6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Summary of Express Terms

Part 360

Definitions are added for new terms relevant to the rulemaking and adjustments are made in section 360.2(a) to remove the exclusion for leachate being sent to a Water Resource Recovery Facility (WRRF) via a sewer system or discharged via a State Pollutant Discharge Elimination System (SPDES) permit. Transition language is added in section 360.4 that requires submission of a conceptual leachate treatment plan within one year of the effective date of the rule and submission of a final plan within two years of the effective date of the rule for all landfills subject to the rule. Transition language is added that allows landfills to continue sending leachate regulated by the proposed rule to WRRFs for up to four years from the effective date of the rule and allows WRRFs to receive leachate from a landfill subject to the proposed rule until that landfill's associated leachate treatment plant is operational. Transition language is added that requires facilities that are currently treating and plan to continue treating Municipal Solid Waste (MSW) or Construction and Demolition (C&D) Debris landfill leachate subject to the rule to submit a permit application to the department within two years of the effective date of the rule. Transition language in section 360.4 is modified to change the relative time frames entered in the July 2023 rulemaking to specific dates. Language is added to 360.7 to add the detail that sample collection can be a component of department inspections.

Part 363

The name and applicability of Part 363 are modified to include landfill leachate treatment facilities that treat MSW and C&D debris landfill leachate. An exemption is added to Subpart 363-1 for facilities that

treat leachate from landfills that do not currently accept MSW, from landfills that accept C&D debris that do not have leachate collection systems, and from landfills that ceased acceptance of all solid waste prior to the effective date of the rule or that will cease acceptance of waste and provide all required closure documents within two years of the effective date of the rule. All references to landfill leachate recirculation are removed from Part 363. Language is amended in section 363-5.1(k) to change the relative time frames in the July 2023 rulemaking to specific dates. The landfill operating requirements in Subpart 363-7 are amended to require the treatment of MSW and C&D debris landfill leachate either at a facility located in New York that is authorized pursuant to Subpart 363-12 or at a facility located outside of New York that is duly authorized within that state or jurisdiction, and to prevent discharge or release of MSW or C&D debris landfill leachate that does not meet the proposed treatment requirements directly to the environmental or to a SPDES permitted facility. The facility closure plan requirements in section 363-9.3 are amended to include continued treatment of leachate after closure. The post-closure care requirements in 363-9.6 are amended to provide for continued leachate management and provide a mechanism for requesting modification of the level of treatment required based on leachate contaminant concentrations. A new Subpart 363-12 is added which provides the requirements for landfill leachate treatment facilities. Among the specific details and requirements, the treatment requirement is for 99.9% removal of certain contaminants as specified in the proposed rulemaking.

6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Summary of Regulatory Impact Statement

NEEDS AND BENEFITS

The goal of this rulemaking is to minimize the re-introduction of contaminants into the environment by requiring leachate from active Municipal Solid Waste (MSW) landfills and active Construction and Demolition Debris landfills with leachate collection systems (C&DD landfills) to be treated to remove and ensure the proper disposal of contaminants. The rulemaking includes a quantitative treatment requirement that must be met before a treated effluent stream can leave the leachate treatment facility. There are currently 25 active MSW landfills and 7 active C&DD landfills that will be affected by this rulemaking. The leachate management would likely involve concentration and solidification with disposal at an authorized MSW or C&DD landfill and discharge of the treated effluent stream to a Water Resource Recovery Facility (WRRF). Concentrated, solidified leachate may be able to be used as alternative operating cover at an MSW or C&DD landfill.

The proposal would amend Part 360 and Part 363 in the following ways:

- Definitions are added for new terms relevant to the rulemaking and adjustments are made in section 360.2(a) to remove the exclusion for leachate being sent to a WRRF via a sewer system or discharged via a State Pollutant Discharge Elimination System (SPDES) permit.

- Transition language is added in section 360.4 that requires submission of a conceptual leachate treatment plan within one year of the effective date and submission of a final plan within two years of the effective date for all landfills subject to the rule. Language is added that allows landfills that will cease acceptance of waste within two years of the effective date to satisfy the requirement by providing all required closure documents within two years of the effective date of the rule.

- Transition language is added that allows landfills to continue sending leachate regulated by the proposed rule to WRRFs for up to four years from the effective date and allows WRRFs to receive leachate from a landfill subject to the proposed rule until that landfill's associated leachate treatment plant is operational.

- Transition language is added that requires facilities that are currently treating and plan to continue treating MSW or C&DD landfill leachate subject to the rule to submit a permit application to the department within two years of the effective date.

- Language is added to 360.7 to add the detail that sample collection can be a component of department inspections.

- The name and applicability of Part 363 are modified to include landfill leachate treatment facilities that treat MSW or C&DD landfill leachate.

- An exemption is added to Subpart 363-2 for facilities that treat leachate from landfills that do not currently accept MSW or C&DD, landfills that accept C&DD that do not have leachate collection systems, and landfills that ceased acceptance of all solid waste prior to the effective date.

- All references to landfill leachate recirculation are removed from Part 363.

- The landfill operating requirements in Subpart 363-7 are amended to require the treatment of MSW and C&DD landfill leachate either at a facility located in New York State (NYS) that is authorized pursuant to Subpart 363-12 or at a facility located outside of NYS that is duly authorized within that state or jurisdiction, and to prevent discharge or release of leachate from landfills that accept MSW and from landfills that both accept C&DD and have leachate collection systems that does not meet the proposed treatment requirements directly to the environment or to a NYS SPDES permitted facility.

- The facility closure plan requirements in section 363-9.3 are amended to include continued treatment of leachate after closure.

- The post-closure care requirements in 363-9.6 are amended to provide for continued leachate management and provide a mechanism for requesting modification of the level of treatment required based on leachate contaminant concentrations.

- Subpart 363-12 is added which provides the requirements for landfill leachate treatment facilities.

- Unrelated to the proposed changes for leachate, transition language in section 360.4 and language in 363-5.1(k) are modified to change the relative time frames entered in the July 2023 rulemaking to specific dates. The regulatory timeframe would change unless these prior terms are changed to dates.

COSTS

Cost to the Regulated Community:

Total costs for each landfill to evaluate, plan, and implement leachate treatment will vary considerably based on the approach and the technologies that the facility chooses to use to meet the new requirements, along with the volume of leachate that needs to be treated. A landfill that pays another facility to treat its leachate will likely pay a per-gallon cost, as in a similar way most landfills currently pay WRRFs to receive their leachate. A landfill that builds and operates its own leachate treatment system will incur permitting, capital, and operating costs for the system, but those costs could be partially offset if the landfill receives and treats off-site generated leachate for a fee.

Capital costs will vary depending, among other variables, on the treatment technology used and the

volume of leachate to be treated. The proposed regulations do not prescribe a treatment method but rather set an overall level of treatment required, and the treatment technology/method to achieve that will need to be determined as part of the planning and design process. It is estimated that capital costs could be between $3 million and $50 million. Annual operating cost will again vary based on chosen technology, the volume of leachate to be treated and other variables and are estimated between $1.5 million and $8 million per year. Some capital and operating costs may be offset at facilities which currently have staff operating/maintaining pre-treatment systems that may become incorporated under the new requirements.

Going through the expected costs on a per-facility basis, based on a 20-year operating period, overall costs for landfills to treat their own leachate were estimated to range from $0.18/gallon to $0.42/gallon. Some landfills provided costs for leachate treatment at WRRFs that were in the range of $0.004/gallon to $0.23/gallon. As noted above, landfills that generate a relatively large volume of leachate but accept a relatively small amount of waste for disposal have large costs on a per ton of waste disposal basis. Costs for treating their own leachate over a 20-year operating period on a per ton of waste disposal basis are estimated to range of $4.62/ton to $121.28/ton.

The Environmental Facilities Corporation (EFC) has Bipartisan Infrastructure Law funding available from EPA to municipalities through 2026 for planning, design and construction activities that address emerging contaminants, including PFAS, in wastewater, stormwater and nonpoint source pollution.

Landfills may pass on costs associated with the leachate treatment to their customers. The average cost is estimated between $3.85 and $8.99 per month per household. The median cost per month per

household is estimated between $2.09 and $4.88. These estimates assume each landfill decides to treat its own leachate and are based on a 90-gallon household waste container with weekly collection.

Costs to the Department and the State:

The cost to the State lies within the department, for implementation and administration of the regulatory program. Since this is an existing regulatory program, it is not expected to be a significant increased cost to the department.

Costs to Local Governments:

Some local governments choose to own a landfill. While these government-owned facilities will be required to treat their leachate to remove contaminants prior to delivery of the leachate stream to a WRRF or other authorized discharge location, the municipality will have the option of designing, constructing and operating a leachate treatment facility or of sending their leachate to an alternate treatment facility owned by another entity. These local governments may incur additional or reduced costs associated with the regulations as described above.

PAPERWORK

The proposed amendments add a new requirement to an existing facility type and add a new solid waste management facility activity type. Those that will be undertaking the new activity type will necessitate filing of a Part 360 permit application. Landfills will be required to submit conceptual and final leachate treatment plans. Facilities that conduct leachate treatment under the new Part 360 permit type will be required to create and maintain records as identified in section 360.19(k) and

additional records as identified in section 363-12.5 including but not limited to those records for documenting maintenance activities, sampling activities, laboratory analysis results, disposal records, and specific notifications in instances of unplanned shutdowns, treatment process issues, or sample result non-compliance.

DUPLICATION

The proposed regulations are not intended to duplicate any other federal or State regulations or statutes. Additional discussion regarding duplication is included in the Regulatory Impact Statement.

ALTERNATIVE APPROACHES

The primary alternative considered was to make no changes to the existing leachate treatment requirements. This was rejected as it would allow contaminants present in leachate to continue to be reintroduced to the environment.

Another alternative considered was to require all raw landfill leachate to be solidified and redisposed at the generating landfill. This was rejected as it would consume significant amounts of landfill airspace and raised other concerns about cost and landfill stability.

Another alternative considered was to target the removal of emerging contaminants from leachate, like 1,4-dioxane, perfluorooctanesulfonic acid (PFOS), and perfluorooctanoic acid (PFOA), when new information becomes available and new groundwater or surface water quality standards or new NYS Department of Health drinking water maximum contaminant levels are adopted. Under this alternative, future rulemakings would be necessary to address new contaminants as information

becomes available, with the possibility of having to redesign the treatment system. This was rejected as not being as protective of water quality as the proposed regulations and as being an inefficient process to implement comprehensive leachate treatment.

FEDERAL STANDARDS

There are federal standards for the design and operation of solid waste landfills at 40 CFR part 258. The proposed revisions are more stringent than those found in 40 CFR part 258 and the State has been approved by the US Environmental Protection Agency to implement the federal part 258 criteria.

COMPLIANCE SCHEDULE

Transition provisions for existing facilities are specified in proposed section 360.4. There are three types of existing facilities that will be subject to the proposed rule: active MSW landfills located in NYS; active C&DD landfills located in NYS; and facilities located in NYS that currently accept leachate from those landfills.

A conceptual leachate treatment plan must be submitted by the owner or operator of each landfill subject to the rulemaking within one year of the effective date, or alternatively within that one-year timeframe, must submit a notification to the department that it intends to cease acceptance of all solid waste for disposal at the facility within two years of the effective date. For the landfills that will continue operating, within two years of the effective date, a final leachate treatment plan must be submitted. For landfills that provided notice that they will cease acceptance of waste, a closure plan must be submitted within two years of the effective date. If any activities in the final leachate

treatment plan would require a modification to the landfill's Part 360 permit, a permit modification application for that permit must be submitted within two years of the effective date.

Facilities accepting leachate from landfills under the proposed regulations would be allowed to continue to accept leachate without a permit issued pursuant to Subpart 363-12 until that landfill's identified leachate treatment facility is permitted. Leachate treatment facilities would be required to submit a Part 360 permit application to the department within two years of the effective date.

For new facilities, compliance will be required upon adoption of the final rule. Facilities that are not currently leachate treatment facilities would not be authorized to commence acceptance of leachate after the effective date of the rulemaking until after applying for and having a permit as a leachate treatment facility issued.

INITIAL REVIEW OF RULE

The department will conduct an initial review of the rule within 3 years as required by SAPA §207.

6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Regulatory Impact Statement

INTRODUCTION

The New York State Department of Environmental Conservation (department) is proposing to amend 6 NYCRR Part 360 Solid Waste Management Facilities and 6 NYCRR Part 363 Landfills, to include new requirements for the treatment of leachate generated at municipal solid waste landfills and at C&D debris landfills with leachate collection systems.

Many contaminants are found in leachate generated at municipal solid waste and construction and demolition debris landfills, including but not limited to dissolved organic matter, salts, heavy metal ions, and other organic and inorganic compounds including emerging contaminants (ECs). Disposal at wastewater treatment plants, also known as water resource recovery facilities (WRRFs), is currently the standard method of landfill leachate disposal. A common concern is that ECs, including compounds like per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, are not treated or removed at the WRRF and either pass through to the WRRF's receiving waterbody or accumulate in the biosolids generated through the WRRF's treatment of other organic wastes. A solution is needed that better protects the water resources and environmental resources of the State by reducing the reintroduction of contaminants into the environment.

Municipal solid waste (MSW) is a term defined in regulation, meaning “residential waste, commercial waste, or institutional waste, or any component or combination thereof, excluding construction and demolition debris and biosolids unless they are commingled.” MSW is generated by virtually all public and private entities, including individuals, households, institutions, and businesses. Most MSW that is not recycled or otherwise removed from the waste stream is eventually delivered to an MSW landfill for disposal.

Construction and demolition (C&D) debris is a term defined in regulation, meaning “waste resulting from construction, remodeling, repair and demolition of structures, buildings and roads. C&D debris includes excavated material, demolition wastes, and construction wastes." C&D debris is generated by virtually all public and private entities, including individuals, households, institutions, and businesses. Most C&D debris that is not beneficially used, recycled or otherwise removed from the waste stream is eventually delivered to a landfill for disposal.

Leachate is a term defined in regulation, meaning “any solid waste in the form of a liquid, including any suspended components, that results from contact with waste.” Leachate is generated at a landfill as a result of percolation of precipitation through the disposed waste and from the decomposition of organic wastes within the landfill. Leachate accumulates contaminants that are in the solid waste, resulting in large amounts of dissolved organic matter, salts, heavy metal ions, and other organic

compounds (e.g., chlorinated aliphatics, pesticides and ECs) being present in the leachate.

Landfills are designed to contain and collect leachate to protect groundwater at the landfill site and to allow for proper management. As noted above, the standard method for managing landfill leachate has been disposal at WRRFs. The standard biological treatment processes at WRRFs are not designed to treat many of the chemical contaminants found in leachate. However, technologies are now available whereby contaminants can be removed from landfill leachate and retained in a landfill, avoiding the reintroduction of these contaminants to the environment.

The US Environmental Protection Agency (EPA) is also considering the treatment of landfill leachate. EPA has determined that the development of effluent guidelines and pretreatment standards is needed to address PFAS discharges from landfills. The amendments to 6 NYCRR Part 360 Solid Waste Management Facilities and 6 NYCRR Part 363 Landfills regulations will pave the way for New York State to be the first state to implement such guidelines and standards, and provide for innovative, progressive approaches to address this emerging issue.

1. STATUTORY AUTHORITY

The department is authorized to promulgate regulations to establish requirements for solid waste management in New York State pursuant to multiple statutes which provide

general and specific authority.

The department's statutory authority to undertake amendments to Part 360 and Part 363 is found in Environmental Conservation Law (ECL) sections 1-0101, 3-0301, and titles 1 and 7 of article 27.

- ECL section 1-0101 declares a policy of the State to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution in order to enhance the health, safety and welfare of the people and their overall economic and social well-being.

- ECL section 3-0301 empowers the department to adopt regulations as may be necessary to carry out the environmental policy of the State set forth in section 1-0101.

- ECL article 27, title 1 empowers the department to regulate the collection, treatment and disposal of solid waste.

- ECL article 27, title 7 authorizes the department to regulate solid waste management and resource recovery facilities. Section 27–0703 sets forth the powers and duties of the department with respect to solid waste management facilities, including the department's power to adopt rules and regulations

governing the operation of solid waste management facilities.

2. LEGISLATIVE OBJECTIVES

The overarching legislative objective of ECL Article 27 as it relates to solid waste management is found at ECL 27-0703, authorizing the department to:

> Adopt and promulgate, amend and repeal rules and regulations governing the operation of solid waste management facilities. Such rules and regulations shall be directed at the prevention or reduction of (i) water pollution, (ii) air pollution, (iii) noise pollution, (iv) obnoxious odors, (v) unsightly conditions, caused by uncontrolled release of litter, (vi) infestation of flies and vermin, and (vii) other conditions inimical to the public health, safety, and welfare. In promulgating such rules and regulations, the department shall give due regard to the economic and technological feasibility of compliance therewith. Any rule or regulation promulgated pursuant hereto may differ in its terms and provisions as between particular types of solid waste management facilities and as between particular areas of the state.

3. NEEDS AND BENEFITS

More than thirty years ago, New York State established itself as a national leader in groundwater protection by adopting federal hazardous waste landfill liner design criteria as the State's standard for non-hazardous solid waste landfills. This forward-thinking decision has helped ensure protection of groundwater at landfill locations and was found to be necessary because of the contaminants found in solid waste and concentrated at landfills. In addition, soon after large-scale landfills began to operate, the generation of landfill gas, typically containing approximately 50% methane, became a serious concern. To address the landfill gas being generated, landfill designs and associated regulations were modified to require large-scale landfills to collect landfill gas. This led to landfills installing landfill gas collection systems ultimately utilizing flares or landfill-gas-to-energy facilities. For both these issues – groundwater protection and landfill gas management – landfill procedures and regulations adapted to appropriately deal with the concerns raised at the time.

However, the management of landfill leachate has become a third fundamental environmental concern associated with landfill activities. Improved management of landfill leachate will address the potential environmental impacts posed by landfill contaminants. Landfill leachate – liquid in which contaminants have become concentrated from being in contact with disposed material – has traditionally been sent

for disposal at WRRFs. While this is a standard method for management of leachate nationwide, it allows contaminants in the leachate to leave the concentration point that the landfill represents and to be sent to treatment facilities that are not designed to treat those contaminants.

There are tens of thousands of chemical compounds used in manufacturing products and goods that are distributed throughout the economy. At the end of their useful life, many of these products and goods, along with their chemical constituents, will ultimately be disposed in a landfill. Programs and initiatives are in place and underway to reduce the quantity of chemicals recognized to have negative human health and environmental impacts, like lead, mercury, PFAS and 1,4-dioxane, that are present in products and goods. Despite these efforts, for many years to come these and other contaminants will continue to be concentrated in solid waste and therefore will end up in landfills and eventually landfill leachate. While landfills do not create the contaminants found in their leachate, they do represent a unique opportunity to entomb those contaminants and remove their potential downstream impacts to human health and the environment.

The goal of this rulemaking is to minimize the re-introduction of those contaminants into the environment. Solidifying the entire volume of raw leachate, however, would take up significant landfill airspace. Instead, it is expected that currently available volume reduction, separation and/or treatment technologies would be used to reduce the overall volume of leachate requiring management, or that a concentrated leachate stream

would be separated from a clean liquid stream with the concentrated stream managed for disposal and the clean liquid stream sent either to a WRRF or discharged directly through a SPDES permit. But separation and treatment processes will not work perfectly and will leave some residual loading in the “clean” or treated effluent stream. Because of this, this rulemaking includes a quantitative treatment requirement that must be met before a treated effluent stream can leave the leachate treatment facility. The quantitative treatment requirement is not based on achieving a human health or environmental risk assessment-based outcome. Instead, it is intended to function as an achievable and measurable criterion that facilities and the department can use to determine compliance with the regulation.

The proposed revisions to Part 360 and Part 363 require leachate from currently active MSW landfills and active C&D debris landfills with leachate collection systems to be treated to remove contaminants and ensure the proper disposal of those contaminants. The treatment must occur prior to delivery of any treated leachate stream to a WRRF or other authorized discharge location. The concentrated residual waste resulting from treatment must be properly disposed. There are currently 25 active MSW landfills and seven active C&D Debris landfills with leachate collection systems, identified in Table 1, that will be affected by this rulemaking.

Some landfills may not have available space or may have other factors that would inhibit the ability to site the required treatment systems at the landfill. Accordingly,

provisions are included to add landfill leachate treatment as a new solid waste management activity and to provide for permitting of that activity so that it could be located at the generating landfill, at another landfill or at an alternate location. Landfills will have the option of treating the leachate on-site or contracting with an alternate landfill or other location to have the leachate treated off-site. This could potentially lead to regional facilities that treat leachate from multiple landfills. Provision has also been included so that landfills that will cease to accept waste soon after this rulemaking goes into effect may move to formal closure of the facility instead of developing a treatment plan.

The leachate management would most likely involve concentration and some form of solidification with disposal at an authorized MSW landfill or C&D debris landfill and discharge of the treated effluent stream to a WRRF. Concentrated, solidified leachate may be able to be used as alternative operating cover at an active, authorized MSW or C&D debris landfill. Landfills that employ technologies to reduce the leachate volume onsite may find a reduced need for transport of a treated effluent to WRRFs by truck, which could result in greenhouse gas emission reductions. Concentrated, solidified leachate used as alternative operating cover at the landfill would save landfill space and reduce the emissions from trucks transporting operating cover to the landfill.

Table 1
Active MSW Landfills

Facility Name	City	NYSDEC Region + County
Albany (City) SWMF	Albany	4 - Albany
Allied Waste Niagara	Niagara Falls	9 - Niagara
Ava Landfill	Boonville	6 - Oneida
Bath Sanitary Landfill	Bath	8 - Steuben
Bristol Hill SLF	Fulton	7 - Oswego
Broome County Landfill	Binghamton	7 - Broome
Chaffee Landfill	Chaffee	9 - Erie
Chautauqua Landfill	Ellery	9 - Chautauqua
Chemung County Sanitary Landfill	Chemung	8 - Chemung
Chenango County Landfill	Norwich	7 - Chenango
Clinton County Landfill	Morrisonville	5 - Clinton
Colonie (T) SWMF	Colonie	4 - Albany
Cortland County LF Westside Extension	McGraw	7 - Cortland
Delaware County SWMF - MSW	Walton	4 - Delaware
Dev. Authority of the North Country LF	Rodman	6 - Jefferson
Franklin County Regional Landfill	Constable	5 - Franklin
Fulton County Landfill	Johnstown	5 - Fulton
Green Ridge RDF	Gansevoort	5 - Saratoga
High Acres Western Expansion Landfill	Fairport	8 - Monroe
Hyland Landfill	Angelica	9 - Allegany
Madison County West Side Extension LF	Canastota	7 - Madison
Mill Seat SLF	Riga	8 - Monroe
Modern Landfill, Inc.	Model City	9 - Niagara
Ontario County Sanitary Landfill	Stanley	8 - Ontario
Seneca Meadows LF	Waterloo	8 - Seneca
Active C&D Debris Landfills with Leachate Collection		
Facility Name	City	NYSDEC Region + County
110 Sand Company Clean Fill Disposal Site	Melville	1 - Suffolk
Blydenburgh Road Landfill Complex	Hauppauge	1 - Suffolk
Brookhaven Waste Management Facility	Yaphank	1 - Suffolk
Chemung County Area 3 C&D Landfill	Chemung	8 - Chemung
Delaware County SWMF	Walton	4 - Delaware
Dunn C&D LF	Rensselaer	4 - Rensselaer
Hakes C&D Disposal Inc	Painted Post	8 - Steuben

Needed Regulatory Changes

The proposal would amend Part 360 and Part 363 in the following ways:

- Definitions are added for new terms relevant to the rulemaking and adjustments are made in section 360.2(a) to remove the exclusion for leachate being sent to a WRRF via a sewer system or discharged via a SPDES permit.

- Transition language is added in section 360.4 that requires submission of a conceptual leachate treatment plan within one year of the effective date of the rule and submission of a final plan within two years of the effective date of the rule for all landfills subject to the rule. Language is added that allows landfills that will cease acceptance of waste within two years of the effective date of the rule to satisfy the requirement by providing all required closure documents within two years of the effective date of the rule.

- Transition language is added that allows landfills to continue sending leachate regulated by the proposed rule to WRRFs for up to four years from the effective date of the rule and allows WRRFs to receive leachate from a landfill subject to the proposed rule until that landfill's associated leachate treatment plant is operational.

- Transition language is added that requires facilities that are currently treating and plan to continue treating MSW or C&D debris landfill leachate subject to the rule to

submit a permit application to the department within two years of the effective date of the rule.

- Language is added to 360.7 to add the detail that sample collection can be a component of department inspections.

- The name and applicability of Part 363 are modified to include landfill leachate treatment facilities that treat MSW or C&D debris landfill leachate.

- An exemption is added to Subpart 363-2 for facilities that treat leachate from landfills that do not currently accept MSW or C&D debris, landfills that accept C&D debris that do not have leachate collection systems, and from landfills that ceased acceptance of all solid waste prior to the effective date of the rule.

- All references to landfill leachate recirculation are removed from Part 363.

- The leachate management plan, which is part of the Facility Manual in section 363-4.6, is modified to include details on the newly required conceptual and final leachate treatment plans. Among other required information, these plans will provide details on how and where the landfill intends to treat its leachate.

- The landfill operating requirements in Subpart 363-7 are amended to require the

treatment of MSW and C&D debris landfill leachate either at a facility located in New York that is authorized pursuant to Subpart 363-12 or at a facility located outside of New York that is duly authorized within that state or jurisdiction, and to prevent discharge or release of leachate from landfills that accept MSW and from landfills that both accept C&D debris and have leachate collection systems that does not meet the proposed treatment requirements directly to the environment or to a New York State Pollutant Discharge Elimination System permitted facility.

- A record-keeping requirement for the owner or operator of a landfill to document compliance with the new requirements is added to section 363-8.1.

- The facility closure plan requirements in section 363-9.3 are amended to include for continued treatment of leachate after closure.

- The post-closure care requirements in 363-9.6 are amended to provide for continued leachate management and provide a mechanism for requesting modification of the level of treatment required based on leachate contaminant concentrations.

- A new Subpart 363-12 is added which provides the requirements for landfill leachate treatment facilities. Among the specific details and requirements, the treatment requirement is for 99.9% removal of certain contaminants as specified in the proposed rulemaking.

• Unrelated to the proposed changes for leachate, edits are made to the text of the regulation to correct typographical errors in the July 22, 2023, adopted rule. These edits are generally to add or remove spaces between words. Also, 360.4(c)(1) and (2) are edited to change “360.16” to “360-16”, to correct the reference to Subpart 16 of Part 360 which was in effect prior to the November 4, 2017 rulemaking.

• Unrelated to the proposed changes for leachate, transition language in section 360.4 is modified to change the relative time frames entered in the July 2023 rulemaking to specific dates (e.g., “within 180 days of the effective date of this rulemaking”, referring to the July 2023 rulemaking, was changed to “January 18, 2024”). Language is similarly amended in section 363-5.1(k) to identify the effective date of those requirements. The regulatory timeframe would change as being relative to this proposed rulemaking unless these prior terms are changed to dates.

4. COSTS

Total costs for each landfill to evaluate, plan, and implement leachate treatment will vary considerably based on the approach and the technologies that the facility chooses to use to meet the new requirements, along with the volume of leachate that needs to be treated. A landfill that pays another facility to treat its leachate will likely pay a per-gallon

cost, as in a similar way most landfills currently pay WRRFs to receive their leachate. A landfill that builds and operates its own leachate treatment system will incur permitting, capital, and operating costs for the system, but those costs could be partially offset if the landfill receives and treats off-site generated leachate for a fee.

Capital costs will vary depending, among other variables, on the treatment technology used and the volume of leachate to be treated. The proposed regulations do not prescribe a treatment method but rather set an overall level of treatment required, and the treatment technology/method to achieve that will need to be determined as part of the planning and design process. For cost estimating, the department based its estimates on a treatment system using a multi-stage reverse osmosis (RO) system, with subsequent activated carbon on the RO permeate (clean stream), use of a concentrator on the RO concentrate stream, followed by solidification for the concentrate and treatment such as a thermal oxidizer on the concentrator vapor effluent. It is estimated that capital costs could be between $3 million and $50 million. Annual operating cost will again vary based on chosen technology, the volume of leachate to be treated and other variables and are estimated to be between $1.5 million and $8 million per year. Some capital and operating costs may be offset at facilities which currently have staff operating/maintaining pre-treatment systems that may become incorporated under the new requirements. It is expected that the infrastructure built/installed through capital investment should remain viable for a period of at least 20 years.

Costs associated with the new requirements also may be partially offset by reductions in current costs for leachate transportation, disposal, and sampling costs and operating cover transportation and material costs if leachate concentrate is solidified and utilized as alternative operating cover. Landfills in New York State and in other states have implemented similar techniques voluntarily to reduce leachate volumes and associated disposal costs. In addition, these liquid management technologies could represent a new revenue stream if landfills receive leachate from other landfills for treatment.

Costs to new leachate treatment facilities located at non-landfill facilities would be similar to those for facilities at landfills. Municipalities that choose to comply with the proposed requirements by taking their leachate to another landfill or to an alternate facility for treatment, will incur costs for leachate transportation and treatment. These costs will vary depending on the volume of leachate, the distance to the treatment facility and the treatment costs being charged by the treatment facility.

Since the volume of leachate needed to be treated will be one of the design parameters for treatment facilities, the volume of leachate being generated was evaluated. There are numerous variables that affect the volume of leachate generated including but not limited to the area of built liner with disposed waste, the age of constructed or closed cells, the area of disposed waste without final cover, moisture content of waste accepted, proportion of organic/decomposable waste accepted, precipitation at the facility, and the efforts undertaken by facilities in operation to minimize leachate

generation. Two gross metrics were considered for evaluation, comparing the total annual volume of leachate collected per facility per total acres of lined landfill (all types of open/closure status with respect to final cover) with leachate collection (gallons/acre) and per ton of waste accepted over the year (gallons/ton). Using the data for calendar year 2022, the range of results for these two metrics was 0.05-0.54 million gallons/acre and 13.7-400.2 gallons/ton. Minimization of leachate generation is already a regulatory requirement; however, all facilities should re-evaluate what changes and additional operational measures could be implemented to further reduce leachate generation.

Going through the expected costs on a per-facility basis, based on a 20-year operating period for facilities installed, overall costs to treat their own leachate among the landfills affected by this rulemaking were estimated to range from $0.18/gallon to $0.42/gallon. Some landfills provided their costs for leachate treatment/disposal, and those costs were in the range of $0.004/gallon to $0.23/gallon. As noted above, landfills that generate a relatively large volume of leachate but accept a relatively small amount of waste for disposal have large costs on a per ton of waste disposal basis. Costs for treating their own leachate over a 20-year operating period on a per ton of waste disposal basis are estimated to be in the range of $4.62/ton to $121.28/ton.

Of the 25 active MSW landfills, 13 are municipally owned and municipally operated. Of the seven active C&D debris landfills with leachate collection systems, 3 are municipally owned and municipally operated. The costs of this proposal to these municipalities will

depend on how the municipality chooses to comply with the proposed requirements. Five of the MSW landfills and one of the C&D debris landfills with leachate collection systems are municipally owned and privately operated. The costs of this proposal to these municipalities will depend on the terms of the contract in place with the private landfill operator.

The Environmental Facilities Corporation (EFC) has Bipartisan Infrastructure Law funding available from EPA for planning, design and construction activities that address emerging contaminants, including PFAS, in wastewater, stormwater and nonpoint source pollution. This funding is available to municipalities through 2026. In addition, Governor Hochul's State of the State directed the department to provide funding for local governments to comply with regulations to treat leachate for harmful contaminants at the source before discharge. This funding is anticipated to be provided through the Water Quality Improvement Project (WQIP) grant program. More details will be provided to municipalities as they become available.

Municipally owned and privately owned landfills may decide to pass on costs associated with the leachate treatment to the landfill customers. Based on the amount of waste received per year at each landfill and using costs charged by private waste haulers for weekly collection of a 90-gallon household waste container, the average cost associated with leachate treatment is estimated between $3.85 and $8.99 per month per household. The median cost per month per household is estimated between $2.09

and $4.88. These estimates assume each landfill decides to treat its own leachate.

The cost to the State lies within the department, for implementation and administration of the regulatory program. Since this is an existing regulatory program, it is not expected to be a significant increased cost to the department.

5. LOCAL GOVERNMENT MANDATES

The rulemaking would amend existing regulatory criteria applicable to active MSW landfills and active C&D debris landfills with leachate collection and applies new criteria to facilities that treat leachate from these facilities. As discussed in Section 4, the costs associated with revisions to regulatory criteria for these facilities will apply to all facilities, including those facilities that are owned or operated by local governments. Some local governments choose to own a landfill. While these government-owned facilities will be required to treat their leachate to remove contaminants prior to delivery of the leachate stream to a WRRF or other authorized discharge location, the municipality will have the option of designing, constructing and operating a leachate treatment facility or of sending their leachate to an alternate treatment facility owned by another entity.

Several landfills plan to reach final capacity within the next two years. Landfills that plan to or choose to stop accepting waste within two years of the effective date of the rulemaking will be able to submit documentation to that effect to meet the requirements and will not be required by this rulemaking to treat their leachate.

6. PAPERWORK

The proposed amendments add a new requirement to an existing facility type and add a new solid waste management facility activity type. Those that will be undertaking the new activity type will necessitate filing of a solid waste management facility permit application. Landfills, whether planning to conduct leachate treatment themselves or not, will be required to submit conceptual and final leachate treatment plans. Those facilities that conduct leachate treatment under the new solid waste management facility permit type will be required to create and maintain records as identified in section 360.19(k) and additional records as identified in section 363-12.5 including but not limited to those records for documenting maintenance activities, sampling activities, laboratory analysis results, disposal records, and specific notifications to the department and others in instances of unplanned shutdowns or other treatment process issues and sample result non-compliance.

7. DUPLICATION

The proposed regulations are not intended to duplicate any other legal requirements of federal or State regulations or statutes. There are standards for the design and operation of solid waste landfills in 40 CFR part 258. The proposed revisions to Part 363 are more stringent than those found in 40 CFR part 258 and the State has been approved by the United States Environmental Protection Agency (EPA) to implement the federal part 258 criteria.

8. ALTERNATIVE APPROACHES

The primary alternative that was considered was to make no changes to the existing leachate treatment requirements. This alternative was rejected as it would allow contaminants present in MSW and C&D debris landfill leachate to continue to be reintroduced to the environment. While the requirements for properly designed, constructed, and monitored liner systems at landfills have proven to be very effective in protecting the State's groundwater resources, to send the leachate to WRRFs, ultimately releasing all that captured leachate to the State's surface water resources, represents a significant missed opportunity. That approach may have been reasonable in the past, but with the information currently available the department can no longer proceed without taking action to prevent or reduce water pollution and other conditions that may result that are contrary to public health, safety, and welfare.

Another alternative that was considered was to require all raw landfill leachate to be solidified and redisposed at the generating landfill. This alternative was rejected as it would consume significant amounts of landfill airspace and raised other concerns about cost and landfill stability. For some facilities, particularly municipal owned facilities, the volume of solidified leachate being disposed would far exceed the volume of waste being received for disposal. This would significantly affect disposal capacity, future construction planning and permitting, and solid waste management planning. There were also concerns raised about disposed waste mass stability.

Another alternative considered was to target the removal of emerging contaminants from leachate, like 1,4-dioxane, perfluorooctanesulfonic acid (PFOS), and perfluorooctanoic acid (PFOA), when new information becomes available and new groundwater or surface water quality standards or new New York State Department of Health drinking water maximum contaminant levels are adopted. Under this alternative, future rulemakings would be necessary to address new contaminants as information becomes available, with the possibility of having to redesign the treatment system. This alternative was rejected as not being as protective of water quality as the proposed regulations and as being an inefficient process to implement comprehensive leachate treatment.

The proposed requirements have been discussed with the regulated community in individual discussion, professional conferences, and two dedicated stakeholder

meetings. The result of this process is the subject proposed rulemaking that the department considers protective of environmental resources.

9. FEDERAL STANDARDS

There are federal standards for the design and operation of solid waste landfills at 40 CFR part 258. The proposed revisions in Part 363 are more stringent than those found in 40 CFR part 258 and the State has been approved by the EPA to implement the federal part 258 criteria.

10. COMPLIANCE SCHEDULE

Transition provisions for existing facilities are specified in proposed section 360.4. There are three main types of existing facilities that will be subject to the proposed rule: the 25 currently active MSW landfills located in New York State; the seven currently active C&D debris landfills with leachate collection systems located in New York State; and facilities (e.g., landfill leachate pre-treatment facilities and SPDES permitted WRRFs) located in New York State that currently accept leachate from those landfills.

A conceptual leachate treatment plan must be submitted by the owner or operator of each landfill subject to the rulemaking within one year of the effective date of the rulemaking, or alternatively within that one-year timeframe, must submit a notification to

the department that it intends to cease acceptance of all solid waste for disposal at the facility within two years of the effective date of the rulemaking. For the landfills that will continue operating, within two years of the effective date of the rulemaking, a final leachate treatment plan must be submitted. For landfills that provided notice that they will cease acceptance of all solid waste, a closure plan must be submitted within two years of the effective date of the rulemaking. Depending on whether any activities in the final leachate treatment plan would require a modification to the landfill's solid waste management facility (SWMF) permit, a permit modification application for that SWMF permit must be submitted within two years of the effective date of the rulemaking.

Facilities accepting leachate from landfills under the proposed regulations would be allowed to continue to accept leachate without a permit issued pursuant to Subpart 363-12 until that landfill's identified leachate treatment facility is permitted. These leachate treatment facilities would be required to submit a solid waste management facility permit application to the department within two years of the effective date of the rulemaking.

For new facilities, compliance will be required upon adoption of the final rule. Facilities that are not currently leachate treatment facilities would not be authorized to commence acceptance of leachate after the effective date of the rulemaking until after applying for and having a permit as a leachate treatment facility issued.

11. INITIAL REVIEW OF RULE

The department will conduct an initial review of the rule within three years as required by SAPA §207.

6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Rural Area Flexibility Analysis

The proposed rulemaking modifies the Department of Environmental Conservation's (department) regulations governing solid waste management facilities, specifically active municipal solid waste (MSW) landfills and active construction and demolition (C&D) debris landfills that have leachate collection systems and adds requirements for treatment of leachate generated at those facilities and the facilities that treat the leachate. There are 32 active MSW and C&D debris landfills that would be subject to this rule. The landfill owners/operators report where their leachate is sent for treatment to the department in an annual report. Based on the annual reports submitted for calendar year 2022, this includes 35 water resource recovery facilities (WRRFs) or systems located in New York State.

1. TYPES AND ESTIMATED NUMBER OF RURAL AREAS

For purposes of this Rural Area Flexibility Analysis (RAFA), "rural area" means those portions of New York State (State) so defined by Executive Law section 481(7) pursuant to State Administrative Procedure Act (SAPA) section 102(10). Under Executive Law section 481(7), rural areas are defined as "counties within the state having less than two hundred thousand population, and the municipalities, individuals, institutions, communities, programs and such other entities or resources as are found therein. In counties of two hundred thousand or greater population, 'rural areas' means towns with population densities of one hundred fifty persons or less per square mile, and the villages, individuals, institutions, communities, programs and such other entities or resources as are found therein." This proposed rule would apply statewide, including all rural areas of the State.

All areas of the State, including rural areas, generate solid waste and will be affected directly or indirectly by the rulemaking. Forty-four of the State's 62 counties have populations of less than 200,000 people. Twenty-three of the 32 currently active landfills that would be subject to this rule are located within counties and/or towns that are rural areas. Similarly, most of the WRRFs identified as receiving leachate from these facilities are in rural areas.

2. REPORTING, RECORDKEEPING, OTHER COMPLIANCE REQUIREMENTS; AND PROFESSIONAL SERVICES

If a local government in a rural area chooses to own and operate an MSW or C&D debris landfill or a leachate treatment facility, there are proposed requirements that apply to those activities. While the local government will be required to treat their leachate to remove contaminants prior to delivery of the leachate stream to a WRRF or other authorized discharge location, they will have the option of designing, constructing and operating a leachate treatment facility or of sending their leachate to an alternate treatment facility owned by another entity. Affected facilities will need to develop plans for how they intend to treat their leachate. It is expected that facility owners/operators will procure professional services for the development of these plans. Part of the plan development will be to evaluate methods that can be used to meet the treatment requirements, and it is expected that laboratory and other technical services will be needed for this. Professional and other services would also be required as part of the permitting process that will be required under the regulatory revisions. These efforts would occur within two years of adopting the proposed revisions. Subsequently, the treatment systems will then need to be fully designed, along with the development of operation and maintenance plans. The treatment systems and associated infrastructure will need to be constructed

and, ultimately, will need to be operated and maintained. Leachate and any treated effluent will need to be sampled, analyzed by a certified laboratory, and results will need to be evaluated for compliance and reported. To the extent that the location of leachate treatment changes for any landfill, changes may be needed for leachate transport, either adding it where needed or removing it where no longer needed. Treatment residuals will need to be transported to an authorized disposal facility, requiring transportation services.

While not a requirement under the proposed rule, some local governments may choose to pursue grants or other funding that may be available through the New York State Environmental Facilities Corporation, or other sources, to partially cover costs to comply with the proposed rule. These types of grant programs have their own requirements for applications, recordkeeping, reporting and may need procurement of professional services.

3. COSTS

Total costs for each landfill to evaluate, plan and implement leachate treatment will vary considerably based on the approach and the technologies that the facility chooses to use to meet the new requirements, along with the volume of leachate that needs to be treated. A landfill that pays another facility to treat its leachate will likely pay a per-gallon cost, as most landfills currently pay WRRFs to receive their leachate. A landfill that builds and operates its own leachate treatment system will incur permitting, capital, and operating costs for the system, but those costs could be partially offset if the landfill receives and treats off-site generated leachate for a fee.

Capital costs will vary depending, among other variables, on the treatment technology used and the volume of leachate to be treated. The proposed regulations do not prescribe a treatment

method but rather an overall level of treatment required, and the treatment technology/method to achieve that will need to be determined as part of the planning and design process. For cost estimating, the department based it on a treatment system using a multi-stage reverse osmosis (RO) system, with subsequent activated carbon on the RO permeate (clean stream), use of a concentrator on the RO concentrate stream, followed by solidification for the concentrate and treatment such as a thermal oxidizer on the concentrator vapor effluent. It is estimated that capital costs could be between $3 million and $50 million. Annual operating cost will again vary based on chosen technology, the volume of leachate to be treated and other variables and are estimated could be between $1.5 million and $8 million per year. Some capital and operating costs may be offset at facilities which currently have staff operating/maintaining pre-treatment systems that may become incorporated into, obsolete, or redundant under the new requirements. It is expected that the infrastructure built/installed through capital investment should remain viable for a period of at least 20 years.

Costs associated with the new requirements for landfills also may be partially offset by reductions in current costs for leachate transportation, disposal, and sampling costs and daily operating cover transportation and material costs if leachate is solidified and utilized as alternate operating cover. Landfills in New York State and in other states have implemented similar techniques voluntarily to reduce leachate volumes and associated disposal costs. In addition, these liquid management technologies could represent a new income stream if landfills receive leachate from other landfills for treatment.

Costs to new leachate treatment facilities, located at non-landfill facilities, to comply with the requirements would be similar to those for facilities at landfills. Municipalities that choose to comply with the proposed requirements by taking their leachate to another landfill or to an alternate facility for treatment, will incur costs for leachate transportation and treatment. These costs will vary depending

on the volume of leachate, the distance to the treatment facility and the treatment costs being charged by the treatment facility.

On a per- landfill basis, based on a 20-year operating period for facilities installed, overall costs to treat their own leachate among the 32 landfills were estimated to range from $0.18/gallon to $0.42/gallon. Some landfills provided their costs for leachate treatment/disposal, and those costs were in the range of $0.004/gallon to $0.23/gallon. As noted above, landfills that generate a relatively large volume of leachate but accept a relatively small amount of waste for disposal have larger costs on a per ton of waste disposal basis. Costs for treating their own leachate over a 20-year operating period on a per ton of waste disposal basis are estimated to be in the range of $4.62/ton to $121.28/ton.

Of the 25 active MSW landfills and seven active C&D debris landfills with leachate collection systems, 16 are municipally owned and municipally operated. The costs of this proposal to these municipalities will depend on how the municipality chooses to comply with the proposed requirements. Six of the MSW landfills are municipally owned and privately operated. The costs of this proposal to these municipalities will depend on the terms of the contract in place with the private landfill operator. It is expected that this proposal will not impose additional costs to the State or to the department.

The NYS Environmental Facilities Corporation (EFC) has Bipartisan Infrastructure Law funding available from US Environmental Protection Agency (EPA) for planning, design and construction activities that address emerging contaminants, including PFAS, in wastewater, stormwater and nonpoint source pollution. This funding is available to municipalities through 2026.

Municipally owned and privately owned landfills may decide to pass on costs associated with the leachate treatment to the landfill customers. The average monthly cost associated with leachate

treatment is estimated between $3.85 and $8.99 per month per household. The median cost per month per household is estimated between $2.09 and $4.88. These estimates assume each landfill decides to treat its own leachate and is based on a 90-gallon household waste container with weekly curbside collection.

The cost to the State lies within the department, for implementation and administration of the regulatory program. Since this is an existing regulatory program, it is not expected to be a significant increased cost to the department.

Other than differences that may exist in facility size, waste throughput and staffing levels, there are likely no variations in such costs for different types of public and private entities in rural areas.

4. MINIMIZING ADVERSE IMPACT

Approaches to accomplish the objectives of the proposed rule while minimizing any adverse impact of the rule on public and private sector interests in rural areas were considered. As noted above, most of the affected facilities and activities are located within rural areas. Having a different timetable for implementation or different criteria for rural areas was considered and rejected because of the negative effect it would have on achieving the overall objectives of the rule of minimizing the amount of contamination that gets released to the environment.

5. RURAL AREA PARTICIPATION

The new requirements have been discussed with the regulated community in individual discussion, professional conferences, and four stakeholder meetings. The result of this process is the

subject proposed rulemaking that the department considers protective of environmental resources.

Once the proposed rules have been released for public comment, the department plans to hold the required public hearing prior to the end of the public comment period. Information about the rulemaking will also be posted on the department's website and in the Environmental Notice Bulletin, which is published weekly on Wednesdays.

6. INITIAL REVIEW OF THE RULE

The department would conduct an initial review of the rule within three years as required by SAPA §207 as amended by Chapter 462 of the Laws of 2012.

6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Job Impact Statement

The New York State Department of Environmental Conservation (department) is proposing to amend 6 NYCRR Part 360 Solid Waste Management Facilities and 6 NYCRR Part 363 Landfills. While the amended regulations will apply statewide, at the time of the proposal, there are 25 currently active municipal solid waste (MSW) landfills and seven construction and demolition (C&D) debris landfills with leachate collection systems, located in department Regions 1 and 4 through 9, that will be affected by the proposed rule. There are also Water Resource Recovery Facilities (WRRFs) that currently receive leachate from these landfills that will be affected by the rule. The department does not expect the proposed regulations to have adverse impacts on jobs and employment opportunities in the State.

1. NATURE OF IMPACT

The proposed revisions add new requirements for leachate treatment prior to any release to the environment. New treatment systems will be required to accomplish the goals of the rule. While the level of treatment described by the rule is novel as applied directly to landfill leachate, it is not new to the environmental consulting or wastewater treatment industry. Affected facilities will need to develop plans for how they intend to treat their leachate. It is expected that facility owner/operators will procure professional services for the development of these plans. Part of the plan development will be to evaluate methods that can be used to meet the treatment requirements, and it is expected that laboratory and other technical services will be needed for this. Professional and other services are expected to also be needed as part of the permitting process that will be required under the proposed

regulatory revisions. These efforts would occur within two years of adopting the proposed revisions. Subsequently, the treatment systems will then need to be fully designed, along with the development of operation and maintenance plans. The treatment systems and associated infrastructure will need to be constructed, and ultimately will need to be operated and maintained. Leachate and any treated effluent will need to be sampled, analyzed by a certified laboratory, and results will need to be evaluated for compliance and reported. To the extent that the location of leachate treatment changes for any landfill, changes may be needed for leachate transport, either adding it where needed or removing it where no longer needed. Treatment residuals will need to be transported to an authorized disposal facility, requiring transportation services.

2. CATEGORIES AND NUMBERS AFFECTED

Overall, the proposed regulations are not expected to adversely affect employment opportunities. It is expected that there will be a short-term need for professional services for planning, permitting, design, report/plan preparation and activities associated with construction. There will be a short-term need for construction services and associated trades. There will be a need for laboratory services associated with treatability studies initially then for ongoing testing of leachate, residuals and other discharge streams. Once constructed and operational, there will be an ongoing need for technical staff to operate and maintain the equipment, to conduct the required sampling, and to complete the record-keeping and reporting requirements.

3. REGIONS OF ADVERSE IMPACT

There are no regions of the State expected to have a disproportionate adverse impact on jobs or employment opportunities from the revised regulations. As noted above, the landfills affected by the

proposal are located in department Regions 1 and 4 through 9.

4. MINIMIZING ADVERSE IMPACT

The proposed revisions are not expected to have an adverse impact on existing jobs. There will be some short-term employment opportunities during planning, permitting, design and construction of the required leachate treatment facilities. It is expected that some additional staff will be needed for operation and maintenance of the new treatment systems, but the additional staff needed are not expected to be significant.

5. SELF-EMPLOYMENT OPPORTUNITIES

The proposed revised regulations are not expected to have a measurable impact on self-employment opportunities.

6. INITIAL REVIEW OF THE RULE, PURSUANT TO SAPA §207 AS AMENDED BY L. 2012, ch. 462

The department will conduct an initial review of the regulations within three years of promulgation as required by SAPA § 207.

6 NYCRR Part 360 and Part 363: Treatment and Disposal of Landfill Leachate

Regulatory Flexibility Analysis for Small Businesses and Local Governments

1. EFFECT OF RULE

The Department of Environmental Conservation (department) is proposing to amend 6 NYCRR Part 360 Solid Waste Management Facilities and 6 NYCRR Part 363 Landfills to include new requirements for the treatment of leachate generated at landfills that accept municipal solid waste (MSW) and landfills that both accept construction and demolition debris and have leachate collection systems (C&DD landfills). For the purposes of this regulatory flexibility analysis, “small business” means any business resident in this State that is independently owned and operated and employs one hundred or fewer employees. If a small business or local government chooses to own or operate a facility or activity subject to the proposed rulemaking, then the requirements of the proposed rule would apply. While these small businesses or local governments will be required to treat their leachate to remove contaminants prior to delivery of the leachate stream to a water resource recovery facilities (WRRF) or other authorized discharge location, they will have the option of designing, constructing and operating a leachate treatment facility or of sending their leachate to an alternate treatment facility owned by another entity.

There are 32 active MSW and C&DD landfills that would be subject to this rule. Twenty-two of these landfills are owned by local governments and ten are owned by businesses. Six of the landfills owned by local governments are operated by private businesses. It is believed that none of the businesses that own or operate the affected landfills are small businesses. Any businesses that may

be small businesses are likely wholly owned subsidiaries of larger regional or national companies that are not small businesses.

The landfill owners/operators report where their leachate is sent for treatment to the department in an annual report. Based on the annual reports submitted for calendar year 2022, this includes 35 WRRFs located in the State. The WRRFs are all owned by local governments.

Most landfills do not have direct piped connections to a WRRF for leachate disposal, and therefore most leachate is hauled by waste transporters. This proposed rulemaking does not modify how waste transport is regulated, however, depending on how landfill owners/operators decide to implement the requirements for leachate treatment, leachate transport may be affected. While the waste transporters used for this purpose are not reported to the department by the landfill owners/operators, it is anticipated that some may be small businesses.

Overall, it is estimated that less than 20 businesses that may meet the definition of small business would be affected by this proposed rulemaking.

2. COMPLIANCE REQUIREMENTS

If a local government or small business chooses to own or operate an MSW or C&DD landfill or a leachate treatment facility, the proposed requirements would apply to those activities. The local government or small business will have the option of designing, constructing and operating a leachate treatment facility or of sending their leachate to an alternate treatment facility owned by another

entity. Affected facilities will need to develop plans for how they intend to treat their leachate. It is expected that facility owners/operators will procure professional services for the development of these plans. Part of the plan development will be to evaluate methods to meet the treatment requirements, and it is expected that laboratory and other technical services will be needed. Subsequently, the treatment systems will then need to be fully designed, and operation and maintenance plans developed. The treatment systems and associated infrastructure will need to be constructed and ultimately operated and maintained. Leachate and any treated effluent will need to be sampled, analyzed by a certified laboratory, and results evaluated for compliance and reported. To the extent that the location of leachate treatment changes for any landfill, changes may be needed for leachate transport. Treatment residuals may need to be transported to an authorized disposal facility, requiring transportation services.

While not required in the proposed rule, some local governments may choose to pursue grants or other funding that may be available through the Environmental Facilities Corporation (EFC), or other sources, to partially cover costs to comply with the proposed rule. These types of grant programs have their own requirements for applications, recordkeeping, reporting and may need procurement of professional services.

There are no new requirements that affect how waste transporters are regulated.

3. PROFESSIONAL SERVICES

Professional services would be required for preparation of plans, permitting, development of operations and maintenance plans, treatment system design, construction oversight and laboratory services. Small businesses and local governments that operate landfills and WRRFs already use

most of these professional services on a regular basis for compliance with existing regulatory requirements. There would be no need for professional services for any waste transporters that may be indirectly affected by the proposed rulemaking.

4. COMPLIANCE COSTS

Total costs for each landfill to evaluate, plan and implement leachate treatment will vary based on the approach and the technologies that the facility chooses to use to meet the new requirements and the volume of leachate that needs to be treated. A landfill that pays another facility to treat its leachate will likely pay a per-gallon cost, as most landfills currently pay WRRFs to receive their leachate. A landfill that builds and operates its own leachate treatment system will incur permitting, capital, and operating costs for the system, but those costs could be partially offset if the landfill receives and treats leachate generated off-site for a fee.

Capital costs will vary depending on the treatment technology used and the volume of leachate to be treated. The proposed regulations do not prescribe a treatment method but rather an overall level of treatment required. The treatment method to achieve that will need to be determined as part of the planning and design process. For cost estimating, a multi-stage reverse osmosis (RO) system, with subsequent activated carbon on the RO permeate (clean stream), use of a concentrator on the RO concentrate stream, followed by solidification for the concentrate and treatment such as a thermal oxidizer on the concentrator vapor effluent was used. It is estimated that capital costs could be between $3 million and $50 million. Annual operating cost will vary based on chosen technology, the volume of leachate to be treated and other variables and are estimated to be between $1.5 million and $8 million per year. Some capital and operating costs may be offset at facilities which currently

have staff operating pre-treatment systems that may become incorporated into or obsolete/redundant under the new requirements. It is expected that the infrastructure built/installed through capital investment should remain viable for a period of at least twenty years.

Costs associated with the new requirements for landfills also may be partially offset by reductions in current costs for leachate transportation, disposal, sampling and operating cover transportation and materials. Landfills in NYS and in other states have implemented similar techniques voluntarily to reduce leachate volumes and associated disposal costs. In addition, these treatment facilities could represent a new revenue stream if landfills receive leachate from other landfills for treatment.

Costs to new leachate treatment facilities, located at non-landfill facilities, to comply with the requirements would be similar to those for facilities at landfills. Municipalities that choose to comply with the proposed requirements by taking their leachate to another landfill or to an alternate facility for treatment, will incur costs for leachate transportation and treatment. These costs will vary depending on the volume of leachate, distance to the treatment facility and costs being charged by the treatment facility.

On a per-landfill basis, based on a twenty-year operating period, overall costs to treat their own leachate among the 32 landfills were estimated to range from $0.18/gallon to $0.42/gallon. Some landfills provided their costs for leachate treatment/disposal, and those costs were in the range of $0.004/gallon to $0.23/gallon. Landfills that generate a relatively large volume of leachate but accept a relatively small amount of waste for disposal have larger costs on a per ton of waste disposal basis. Costs for treating their own leachate over a twenty-year operating period on a per ton of waste disposal basis are estimated in the range of $4.62/ton to $121.28/ton.

Of the 32 active MSW landfills and C&DD landfills, sixteen are municipally owned and

municipally operated. The costs of this proposal to these municipalities will depend on how the municipality chooses to comply with the proposed requirements. Six of the 32 landfills are municipally owned and privately operated. The costs of this proposal to these municipalities will depend on the terms of the contract in place with the private landfill operator. It is expected that this proposal will not impose additional costs to the state or to the department.

There is an expectation that overall costs are not linear based on leachate volume, especially at lower leachate volumes, and that reductions in unit cost that can be realized by having facilities for larger volumes and by treating larger volumes. It is expected that landfill owners/operators will consider this when evaluating how and where they intend to treat their leachate and whether partnering with or using other facilities would be beneficial from a cost perspective.

5. ECONOMIC AND TECHNOLOGICAL FEASIBILITY

The proposed regulations will be economically and technologically feasible for small business and local governments. The regulations do not prescribe any specific technology to achieve the overall objectives for the level of treatment required, and through the leachate treatment planning process that is part of the rulemaking, landfill owners/operators will be able to evaluate and consider what technologies will work best for the treatment of their leachate and whether agreements to have their leachate treated at another facility would be most cost effective.

EFC has Bipartisan Infrastructure Law funding available from EPA to municipalities through 2026 for planning, design and construction activities that address emerging contaminants, including PFAS, in wastewater, stormwater and nonpoint source pollution.

6. MINIMIZING ADVERSE IMPACT

Approaches to accomplish the objectives of the proposed rule while minimizing any adverse impact of the rule on small businesses and local government were considered. Having a different timetable for implementation or different criteria for rural areas was considered and rejected because of the negative effect it would have on achieving the overall objectives of minimizing the amount of contamination that gets released to the environment.

7. SMALL BUSINESS AND LOCAL GOVERNMENT PARTICIPATION

The new requirements have been discussed in concept with the regulated community in individual discussion, professional conferences, and four stakeholder meetings. Starting in 2023, the department began presenting these concepts at solid waste conferences, with the most recent being held in September 2025. At both the stakeholder meetings and conferences, the regulated community has been in attendance. The department received feedback during the January and February 2026 stakeholder meetings. The result of this process is the proposed rulemaking that the department considers protective of environmental resources.

EFC has reached out to the local governments that own landfills to let them know about the BIL funding that is available. The feedback from that outreach is that landfill owners/operators are waiting to see the specific requirements in the rulemaking package to understand their options and potential cost impacts.

Once the proposed rules have been released for public comment, the department plans to hold the required public hearing prior to the end of the public comment period. Information about the rulemaking will also be posted on the department's website and in the Environmental Notice Bulletin

8. CURE PERIOD OR OTHER OPPORTUNITY FOR AMELIORATIVE ACTION

Pursuant to State Administrative Procedures Act (SAPA) 202-b (1-a)(a) and (b), the rulemaking includes transition provisions that provide adequate time for regulated parties to come into compliance with any new provisions. Otherwise, there is no such cure period included in the rule because of the potential for adverse impacts on human health and the environment.

9. INITIAL REVIEW OF THE RULE

The department would conduct an initial review of the rule within three years as required by SAPA §207.