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Report to the Report on Land Application of Septage
Pursuant to P.L. 2021 Chapter 641

Report on Land Application of Septage Pursuant to P.L. 2021 Chapter 641

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I. Purpose

This report is submitted to the Joint Standing Committee on Environment and Natural Resources pursuant to [P.L. 2021 Chapter 641](#). Section 10 of the law (An Act to Prevent the Further Contamination of the Soils and Waters of the State with So-called Forever Chemicals), attached as Appendix A, requires that the Department of Environmental Protection (Department) “study methods of and develop a plan for prohibiting the land application of septage in the State”. The law further requires that the plan include (but is not limited to):

- Identification of the available capacity at wastewater treatment plants or other treatment or disposal facilities in the State or regionally to manage the septage that is currently land applied in the State;
- Determination of the capacity anticipated to be necessary to manage that septage if land application is prohibited in the State;
- Development of recommendations for supporting and funding the development of such additional management capacity if necessary; and,
- Development of recommendations concerning a framework and appropriate time frame for prohibiting the land application of septage in the State.

The law requires that the Department submit the report containing its findings and recommendations, and any suggested legislation, to the Joint Standing Committee on Environment and Natural Resources on or before January 15, 2023. The Committee may report out legislation to implement any such recommendations.

II. Introduction

In 2021, the Legislature passed P.L. 2021 Chapter 478 (An Act to Investigate Perfluoroalkyl and Polyfluoroalkyl Substance Contamination of Land and Groundwater) in response to growing concerns regarding per- and poly-fluoroalkyl substance (PFAS) contamination in the environment and in response to recommendations of the Maine PFAS Task Force put forward in its January 2020 final report. The law required, in part, that the Department develop and implement a program to evaluate soil and groundwater for PFAS at locations licensed or permitted to land apply sludge or septage prior to 2019.

P.L. 2021 Chapter 641 (effective August 8, 2022) includes provisions intended to further prevent or mitigate the contamination of soil and water with PFAS. Among those provisions is a prohibition on land application of sludge and sale/distribution of compost and other agricultural products and materials containing sludge and septage. Although a ban on sludge land application was effective on August 8, 2022, the legislation did not extend

that ban to septage at the same time, but instead directed the Department to study the issue and develop a plan for prohibiting septage land application, in view of the State's current reliance on this management option and the perceived lack of sufficient alternative disposal capacity.

In developing this report, the Department evaluated current septage management practices, the availability and adequacy of alternative management methods, and the potential for development of new or modified/enhanced facilities or methods.

III. Current Septage Management Practices in Maine

“Septage”, as defined in Maine rules at 06-096 C.M.R. Chapter 420 (*Septage Management Rules*), means: “waste, refuse, effluent, sludge and any other materials from septic tanks, cesspools or any other similar facilities. For the purposes of these rules, septage is defined as a mixture of liquids and solids derived from residential sanitary wastewater, and includes sanitary wastewater from tanks connected to commercial and institutional establishments which have inputs similar to residential wastewater. Septage also includes waste derived from portable toilets.” The Department regulates the land application and storage of septage under the provisions of Chapter 420.¹

In Maine, septage is disposed of in the following three ways:

A. Direct Land Application of Unprocessed Septage to a Licensed Disposal Site

In the base year of 2020, there were 40 Department licensed septage sites where unprocessed septage was directly land applied.² These sites are typically owned by a septage hauler or a municipal or quasi-municipal entity. In 2020, a total of 6,544,797 gallons of septage was land applied on these sites, where volumes per site ranged from a high of 665,500 gallons to a low of 2,000 gallons. For the purposes of this report, it was assumed that the full volume of approximately 6.5 million gallons per year could no longer be land applied on these licensed disposal sites in the event that septage land application is prohibited, and an alternative disposal option would be required.

¹ Landfilling, composting, and processing of septage are regulated under various other provisions of the *Maine Solid Waste Management Rules* (06-096 C.M.R. Chapters 400 – 419); land application of dewatered septage sludge is regulated under the rules for the *Agronomic Utilization of Residuals* (06-096 C.M.R. Chapter 419); and land application of dewatered septage effluent is governed by 38 MRS § 413 (*Surface Application of Wastewater*). Septage transporters are subject to the provisions of 06-096 C.M.R. Chapter 411 (*Non-Hazardous Waste Transporter Licenses*)

² See [Appendix A](#) – Septage Land Application Sites – 2020

B. Dewatering of Septage at a Licensed Commercial Septage Processor Followed by Disposal

There are five licensed septage processing sites that have the capability to physically dewater septage. Septage filtrate is then land applied on a licensed disposal site at these facilities, discharged subsurface in a leach field system at these facilities, or discharged directly to the sewer system of a licensed municipal or quasi-municipal wastewater treatment facility (otherwise known as a publicly operated treatment works or POTW).³ Dewatered septage solids are composted on site or landfilled. In the base year of 2020, four of these five septage processing facilities processed approximately 9,171,418 million gallons of septage. Of this total amount, 5,130,532 gallons was discharged to a sewer system of a POTW, 2,625,000 gallons was land applied as filtrate, and 1,415,886 was disposed subsurface as filtrate. Therefore, for the purposes of this report it was assumed that a combined total of approximately 4,040,886 gallons per year could no longer be land applied (or discharged subsurface) on these licensed disposal sites and an alternative disposal option would be required.

C. Disposal via Truck Transport to a POTW

There are 160 POTWs in the state. Sixty of these are licensed by the Department to accept transported wastes such as septage. Proper management of septage at a POTW can be challenging. Septage is a concentrated waste that can exert a high oxygen demand on a POTW, and it contains physical contaminants such as plastics, rags, and other items that must be screened out. Septage can also complicate POTW sludge dewatering. Potential impacts to neighbors from increased truck traffic is also a consideration at some POTWs.

For these reasons, to successfully accept and treat septage a POTW must have a well-designed septage receiving station, adequate treatment capacity, and adequate staffing. The POTW must also obtain special approval from the Department in the POTW's waste discharge license as specified in Department regulation [06-096 C.M.R. Chapter 555](#), *Standards for the Addition of Transported Wastes to Wastewater Treatment Facilities*. The POTW license specifies the amount of transported waste the POTW can accept on a daily and monthly basis to address the concerns noted above.

In the base years of 2019 and 2020, these POTWs accepted an annual average volume of 57,248,264 gallons of septage for disposal. Some of these POTWs also accepted other transported wastes such as landfill leachate.

³ Septage is defined at 38 M.R.S. §1303-C.27. as, "Septage" means waste, refuse, effluent, sludge and any other materials from septic tanks, cesspools or any other similar facilities. (Based on this definition, for the purposes of this report and interpretation of P.L. 2021, ch. 641, septage filtrate is considered to be septage.)

Summary of Current Septage Disposal			
Method	Volume (gals)	%	Alternative Options Needed
Disposal at POTW	57,248,264	84	No
Direct land application sites	6,544,797	10	Yes
Septage processing sites with spray irrigation or subsurface disposal of filtrate	4,040,886	6	Yes
TOTAL	67,833,947	100	
Sub-total needing alternative disposal options	10,585,683	16	

IV. Locations and Capacity of POTWs Accepting Septage

A. Wastewater Treatment Plant Capacity

To evaluate remaining disposal capacity at the 60 POTWs that currently accept septage, the Department first determined licensed transported waste capacity and subtracted capacity that has been utilized on average for 2019 and 2020 to determine potential remaining licensed capacity. However, the potential licensed capacity was likely much higher than actual capacity for several reasons. Because septage is limited on a daily basis to protect the POTW from operational upset, if the capacity is not used it is lost and cannot be added to subsequent days. Also, the licensed capacity may exceed the actual amount the POTW can, or is willing to, take due to local ordinances that may limit acceptance of septage to the immediate service area, operational constraints, and concerns with increasing sludge disposal costs and potential for PFAS contamination.

To determine actual remaining capacity the Department contacted and surveyed the 60 POTWs to gather a variety of additional information. Based on this survey data the Department determined that there is remaining capacity at 13 of the 60 POTWs. This capacity is adequate for all of the septage from direct septage land application sites and septage processing sites. However, in some areas of the state this POTW capacity is a significant distance from the licensed septage land application sites and septage processing sites. In some areas, these distances would make it impractical to use this POTW capacity under current management practices.⁴

⁴ See [Appendix B](#) - Licensed Septage Land Application Sites and Distance to Nearest POTW Accepting Septage

B. Limitations on Use of POTW Capacity

If the land application of septage was banned, the most appropriate alternative from an environmental perspective would be a shift to POTW disposal. There are several factors however, that present challenges in accomplishing this. Having adequate septage disposal capacity within a cost-effective distance from the point of generation is an important aspect of overall septage management in the state. Significantly increasing the distance a septage hauler must travel to dispose of a load of septage would likely: considerably increase disposal costs for the septage hauler due to increased fuel usage, additional wear and tear on the septage truck, and potentially higher tipping fees at the point of disposal; and, reduce revenues due to more time spent in transit to disposal sites and less time pumping septic tanks. Significantly increased disposal costs would likely result in rising costs to the customer to pump a septic tank. Increased pumping costs may lead to less frequent pumping of septic tanks that can cause septic system failures which may contaminate surface waters; replacement of a failed septic system is a very significant expense. Some septage haulers may find these economic challenges unworkable and go out of business. It is possible that the State could see an increase in the illegal dumping of septage if pumping costs became too high. For these reasons it is important that all areas of the state have access to affordable septage disposal.

C. Adequacy of Currently Available Alternatives

As shown in Appendix A, there was a total of 45 septage sites (40 land application and 5 processing) active in the base year of 2020. The majority of these sites are located in northern Maine with a few facilities in downeast, mid-coast, and southwestern Maine. However, the majority of the 13 POTWs with remaining septage capacity are not located in these areas. Of the 13 POTWs, 6 have relatively little remaining capacity or are not the closest POTW to a septage land application site. Therefore, it is expected they would play only a minor role in providing additional septage capacity.

The remaining 7 POTWs have remaining capacity sufficient to accept all of the septage from the 45 septage land application and septage processing sites and are the closest to these sites. These POTWs are Anson Madison, Belfast, Brewer, Boothbay Harbor, East Millinocket, Ellsworth, and Sanford.

As shown in Appendix B, the most significant impact of banning septage land application would be in northern Maine. The Brewer POTW would be the closest disposal option for approximately 6.7 million gallons per year of septage that is currently land applied at 24 sites. The one-way straight-line travel distances from these sites to the Brewer POTW range from 24 miles to 175 miles with an average distance of 98 miles. The East Millinocket POTW would contribute a very limited amount of capacity for this

area and if septage land application was banned, this part of the state would require new management practices for septage disposal to remain affordable. Three other areas of the state would also be impacted to a lesser, but still concerning, degree.

The Ellsworth POTW would be the closest disposal option for approximately 520,000 gallons per year of septage that is currently land applied at 3 sites. The one-way straight-line travel distances from these sites to the Ellsworth POTW range from 36 miles to 62 miles with an average distance of 51 miles. This area of the state would likely require new management practices for septage disposal to remain affordable if septage land application was banned.

The Anson Madison POTW would be the closest disposal option for approximately 1.4 million gallons per year of septage that is currently land applied at 8 sites. The one-way straight-line travel distances from these sites to the Anson Madison POTW range from 14 miles to 56 miles with an average distance of 34 miles. This area of the state may require new management practices for septage disposal to remain affordable. Anson Madison has also expressed a willingness to further explore possible management and handling options that could potentially result in the affordable disposal of septage from additional locations at greater distances.

The Sanford POTW would be the closest disposal option for approximately 1.5 million gallons per year of septage that is currently land applied at 3 sites. The one-way straight-line travel distance from these sites to the Sanford POTW range from 7 miles to 53 miles with an average distance of 37 miles. This area of the state may require new management practices for septage disposal to remain affordable.

The Belfast and Boothbay Harbor POTWs are in reasonable proximity to the remaining 5 land application sites in the Midcoast area and no changes in management practices would likely be needed in this area.

See [Appendix C](#) for graphical and tabular summaries of the above data.

V. Septage Site PFAS Investigations

As discussed in Section II above, P.L. 2021 Chapter 478 (An Act to Investigate Perfluoroalkyl and Polyfluoroalkyl Substance Contamination of Land and Groundwater) required, in part, that the Department develop and implement a program to evaluate soil and groundwater for PFAS at locations licensed or permitted to apply sludge or septage prior to 2019. Septage land application sites are being evaluated separately from sludge sites since they are licensed and managed differently, and because a number of them remain currently active (approximately 45). Initial investigations of septage land application sites began in

Summer 2022. The evaluation process for each site includes sampling of soils, as well as nearby private drinking water wells (groundwater) for PFAS.

A total of 167 active and closed septage land application sites will be included as part of the PFAS soil and groundwater investigation; of that number, the investigation has been initiated at 94 of the sites. To date, 125 private drinking water wells have been sampled in association with the investigation, with 6 of these found to exceed the State's interim PFAS drinking water standard of 20 ppt (sum of 6 PFAS compounds: PFOS, PFOA, PFHpA, PFNA, PFHxS, and PFDA). At this time, it is not possible to draw conclusions concerning the overall impact of septage land application sites on soils and groundwater since the investigation is ongoing and the relevant data is incomplete.

VI. Possible Development of Alternative Management Options and/or Additional Capacity

The Department explored various approaches to developing additional septage disposal capacity and alternative management methods. It was generally concluded that the construction of new treatment facilities would likely be cost prohibitive, and would require lengthy periods of time for planning, financing, and construction. It was determined that the idea of establishing temporary storage/consolidation sites for septage collected by haulers, for bulk transport to a POTW with available capacity (septage "transfer stations"), had the most potential for providing a septage management option that could adequately and reasonably address the issues of capacity and distance that have been identified.

On November 29, 2022, the Department held a meeting of owners and operators of septage land application sites, for the purpose of providing general information about P.L. 2021 Chapter 641 and the ongoing work of the Department to study the issue of septage management and disposal, and to solicit their comments and questions about this topic. Participants provided valuable information and input generally affirming the potential viability of the storage/consolidation/bulk transport model and detailing the logistical and financial challenges they face in implementing new approaches to septage handling. Participants offered their perspectives on the feasibility of transport to, and disposal at, the POTWs identified as having available capacity, and on the potential impacts on their businesses/operations, and customers, if distances were too great. There was agreement that there is a critical need to maintain the availability of affordable septage management/disposal options in the State.

Implementation of a septage storage/bulk transport model poses a range of logistical and planning challenges and questions related to facility siting, financing, ownership, contracts, and organization. As a first step, it would be necessary to do a more in-depth evaluation of

these issues, and others, through a study to determine the feasibility of providing affordable management of septage through the use of septage storage/consolidation sites and bulk transportation from the service area of septage spreading sites (potentially banned) to POTWs with available septage capacity. Such a feasibility study should also include evaluation of possible mechanisms available to facilitate cooperation among participating towns, such as interlocal agreements or septage management districts. Since there are regional differences with respect to septage management practices and needs, a feasibility study should also address whether any specific or unique approaches would be necessary in the various regions to accommodate these. It would also be appropriate to evaluate any other potentially feasible options in addition to the storage/bulk transport model as part of a study. It is likely that low interest or principal forgiveness loans could be made available through the Clean Water State Revolving Fund to fund capital costs for bulk septage storage areas and tanker trucks for transport of septage.

The Limestone Water and Sewer District's ("District") Greater Limestone Wastewater Treatment Plant, located in central Aroostook County, may have the capacity to treat additional septage generated in that region. Developing that additional capacity would require a significant upgrade to the facility in order to handle the increased loading and to address anticipated logistical challenges. The District is exploring that possibility and is working to prepare a preliminary engineering assessment in order to apply for funding for an upgrade in the near future. This upgrade could take two to three years to complete but would ultimately allow for the acceptance of additional volumes of septage for treatment.

The Maine Water Environment Association ("MeWEA") is currently considering a contracted study looking at the sustainable management of wastewater solids in the State of Maine. MeWEA has engaged with the Department about possible opportunities to collaborate in this effort, the scope of which extends to septage.

V. Recommendations

In view of the findings and conclusions of this report, the Department recommends that:

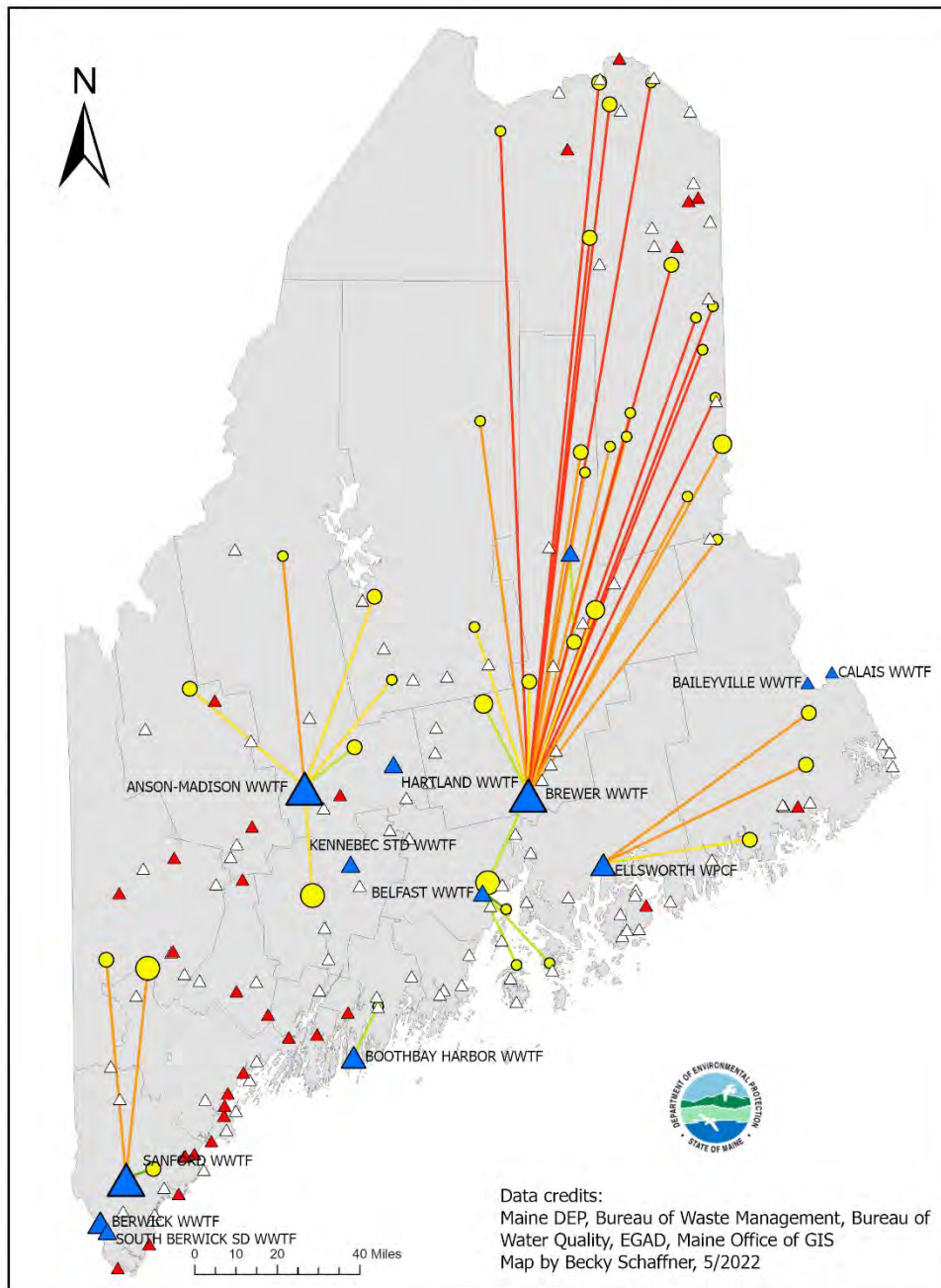
- The Department design a complete study for the purpose of determining the feasibility of providing affordable management of septage through the use of septage storage/consolidation sites and bulk transportation from the service area of septage spreading sites (potentially banned) to POTWs with available septage capacity, to include, in part, evaluation of:
 - ✓ storage/consolidation facility siting, financing, ownership, contractual, and organizational options;

- ✓ possible mechanisms available to facilitate cooperation among participating towns, such as interlocal agreements or septage management districts;
 - ✓ whether any specific or unique approaches would be necessary in different regions of the State; and,
 - ✓ any other potentially feasible options in addition to the storage/bulk transport model.
- The Department continue discussions with MeWEA and other stakeholders about areas of possible collaboration regarding its proposed study of options for sustainable management of wastewater solids in the State of Maine;
 - The Department conduct the feasibility study described above through the services of a contractor and/or through collaboration with MeWEA on its study.
 - The Maine Legislature not enact a ban on the land spreading of septage in Maine prior to completion of the Department’s investigation of soil and groundwater at septage land application sites pursuant to P.L. 2021 Chapter 478, and the above described feasibility study, and full consideration of their results.
 - The Department provide an update on or before January 15, 2024, to the joint standing committee of the Legislature having jurisdiction over environment and natural resources matters regarding the most recent results of the investigation of soil and groundwater at septage land application sites and the above-described feasibility study.
 - The Department continue to evaluate water quality testing data from sites licensed to land apply septage in conformance with the provisions of P.L. 2021 Chapter 641 (38 MRS § 1304(20)) to determine if any such site should be required to cease land application.

Appendix A

#	DIRECT LAND APPLICATION OF UNPROCESSED SEPTAGE IN 2020				License Status as of 6/2022	Comment
	FACILITY	TOWN	COUNTY	GALLONS APPLIED		
1	Haynesville	Haynesville	Aroostook	2,000	Active	
2	Danforth	Danforth	Aroostook	2,000	Active	
3	Great Salt Bay S.D.	Damariscotta	Lincoln	17,000	Active	
4	Dennis Patterson	Abbot	Piscataquis	19,600	Active	
5	Baxter St. Park Auth.	T5 R10 WELS	Piscataquis	22,100	Active	
6	David A. Noyes, Jr.	Crystal	Aroostook	25,000	Active	
7	Jackman/Somerset	Long Pond Twp.	Somerset	27,500	Active	
8	North Haven	North Haven	Knox	29,500	Active	Island (Ferry Req'd)
9	Houlton	Houlton	Aroostook	30,590	Active	
10	Bridgewater	TD R2	Aroostook	41,550	Active	
11	Islesboro	Islesboro	Waldo	50,540	Active	Island (Ferry Req'd)
12	Brownville	Brownville	Piscataquis	52,500	Active	
13	Upper St. John Valley SB	T16 R9	Aroostook	57,500	Active	
14	Island Falls	Island Falls	Aroostook	61,000	Active	
15	Oakfield, Dyer Brook, Smyrna & Merrill	Dyer Brook	Aroostook	70,300	Active	
16	Jane Ricci	Stacyville	Aroostook	71,150	Active	
17	Stonington	Stonington	Hancock	76,000	Active	
18	Blaine	Blaine	Aroostook	80,900	Active	
19	Monticello	Monticello	Aroostook	89,600	Active	
20	Lovell	Lovell	Oxford	112,000	Active	
21	Patten	Patten	Aroostook	116,900	Active	
22	Eustis	Coplin Pkt.	Franklin	130,500	Active	
23	Lincoln Rental	Enfield	Penobscot	132,240	Active	
24	NW. Aroostook Cty. SB	Nashville Pkt.	Aroostook	141,000	Active	
25	Richard Mingo	Meddybemps	Washington	150,070	Active	
26	Elliott Batson	Addison	Washington	171,917	Active	
27	Washington County	Marion	Washington	193,300	Active	
28	N. Aroostook Reg. SB	Cross Lake Twp.	Aroostook	212,700	Active	
29	Ken Allen's Septic	Presque Isle	Aroostook	264,250	Active	
30	Ireland	Lagrange	Penobscot	286,650	Active	
31	Delmar Barker	Athens	Somerset	301,750	Active	
32	Moosehead S.D.	Greenville	Piscataquis	416,025	Active	
33	David S. Pelletier	Frenchville	Aroostook	449,900	Active	
34	Ireland	Lincoln	Penobscot	521,775	Active	
35	Bruce Folsom	Cary Plantation	Aroostook	539,290	Active	
36	Ralph Hall (1)	Charleston	Penobscot	665,500	Active	
37	Ralph Hall (2)	Charleston	Penobscot	230,000	Active	
38	Bingham	Bingham	Somerset	12,000	Closed	Closed end of 2021
39	Jeff Smith	Owl's Head	Knox	140,500	Closed	Closed end of 2021
40	Rangeley	Rangeley	Franklin	530,200	Closed	Closed end of 2021
		TOTAL		6,544,797		
1	Pat Jackson	Belgrade	Kennebec	0	Active	Last used 1995
2	Rick Dyer	Harrison	Cumberland	0	Active	Last used 2011
3	David Moore	Swanville	Waldo	0	Active	Last used 2008
4	David Moore	Belfast	Waldo	0	Active	Last used 2016
5	AAA Portable	Albion	Kennebec	0	Active	Last used 2015

Appendix B



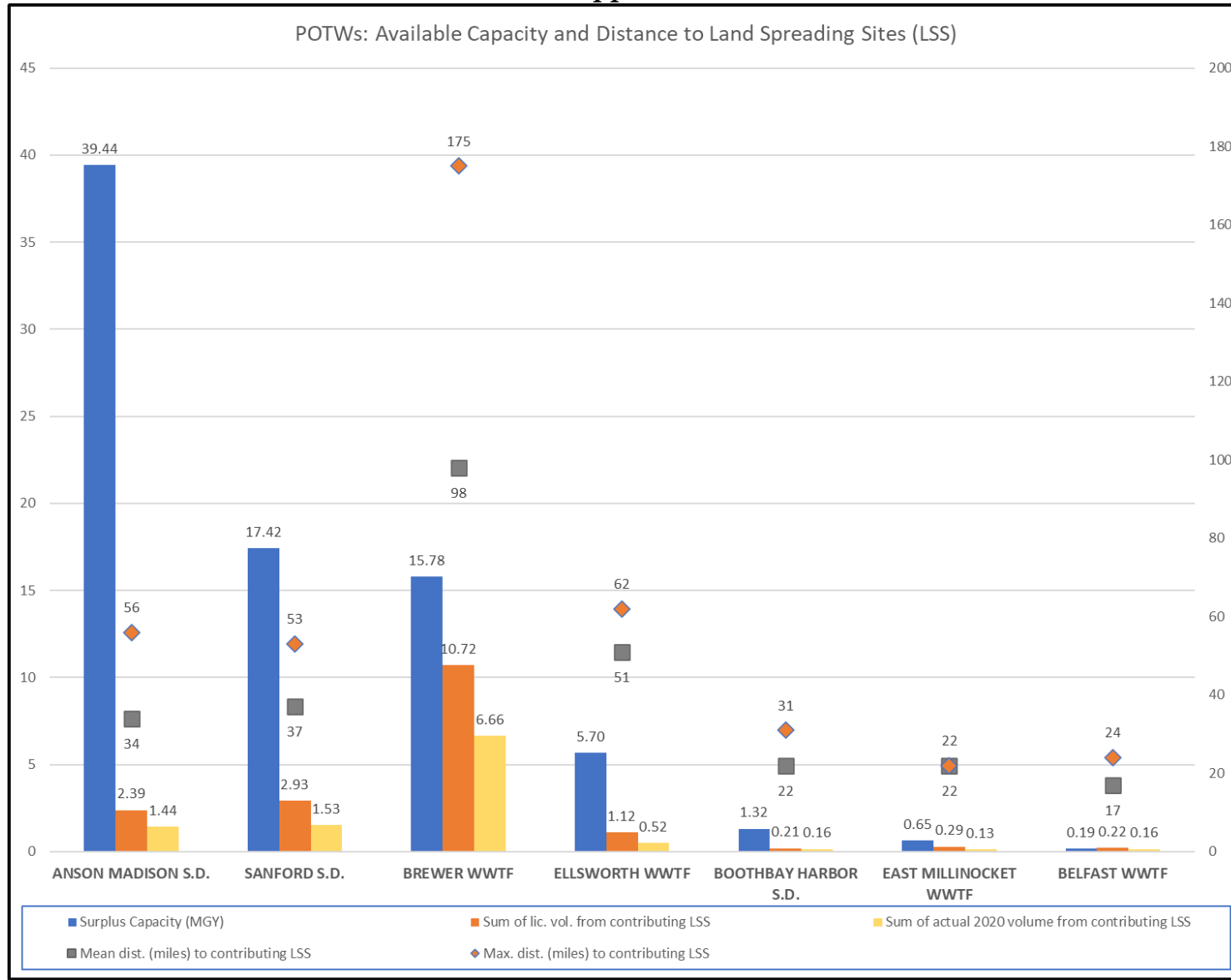
Data credits:
Maine DEP, Bureau of Waste Management, Bureau of Water Quality, EGAD, Maine Office of GIS
Map by Becky Schaffner, 5/2022

LICENSED SEPTAGE LAND SPREADING SITES AND DISTANCE¹ TO NEAREST POTW WITH AVAILABLE CAPACITY²

1. Map indicates direct line distance to POTW. Driving distances may be longer.
2. Available capacity is determined by reported volumes accepted in 2019-2020 by spreading sites and POTWs. If the nearest POTW has insufficient surplus capacity, the next closest POTW with surplus capacity was determined.

Dist. to Avail. Capacity Miles	Septage Proc./Spreading Site 2020 Volume (MGY)	POTW Avail. capacity (MGY)
3 - 5	1 - 5.5	10 - 40 (3)
6 - 10	0.5 - 1	1 - 10 (3)
11 - 25	0.1 - 0.5	0.1 - 1 (5)
26 - 50	<0.1	<0.1 (2)
51 - 100		0 (29)
101 - 180		Other POTW

Appendix C



POTW	Surplus Capacity (MGY)	Number contributing LSS	Sum of <u>licensed</u> volume from contributing LSS (MG)	Sum of <u>actual</u> 2020 volume from contributing LSS (MG)	Max. distance LSS to POTW (miles, one way, straight line)	Min. distance LSS to POTW (miles, one way, straight line)	Mean distance. LSS to POTW (miles, one way, straight line)
ANSON MADISON S.D.	39.44	8	2.39	1.44	56	14	34
SANFORD S.D.	17.42	3	2.93	1.53	53	7	37
BREWER WWTF	15.78	24	10.72	6.66	175	24	98
ELLSWORTH WWTF	5.70	3	1.12	0.52	62	36	51
BOOTHBAY HARBOR S.D.	1.32	2	0.21	0.16	31	13	22
EAST MILLINOCKET WWTF	0.65	1	0.29	0.13	22	22	22
BELFAST WWTF	0.19	3	0.22	0.16	24	7	17
TOTALS	80.5	44	17.88	10.6			