



Via Email

October 29, 2018

Cape Cod Commission
3225 Main Street, P.O. Box 226
Barnstable, MA 02630
Attn: Jonathon Idman, Chief Regulatory Officer

Re: Town of Bourne ("Bourne"), Department of Integrated Solid Waste Management, Integrated Solid Waste Management Facility ("Facility"), Phase 6 Landfill Expansion (CCC File No. 17024)

To Whom It May Concern:

Conservation Law Foundation, Clean Water Action, MASSPIRG, Massachusetts Sierra Club and Toxics Action Center ("the Signatories") strongly oppose the expansion of the Facility in the Town of Bourne, Massachusetts as proposed by its Department of Integrated Solid Waste Management ("Bourne") in its application for a Development of Regional Impact (DRI) for the Phase 6 landfill expansion. **Bourne's proposed expansion of 6.69 acres and approximately 920,000 thousand cubic yards of capacity to its current facility would be a danger to public health, safety and the environment, would undermine the need to responsibly manage waste through source reduction, recycling and composting, and for the reasons set forth herein, should be denied.**

CLF is a nonprofit, member-supported, environmental organization working to conserve natural resources, protect public health, and promote thriving communities for all in the New England region, including Massachusetts. CLF has a long history of advocating for clean air, clean water, and healthy communities, including addressing the environmental and community impacts of solid waste disposal, and by advocating waste management strategies focused on waste reduction and

recycling as opposed to landfilling and incineration. Likewise, Clean Water Action, MASSPIRG, Massachusetts Sierra Club and Toxics Action Center are nonprofit environmental organizations working to protect public health and the environment in Massachusetts and New England, with a long history of advocating for Zero Waste solutions to the dangerous problems our current solid waste system poses.

I. Background

A. The Bourne Landfill's History and Development

The Bourne Landfill is comprised of a 99-acre parcel located at 201 MacArthur Boulevard in Bourne, Massachusetts.¹ Landfill operations began at the Facility in 1967 with Phase 1 (approximately 31 acres).² In 1998, the Town of Bourne, Department of Integrated Solid Waste Management was created and began overseeing the management and operation of the landfill.³ The current Facility operations include: the active lined landfill, construction and demolition debris transfer station, residential recycling center, single stream recyclable collection and transfer, and composting.⁴

The Facility contains both lined and unlined waste disposal areas. The oldest portion of the landfill is comprised of Phases 1A, 1B, 1C and 1D, all of which are unlined cells.⁵ Phases 1A, 1B, and 1C (approximately 23-acres) have been closed and capped. Phase 1D (5.7 acres) was excavated under a pilot landfill reclamation project with MassDEP in order to create additional landfill space.⁶ Phase 2 (approximately 7.3 acres) is a closed, lined and capped landfill cell and Phase 3 (approximately 12 acres) is a closed, double composite lined landfill cell. Both Phase 2 and 3 have leachate collection systems.⁷ Phase 2A/3A (approximately 17.1 acres) is an inactive double composite lined landfill area. Phase 4 (approximately 9.9 acres) is a currently active landfill area and is located in the area previously occupied by Phase 1D. MassDEP issued the Authorization to Operate Phase 5 (approximately 6.2 acres) of the landfill on March 30, 2017, and it addresses vertical expansion over Phases 1A, 1B, and 1C.⁸

In 2001, Bourne purchased a 25-acre parcel immediately abutting the landfill to the south.⁹ This parcel has been site-assigned for solid waste handling and transfer operations.¹⁰ Thus far, this

¹ Final Comprehensive Site Assessment ("CSA"), Dated June 5, 2017, Page 2.

² CSA, Page 3.

³ Town of Bourne, Single Supplemental Environmental Impact Report, May 2018, Page 7.

⁴ CSA, Page 2.

⁵ NPC, Page 3.

⁶ NPC, Page 3.

⁷ NPC, Page 3.

⁸ NPC, Page 3.

⁹EIR, Page 8.

¹⁰ EIR, Page 8.

parcel has only been used for recycling and transfer operations since its purchase.¹¹ In 2016, Bourne purchased 11.7-acre parcel to the south of the 25-acre parcel.¹²

B. Waste Disposal and Capacity

Prior to 1998, the landfill accepted residential and commercial waste from Bourne and the immediate surrounding area.¹³ From 1998 through to 2014, the landfill operated as a large regional disposal facility accepting residential and commercial solid waste that was largely MSW but with an increasing percentage comprised of ash.¹⁴ In 2005, the landfill began accepting MSW in addition to non-MSW.¹⁵

In 2015, Bourne signed a long-term contract with Covanta SEMASS (“SEMASS”), a municipal waste combustor located in Rochester, MA, which shifted the landfill’s waste stream to predominantly ash.¹⁶ Under the contract, approximately 86% of the landfill’s permitted annual capacity (189,000 tons out of 219,000 tons per year) is reserved exclusively for ash through 2021.¹⁷ The remaining capacity will be available for MSW disposal for residents of Bourne and Falmouth under a ten-year contract.¹⁸ Any further remaining capacity will either be held in reserve or be utilized for soils or other difficult-to-manage waste streams.¹⁹

C. The Proposed Expansion

In November of 2017, Bourne submitted an Expanded Notice of Project Change (“ENPC”) to function as an Expanded Environmental Notification Form (“EENF”) for the development of Phase 6 of the landfill.²⁰ The Secretary of the Executive Office of Energy and Environmental Affairs issued a Certificate on the ENPC on January 12, 2018, that requires the preparation of a Single Supplemental Environmental Impact Report (“EIR”) in lieu of Draft and Final Supplemental Environmental Impact Reports. Bourne submitted the EIR May 9, 2018.

The EIR identifies two scenarios for the development of the Phase 6 expansion of the landfill, the Preferred Phase 6 (“PP6”) and No Further Build Phase 6 (“NFBP6”).²¹ In either scenario, Phase 6 will be a contiguous phase connected to and overlaying Phase 3 Stage 3 and Phase 4 Stage 2, at the southern end of the original 74-acre site assigned parcel.²²

¹¹ Certificate of the Secretary of Energy and Environmental Affairs on the Expanded Notice of Project Change, January 12, 2018, EEA#11333, Page 3. (Expanded NPC Certificate).

¹²EIR, Page 8.

¹³ EIR, Page 21.

¹⁴ EIR, Page 21.

¹⁵ EIR, Page 10.

¹⁶ EIR, Page 10.

¹⁷ EIR, Page 10-11.

¹⁸ EIR, Page 11.

¹⁹ EIR, Page 11.

²⁰ EIR, Page 6.

²¹ EIR, Page 9.

²² EIR, Page 9.

Bourne's preferred option, PP6, involves a 6.69-acre expansion that would increase capacity by 920,000 cubic yards. PP6 has been designed to accommodate further expansion of the landfill, called Phases 7 and 8, which would yield a collective 3,830,000 cubic yards of capacity and extend the operational life of the landfill to 2034. This EIR filing explains ISWM's current plan for Phases 7 and 8, but those phases are not to be evaluated as part of this filing.

The second proposed option, NFBP6, involves a 9.82-acre expansion that would increase capacity by 1,670,000 cubic yards and extend the operational life of the landfill to 2024. This scenario is being proposed as the last phase of the landfill, and there would be no further development of the landfill if NFBP6 is chosen.

On June 29, 2018, the Secretary of the Executive Office of Energy and Environmental Affairs issued Phase 6 of the Proposed Expansion a Single Supplemental EIR Certificate.

D. The Proposed Expansion would be Unnecessary if Zero Waste Programs Were Enforced and Expanded

Massachusetts Regulations Have Not Been Enforced Bourne is asserting that there is a need for additional capacity at the Facility due to future reductions in regional capacity. Increasing regional capacity, however, runs directly counter to the State's plan to reduce solid waste disposal from 6,550,000 tons to 4,550,000 by 2020.²³

In Massachusetts, the following are Waste Ban Items, meaning that they are not allowed to be buried in a landfill or burned in an incinerator (310 CMR 19.00):

- Asphalt pavement, brick and concrete
- Cathode ray tubes
- Clean gypsum wallboard
- Commercial food material
- Ferrous and non-ferrous metals
- Glass and metal containers
- Lead acid batteries
- Leaves and yard waste
- Recyclable paper, cardboard and paperboard
- Single-resin narrow-necked plastic containers
- Treated and untreated wood and wood waste (banned from landfills only)
- White goods (large appliances)
- Whole tires (banned from landfills only; shredded tires acceptable)

²³ SWMP, page vi.

These materials are banned from disposal because it has been determined that: (a) disposal of the material presents a potential adverse impact to human health, safety or the environment; (b) a restriction or prohibition will result in the extension of the useful life or capacity of a facility or class of facilities or reduce its environmental impact; or (c) a restriction or prohibition will promote reuse, waste reduction, or recycling.²⁴ Unfortunately, according to MassDEP, almost 40%, or over 2 million tons, of disposed items in Massachusetts are Waste Ban Items²⁵. There are no longer dedicated Waste Ban inspectors at MassDEP, and enforcement has been spotty at best. **No disposal facility should be expanded in Massachusetts until MassDEP reduces disposal by enforcing existing Waste Ban regulations.**

As recently as March of last year, MassDEP authorized Bourne to commence operations at the most recent landfill cell, Phase 5.²⁶ As opposed to seeking further expansions, Bourne should be actively reducing the amount of waste buried in the landfill.

Furthermore, expanding Bourne Landfill enables other facilities to shirk their responsibility to reduce solid waste disposal. For example, Bourne has contracted with SEMASS to accept ash generated from incinerating waste. SEMASS burned over 1.1 million tons of waste in 2016, producing more than 250,000 tons of ash.²⁷ **As can be seen from the chart below, which SEMASS submitted as part of a report to MassDEP in February of 2017, almost 80% of what SEMASS is burning could be recycled and composted.**²⁸ Rather than needing to bury 250,000 tons of ash, SEMASS would then only need to dispose of 50,000 tons of ash each year.

²⁴ Section 19.017, 310 CMR 19.000

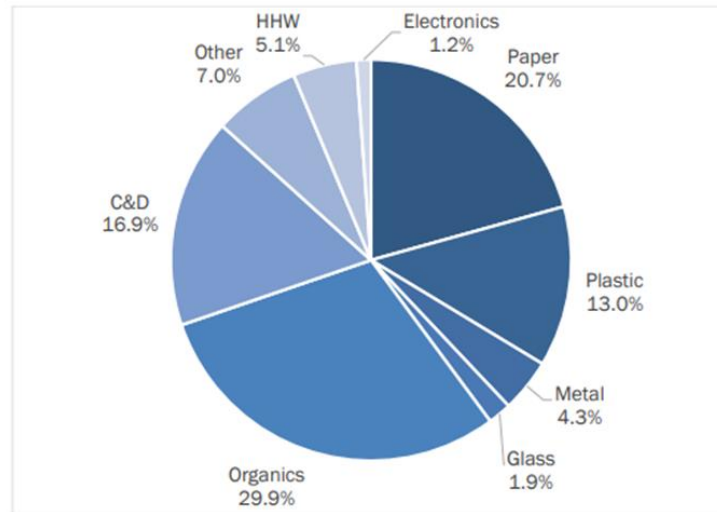
²⁵ Massachusetts Waste Bans as a Tool to Drive Waste Reduction, June 2016, MassDEP <https://uszwbc.org/wpcontent/uploads/2016/06/Fischer-waste-ban-presentation-USZWBC-June-2016.pdf> This excludes the commercial organics Waste Ban.

²⁶ NPC, Page 3.

²⁷ <http://www.mass.gov/eea/docs/dep/recycle/solid/wcs16sem.pdf>, page 2-1.

²⁸ Id. at 3-1.

Figure 3-1 Overall Waste Composition by Material Group



Much of the waste burned at SEMASS – paper/cardboard, metal, glass, some plastic, some construction and demolition material, and some organics, are also Waste Ban Items. If the Waste Ban materials alone were diverted from the incinerator, SEMASS could burn at least 40% less, again, extending the life of the landfills where it buries its ash. See MSW Consultants, Covanta SEMASS 2016 Waste Characterization Study in Support of Class II Recycling Program (Feb. 13, 2017), <http://www.mass.gov/eea/docs/dep/recycle/solid/wcs16sem.pdf>. **The Cape Cod Commission should demand that MassDEP hire dedicated waste ban inspectors to monitor the waste that SEMASS accepts. A small investment in enforcement could extend the life of this landfill and make its expansion unnecessary.**

Cape Cod Commission Standards Have Not Been Met The Town of Bourne has also not met its burden under the current RPP to maximize recycling and composting. The draft Development of Regional Impact Decision issued by the Cape Cod Commission²⁹ states that the Town of Bourne’s Local Comprehensive Plan was certified in 2007, but is not current. However, the draft permit goes on to say that, “The Project is consistent with Section 19 (Solid Waste Management) of said plan, however which outlines the Town’s efforts to “. . .continue to maximize recycling and composting of solid waste. . . and to dispose of the waste that cannot be recycled in an economical and environmentally sound manner.”

A quick review of MassDEP records shows that the Town of Bourne is not even close to maximizing the reduction, recycling, or composting of its waste. Bourne reported to the MassDEP

²⁹ <http://www.capecodcommission.org/resources/regulatory/ProjectFiles/BourneISWM/2018-10-25-Bourne%20ISWMF-DRAFT%20DRI%20Decision.pdf>

that it does not provide any form of composting or food waste diversion to its residents.³⁰ Bourne also reported that it has no form of Pay-As-You-Throw (“PAYT”), or incentive programs to reduce waste.³¹ Bourne’s waste numbers bear this out – Bourne residents each produce about 573 pounds a year³² of municipal solid waste, lagging behind many communities that do not have the benefit of free landfill services. In fact, some estimate that a quarter of the Commonwealth’s communities produce less than 450 pounds per capita.³³

The story is much the same throughout the region – until all of the communities using SEMASS and the Bourne Landfill adopt PAYT or similar programs, until all of them institute comprehensive composting programs, and until all of them enforce existing recycling regulations, expanding this or any other landfill should not even be considered.

The Town of Bourne’s request for Development of Regional Impact, dated October 1, 2018, cites the MassDEP Solid Waste Master Plan 2010-2020’s discussion of the projected loss of in-state landfill capacity as a rationale for allowing this landfill expansion. The request then proceeds to ignore the two preferred methods for making up for this capacity: “Preventing waste from being generated in the first place” and “Increasing recycling and composting.”³⁴ PAYT programs typically reduce residential waste by at least 20% almost immediately. Food and yard waste are 25% - 33% of the MSW stream. As stated above, waste ban items are about 40% of the waste stream. If PAYT, recycling, and composting programs are adopted and enforced properly, Massachusetts’ MSW would be ten percent of what it is now. That would allow us to close all seven of our incinerators and extend the life of our landfills for many years.

Minimizing the ash and MSW going into the Bourne Landfill would extend its life and render expansion moot. For these reasons, we recommend that the Waste Bans be enforced, and PAYT and comprehensive recycling and composting programs be instituted throughout the Cape and the Commonwealth, rather than expanding Bourne Landfill.

II. Dangers of Landfill Expansion

A. Incinerator Ash

Bourne’s contract to accept ash from SEMASS runs through to the end of 2021, with options to extend.³⁵ As a result, if the Phase 6 expansion is permitted, 86% of the Facility’s waste stream will

³⁰ <https://www.mass.gov/lists/recycling-solid-waste-data-for-massachusetts-cities-towns>

³¹ Id.

³² <https://www.mass.gov/lists/recycling-solid-waste-data-for-massachusetts-cities-towns>, Residential waste produced (5,743 tons = 11,486,000 pounds), divided by households served (8114), multiplied by average size of household in MA (2.47 people) = 573 pounds per person per year.

³³ <https://commonwealthmagazine.org/environment/lawmakers-find-common-ground-on-trash/>

³⁴ Town of Bourne, Development of Regional Impact, October 1, 2018.

³⁵ EIR, Page 11.

continue to be comprised of toxic incinerator ash. Incinerator ash is dangerous to human health, public safety, and the environment.

The incineration process produces two types of ash: fly ash from the air pollution control equipment, and bottom ash, which is the non-combustible residue remaining after combustion. Fly ash in particular has a high concentration of toxic compounds, and over the years has become more contaminated as improved air filtration equipment effectively removes more pollutants prior to emission. These toxic compounds include dioxins, which have been described as the most toxic chemicals known to mankind and are recognized human carcinogens. Heavy metals such as lead, which is known to cause cognitive and behavioral development in children, and mercury, which is known for impacts to the central nervous system, kidneys, and developing fetus, are also present in the ash. Other compounds and metals such as polychlorinated biphenyls (“PCBs”), polychlorinated naphthalenes (“PCNs”), cadmium, and arsenic have also been discovered in bottom and fly ash, all of which are known to be toxic to humans and animals. A collection of relevant health studies is provided, with links, in the “Exhibits” section at the end of this letter.

Ash generated by municipal solid waste incinerators constitutes hazardous waste, but EPA allows for the highly toxic fly ash to be mixed with lime and bottom ash prior to toxicity testing. Diluting the fly ash allows incinerators to avoid hazardous waste regulations, but the ash itself is no less dangerous – the same toxic chemicals are merely spread out over a larger volume of combined ash. Further, incineration increases the mobility and bioavailability of toxic metals compared with raw municipal waste. The potential for leaching is also greatest under acidic conditions, which occur when solid waste breaks down into organic acids. Given that the Bourne Facility was originally used for solid waste, soil acidification has likely already taken place and may continue to take place, increasing the risk of leaching.

The larger the Bourne Landfill is, the more dangerous, toxic incinerator ash it stores - permanently. For this reason, we oppose the expansion of the Bourne Landfill.

B. All Landfills Leak

In the 1950s, landfills, or sanitary dumps, were just holes in the ground where the waste was covered by a layer of soil to reduce odors and vermin. In the 1970s compacted soil and clay liners were proposed for waste containment.³⁶ This technology was ultimately abandoned as ineffective at preventing the leachate from escaping the landfill – a clay liner that is a foot thick will be breached in less than five years.³⁷

³⁶ Overview of Subtitle D Landfill Design, Operation, Closure and Postclosure Care, January 2004Page 2. <http://www.gfredlee.com/Landfills/LFOverviewMSW.pdf>

³⁷ Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste, G. Fred Lee & Associates, Updated January 2015, Page 13.

In the 1980s landfills had begun installing plastic liners. However, plastic liners, or plastic sheeting flexible membrane liners, inevitably fail as well. Many times they develop holes during installation, and they develop holes and stress cracks over time. Free-radicals, permeability to low molecular weights, and their inherent diffusion based qualities will also cause plastic liners to ultimately become non-functional.³⁸

Over time, regulations evolved to require composite liner systems – originally in the form of a two-foot thick clay liner and a 60 mil-thick layer of plastic sheeting (about the thickness of paperboard). Today, landfill developers are using a geosynthetic clay liner as a substitute for clay. A geosynthetic clay liner is approximately a quarter of an inch thick. While there are pipes to collect the leachate and landfill gas buried in the waste, and a second liner system is now also required, the total thickness of the two liner systems may be a few inches.³⁹

In 1991, the United States Environmental Protection Agency promulgated regulations for landfilling municipal solid waste (“MSW”) as part of the Resource Conservation Recovery Act (“RCRA”), Subtitle D. Originally Subtitle D required a single composite (plastic sheeting and compacted clay/geosynthetic) liner, and it was eventually amended to require two liner systems for all new landfill cells.

The theory behind Subtitle D Landfills, or Dry Tomb Landfills, is to entomb the landfill in plastic sheeting, thereby keeping water away from the MSW. This was meant to minimize leachate production and the migration of that leachate through the soil and groundwater surrounding the landfill. In theory it also would minimize the production of landfill gas, especially methane, which, in order to form, requires the presence of water (see more below). Another goal of the regulations was to prevent offsite groundwater pollution by landfill leachate. Subtitle D mandated the collection of leachate from the landfill. Subtitle D also required a groundwater monitoring program whereby the extent of the inevitable groundwater pollution could be detected, and the polluted groundwater remediated (cleaned up) before it migrated to adjacent properties.

Unfortunately, the failure of these double composite liner systems is not only inevitable, it can be rapid. Rowe et al. (2003) tested the life of liner systems using a lagoon. They stated:

A geomembrane – compacted clay composite liner system used to contain municipal solid waste (MSW) landfill leachate for 14 years is evaluated. Field observations of the geomembrane revealed many defects, including holes, patches, and cracks... Contaminant modelling of the entire lagoon liner suggests that the geomembrane liner most likely stopped being effective as a contaminant barrier to ionic species sometime between 0 and 4 years after the installation.⁴⁰

³⁸ Id. at 11.

³⁹ Id. at 10.

⁴⁰ Id. at 12, citing Rowe, R. K.; Sangam, H. P. and Lake, C. B., “Evaluation of an HDPE Geomembrane after 14 Years as a Leachate Lagoon Liner,” *Can. J. Geotech./Rev. Can. Geotech.* 40(3): 536-550 (2003) (emphasis added). <http://www.ingentaconnect.com/content/nrc/cgj/2003/00000040/00000003/art00004>.

While one or two composite liners may or may not delay the release of leachate into the environment, they do not prevent it.

As acknowledged repeatedly by USEPA,⁴¹ leachate generation potential will continue for thousands of years (landfills developed by the Roman Empire, 2,000 years ago are still producing leachate).⁴² After the plastic cap is installed, and the landfill cell is closed, the landfill company is required under RCRA to monitor the site for 30 years. Unfortunately, the caps break down in the same manner as the plastic liners. As a result, the landfill company often walks away from the site, the cap fails, precipitation enters the landfill cell, and a whole new wave of leachate production begins, without the leachate collection or monitoring that took place while the cell was accepting waste.⁴³

Dr. Lee reports that John Skinner, Executive Director of the Solid Waste Association of North America and former USEPA official was quoted in the July/August 2001 MSW Management Journal as saying:

The problem with the dry-tomb approach to landfill design is that it leaves the waste in an active state for a very long period of time. If in the future there is a breach in the cap or a break in the liner and liquids enter the landfill, degradation would start and leachate and gas would be generated. Therefore, dry-tomb landfills need to be monitored and maintained for very long periods of time (some say perpetually), and someone needs to be responsible for stepping in and taking corrective action when a problem is detected.⁴⁴

There is evidence that this has already begun at the Bourne Landfill. Fifty-one monitoring wells have been installed on-site and off-site to monitor the entire Facility and determine the vertical and horizontal extent of the impacts of contamination on groundwater. Bourne's reports state that:

The nature of the groundwater contamination at the Facility is nitrates, volatile organic compounds and heavy metals. Historically, eight compounds (arsenic, cadmium, lead, benzene, 1,2-dichloroethane, 1,4-dichlorobenzene, naphthalene and vinyl chloride) have been detected in groundwater samples at concentrations exceeding the GW-1 standards. Historically, four compounds (iron, manganese, total dissolved solids, and chloride) have been detected in groundwater samples at concentrations exceeding Secondary Maximum Contaminant Levels ("SMCL"). Sodium has been detected at concentrations exceeding the Massachusetts Drinking Water Guideline.⁴⁵

⁴¹ Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste, G. Fred Lee & Associates, Updated January 2015, Page 6.

⁴² *Id.* at Page 8.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ CSA, Page 5-6.

As explained above, all landfill liners eventually leak. All landfills therefore release dangerous contaminants into the environment. This one has already begun to pollute the groundwater. For this reason, we oppose the expansion of the Bourne Landfill.

C. Danger to ACEC & Wetlands

Areas of Critical Environmental Concern (“ACEC”) are areas within the Commonwealth “where unique clusters of natural and human resource values exist, and which are worthy of a high level of concern and protection.” 301 CMR 12.02. Nominations for ACECs are reviewed and designated by the state’s EEA Secretary. *Id.* at 12.04 – 12.09. The Secretary considers nine factors in making his or her finding: threat to the public health through inappropriate use; quality of the natural characteristics; productivity; uniqueness of area; irreversibility of impact; imminence of threat to the resource; magnitude of impact; economic benefits; and supporting factors. *Id.* at 12.08.

The purpose of the designation process “is to determine if the nominated area is of regional, state, or national importance or contains significant ecological systems with critical interrelationships among a number of components. After designation, the aim is to preserve and restore these areas and all EOEEA [Executive Office of Energy and Environmental Affairs] agencies are directed to take actions with this in mind.” *Id.* at 12.02. Accordingly, “[a]ll EOEEA agencies shall subject the projects of federal, state, and local agencies and private parties to the closest scrutiny to assure that the above standards are met for any action subject to their jurisdiction.” *Id.* at 12.11(2).

The Massachusetts site assignment regulations, recognizing the significance of an ACEC designation, require that

[n]o site shall be determined to be suitable or be assigned as a solid waste management facility where such siting: (1) would be located within an Area of Critical Environmental Concern (ACEC) . . . ; or (2) would fail to protect the outstanding resources of an ACEC as identified in the Secretary’s designation if the solid waste management facility is to be located outside, but adjacent to the ACEC.

310 CMR 16.40(4)(d). State wetlands protection regulations similarly afford heightened protections to ACECs. See 310 CMR 10.24.

The proposed expansion is very close to wetlands and an ACEC. As explained in Bourne’s Final Comprehensive Site Assessment (“CSA”), Dated June 5, 2017:

Environmental receptors downgradient of the Facility are the Back River Estuary-Area of Critical Environmental Concern (ACEC), Mill Pond and Eel Pong, and cranberry bogs. The ACEC is located less than 500 feet west of the Facility. The Back River estuarine system includes upstream freshwater wetlands within the drainage basin, Mashnee Island Dike and the adjacent waters of Phinney’s harbor. Wetland habitat and species are located approximately 3000 feet west northwest of the Facility.⁴⁶

⁴⁶ CSA, Page 4.

As explained above, all landfills eventually leak. All landfills therefore release dangerous contaminants into the environment. This could have a detrimental impact on the ACEC and other wetland resources in the area. For this reason, we oppose the expansion of the Bourne Landfill.

D. Climate Resiliency

A study released in February 2016 indicates that sea levels along the Massachusetts coastline (and other areas of New England) are expected to continue rising and that sea level rise in our region will outpace other parts of the world.⁴⁷ The study found that while the global sea level rose by about 5.4 inches between 1900 and 2000, in Revere, the water rose 9.3 inches. Throughout New England and beyond, coastal management agencies and public officials are working diligently to identify and minimize environmental and public health risks associated with facilities and/or infrastructure that could be negatively impacted by climate change and sea level rise. Efforts to protect public health, the environment, and coastal infrastructure from impacts of climate change are also well underway in parts of the Cape Cod Watershed. The proposed expansion of the Bourne ISWM landfill in a highly vulnerable location is completely out of step with these efforts.

Given its location adjacent to the Back River Estuary, the Bourne ISWM Facility is extremely vulnerable to climate change impacts. Coastal impacts such as erosion from sea level rise, increasingly intense coastal storms, and damaging storm surge create a significant risk of toxic contamination from the landfill washing into the surrounding rivers and coastal wetlands.

The focus should be on how to effectively permanently close the landfill and protect the surrounding communities and environment, not on how to expand the landfill's capacity. For this reason, we oppose the expansion of the Bourne Landfill.

E. Air Pollution

i. Landfill Gas

Landfill Gas is produced by anaerobic bacteria (in the absence of air) which consume organic matter in the MSW. Landfill Gas is made up of methane (about 55%, flammable), carbon dioxide (45%), and small amounts of oxygen, nitrogen, and other dangerous gases like volatile organic compounds and hydrogen sulfide.⁴⁸ Landfill Gas is very dangerous, not only because it is flammable and has trace amounts of toxic gases, but because it migrates through soils, and

⁴⁷ See Matt Rocheleau, *The seas are rising fast — and even faster in Mass.*, BOSTON GLOBE (Feb. 25, 2016), <https://www.bostonglobe.com/metro/2016/02/25/sea-level-rise-here-was-quicker-century-than-elsewhere-and-that-bodes-ill-for-future/t7XOCWqGsnW1kPKH84W5BJ/story.html>.

⁴⁸ Standard Permit Application for Solid Waste Management Facility, Volume 2, TLR_III South Area, dated May, 2017, Gas Monitoring Plan, TLR South Area, May 2017, Page 1.

accumulates in confined spaces.⁴⁹ It also can cause very strong odors. As such, it can cause asthma and other health problems.⁵⁰

Methane is 28 times more potent a greenhouse gas than carbon dioxide. Landfills are the largest anthropomorphic source of methane, and it is significant. In 2014, U.S. landfills released about 163 million tons of CO2 equivalent of methane.⁵¹ Considering the shorter life span of methane, reducing the methane from landfills, should be a priority.

It is impossible to know how much methane is produced by a landfill, or what percentage of it is captured in a flare or landfill gas to energy system (LFGTE). Kerry Kelly, senior director of federal affairs for Waste Management “says it’s simply not possible to accurately assess methane leakage. “You can measure how much gas you’re collecting. You can’t measure how much gas the landfill actually generates,” she said.⁵²

Estimates by USEPA and scientists outside of the waste industry run from 10 to 90 percent gas capture over the life of the landfill – a large margin for error. The best practice is to prohibit all organics – food, textiles, paper and cardboard from the landfill. Only then will methane production be halted.

Bourne has landfill gas probes and gas flares. Flare is the primary pollution control device for mitigating emissions of LFG. The larger the landfill, and the more waste it accepts, especially organics, which make up more than half of MSW, the more methane it will produce and release into the environment. While much of the air pollution associated with this site is emitted at SEMASS, and Bourne has decreased the amount of MSW they are now accepting, MassDEP and Bourne should continue to work together to eliminate all food, yard waste, textiles, cardboard and paper from this facility. These materials, as explained above, should also not be burned at SEMASS. In this way, the existing capacity of the Bourne Landfill would be extended and pollution reduced.

In order to eliminate methane emissions, carbon based wastes should not be disposed of at the Bourne Landfill. For this reason, we oppose the expansion of the Bourne Landfill.

III. Conclusion

Expanding a facility that will negatively impact the public health of the region, negatively impact the environmental resources in the area, and have a negative impact on the economy and sustainability of all of New England is short-sighted, unwise, and irresponsible.

⁴⁹ Id.

⁵⁰ <https://ensia.com/features/methane-landfills/>

⁵¹ <https://ensia.com/features/methane-landfills/>

⁵² <https://ensia.com/features/methane-landfills/>



For the reasons stated above, among others, the signatories respectfully request that the Cape Cod Commission deny this request to expand the Bourne ISWM Facility. Thank you for the opportunity to comment on this proposal and your attention to this matter.

Very truly yours,

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