover generate less revenue than materials that require disposal. For ISWM to take additional cover material to simply generate revenue

would be a mismanagement of valuable airspace and would actually result in a loss of revenue. Cover material such as bottom ash and cover soils generate an average of less than 50% of the revenue generated for disposal materials like MSW or fly ash. Cover materials used for daily and intermediate cover are utilized for the purpose intended by the solid waste regulations.

By accepting ash from SEMASS, the Bourne Landfill indirectly supports 25% of the MSW disposal needs of Massachusetts and an even greater level of service to Cape Cod and Southeastern Massachusetts. In addition, the Bourne Landfill provides support, by means of disposal, to local municipalities that would not otherwise be available in this region.

ENVIRONMENTAL JUSTICE

The Town understands and recognizes that since the filing of its Application, the Commonwealth of Massachusetts updated its mapping of Environmental Justice (EJ) communities in Bourne based on 2020 census data. As a result, three low-income and one minority community have been identified. The landfill is not in an EJ community, but the closest one is adjacent to the landfill to its east. This community is located on Joint Base Cape Cod (JBCC), however, the actual residential community on JBCC is three miles to the south of the ISWM facility, separated by forest and other facilities on the base.

Although there was no requirement for additional outreach to the EJ communities, ISWM committed to conduct such outreach voluntarily. In addition to its dedicated web page regarding the current landfill expansion permitting effort, ISWM notified JBCC of the Board of Health public hearing on the Application via email communication to the executive director and housing officer.

INTEGRATED SOLID WASTE MANAGEMENT

As thoroughly discussed in the Application (Attachment 1, Section III, 3.3), the site completely meets the criterion for Integrated Solid Waste Management. While the landfill is the focus of this Application, other operations include the regional collection and transfer of Single Stream Recyclables as well as construction and demolition materials; a Residential Recycling Center that allows the source separation by residents and includes a Swap Shop; and processing and composting of brush and yard waste, and processing of asphalt, brick and concrete for reuse.

The facility is the predominant regional integrated solid waste management facility that can support other facilities in the region to protect the public health and conserve the natural resources of the Commonwealth. Furthermore, ISWM is an active participant in regional cooperative efforts on zero waste initiatives and has been the leader on latex paint and mattress diversion programs that serve the region, as well as advocating for permanent, extended producer responsibility legislation. As described fully in the Application, the site meets this criterion.

WATER RESOURCES PROTECTION

The thorough discussions included in the Application (Attachment 1, Section II, C. 3.1.1) demonstrate how the site completely meets the criterion of being located within a Sole Source Aquifer. MassDEP carefully considered this criterion during its review of the

Application and concluded that all comments had been adequately addressed. The Town of Bourne takes groundwater protection very seriously and therefore, it proactively and voluntarily removed downgradient private homeowner water supply wells and in their place installed new connections to the Bourne Water District distribution system at all affected locations at Town expense, 20 years ago, before Phases 7, 8 and 9 were ever considered. Furthermore, to prevent future connections in the area, the Bourne Board of Health adopted a regulation precluding development of public and private drinking water wells in the downgradient area. These actions were taken voluntarily by the Town and were not mandated by any regulatory authority or compliance requirements.

GROUNDWATER PROTECTION AND PFAS

Per- and polyfluoroalkyl substances (PFAS) are regulated by MassDEP as drinking water contaminants. It is well documented that the Bourne Landfill and the downgradient areas are not existing or potential drinking water source areas. As noted above, the Bourne Board of Health passed a regulation prohibiting the installation of public or private drinking water wells in the vicinity of and downgradient from the landfill. Additionally, the Bourne Water District has stated numerous times in recent decades that it will not seek any new water supplies downgradient of the landfill, as has been documented in the Application. This policy is supported by MassDEP, which strongly discourages siting water supply wells downgradient of landfills.

In terms of groundwater characterization, as defined by the Massachusetts Contingency Plan (MCP), the GW-1 criteria are not applicable to that area, nor does it meet GW-2 criteria, because groundwater is greater than 15 feet below the ground surface. As a result of not being categorized as a GW-1 or GW-2 area, groundwater is defaulted to being categorized as GW-3. Consequently, there is no risk of exposure to PFAS through drinking water at or downgradient from the Bourne Landfill. As identified on Table 1 of the MCP, the GW-3 standards for PFAS are 25,000 to 2,000,000 times higher than the GW-1 drinking water standards.

ISWM has been monitoring groundwater quality in its vicinity and downgradient of the landfill, in accordance with the MassDEP approved quarterly groundwater monitoring program, since 1997. In those 24 intervening years, monitored groundwater quality has improved, presumably because of the abandonment and removal of the former septage pits that were located in the northeast corner of the site, the closing and capping of the unlined Phase 1-A,B,C landfill cells, and the mining and removal of the former unlined Phase 1-D landfill area. Over the past several years SITEC Environmental, Inc. has reviewed the results of the monitoring events and has provided a summary report to ISWM identifying any exceedances of the GW-1 standards, as required by the solid waste regulations, and noting any identified trends in groundwater quality. Typically, there may be exceedances of secondary standards, such as pH, iron, manganese, sodium and TDS, with a few exceedances of the low threshold, drinking water standard for 1,4-dioxane, at the immediate perimeter of the landfill. However, there have been no reported exceedances of the applicable GW-3 standards for any parameter. Consequently, there is no contaminant plume emanating from the Bourne Landfill. It should be noted as well, that the Cape Cod Commission has intensively reviewed the facility for more than two decades including during

the recent Development of Regional Impact process and is satisfied with the groundwater protection plan in place at ISWM.

ISWM has been operating the Bourne Landfill, including its environmental monitoring program, in full compliance with its MassDEP approvals. ISWM, as a Town-owned facility, is unquestionably committed to maintaining its exemplary compliance record by assenting to comply with all directives of MassDEP, including sampling and analyzing its leachate and groundwater for PFAS, should it be directed to do so. As stated above, because of the absence of any drinking water sources, PFAS does not pose a risk to human health, safety or the environment, downgradient from the landfill. ISWM will comply with any updated regulations as directed to do so by MassDEP.

Landfill Liner System

CLF continues to assert that “all landfills leak”, based on a 1982 EPA report, notwithstanding the fact that MassDEP issues permits for landfills. To give it some context, the subject of that report and its subsequent evaluation as cited in the CLF letter (footnote 64), was not a landfill but a leachate lagoon that held liquid not solid waste. The construction of the lagoon was of about ten feet of unspecified “silty clay” material from a local borrow source and a smooth 60 mil HDPE geomembrane liner, with no protective layer, such as sand, over the liner. Those areas of the liner that were not submerged by leachate were directly exposed to sunlight and the atmosphere. There was no discussion of any construction quality assurance testing being conducted. During the fourteen-year operating life of the lagoon, it was reported that it “had been drained several times to remove sludge and to patch geomembrane liner defects.” That cleaning would expose the liner to either hand or mechanical equipment operations that are a clear threat to the integrity of the geomembrane. There is little or no similarity between the lagoon’s liner system construction or operations, compared to the liner systems that have been constructed at the Bourne Landfill.

PFAS Removal Pilot Project

In addition to containment, ISWM has proactively initiated a pilot plant project for the treatment of leachate, including the treatment of PFAS components, to meet GW-1 (drinking water) standards prior to being sent to a permitted wastewater treatment plant where further treatment will be conducted. This project is the state-of-the-art in addressing this environmental concern.

ISWM is in the process of conducting a pilot scale test for the treatment of landfill leachate using “Fluoro-Sorb,” a proprietary product of CETCO (Specialty Minerals, Inc.), in order to remove PFAS in leachate. Even though no regulations have been promulgated relative to PFAS in wastewater, ISWM realizes the importance of removal of these compounds from a human health and safety, environmental and regulatory standpoint. Civil and Environmental Consultants (CEC), a national civil and environmental engineering firm, has been retained to provide support in designing, studying and evaluating removal of PFAS from the Town of Bourne’s leachate. The CEC team is led by a nationally recognized leader in the field of PFAS mitigation. ISWM seeks to find a simplistic, yet robust field-tested alternative to other solutions to PFAS removal such as Ion Exchange Resins, Granular Activated Carbon or

Reverse Osmosis that often have residual materials with PFAS that still need to be managed properly.

PFAS compounds exist in all of our daily lives and are the result of manufacturing goods that are spread across society. Waste receiving facilities such as landfills and wastewater treatment plants do not produce these compounds but simply receive them from the consumers and end users of the products that utilize and contain them. Both industries are working as rapidly as possible to find solutions. It should be emphasized that ISWM is developing a cutting-edge process for removal and sequestration of PFAS from landfill leachate under its own volition and with the knowledge of MassDEP. ISWM has made substantial progress in its process and will continue to invest substantial financial capital and resources in moving toward a solution that can capture these chemicals and could prove to be an affordable, scalable and rapidly deployable solution for other landfills.

GREEN HOUSE GAS AND CLIMATE CHANGE

The ash residue from SEMASS that is sent to the landfill has no potential for emitting greenhouse gas (GHGs). The landfill continues to release GHGs from two sources other than the ash residue accepted from the SEMASS municipal combustion facility:

- Methane and carbon dioxide generated through decomposition of the putrescible organic portion of MSW accepted at the landfill during or prior to 2014, when the landfill first began accepting ash residue in large quantities and reduced its acceptance of unprocessed MSW accordingly. As MSW in landfills decomposes, it generates methane and carbon dioxide over a period of 30 years or more. Consequently, ISWM continues to operate the landfill gas collection and flare systems to collect and destroy methane that continues to be generated, notwithstanding that the inert ash residue does not contribute to methane production.
- Methane and carbon dioxide generated through decomposition of the putrescible organic portion of the modest quantities of solid wastes other than inert ash residue that has been accepted at the landfill since 2014.

Quantities of landfill gas collected and destroyed from the landfill, which contain the GHG emissions, have declined by 50 percent since 2014, and further reductions are anticipated as the amount of organic and putrescible materials in the landfill available for decomposition continues to decline. During 2020, the Bourne Landfill emitted 7,979 metric tons of GHG emissions. At the current rate of decline, by 2026 the Bourne Landfill is estimated to emit less than 4,000 metric tons of GHG emissions.

We note that ash residue disposed at the Bourne Landfill provides a benefit for increasing the collection efficiency of landfill gas to the highest levels possible. Specifically, the ash residue provides substantially thick layers of inert, low permeable material over MSW previously and currently disposed, which decreases the ability of gas to escape from the landfill and increases the ability of the system to collect gas generated from the contained MSW.

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For a detailed discussion of climate change mitigation goals and objectives, including an analysis of greenhouse gas emissions, please refer to ISWM's response to comment letter to MassDEP dated November 22, 2021, including other permitting documents referenced therein.

We look forward to the commencement of the hearing on February 2nd. Please contact me with any questions.

Sincerely,

A handwritten signature in blue ink that reads "Michelle N. O'Brien". The signature is written in a cursive style with a large initial "M".

Michelle N. O'Brien

cc: (via email only)
Steven Torres, Esq.
John F. Shea, Esq.
Daniel T. Barrett