



Concise Explanatory Statement Chapter 173-408 WAC, Landfill Methane Emissions

Summary of Rulemaking and Response to Comments

Washington State Department of Ecology
Olympia, Washington
May 2024 | Publication 24-02-008

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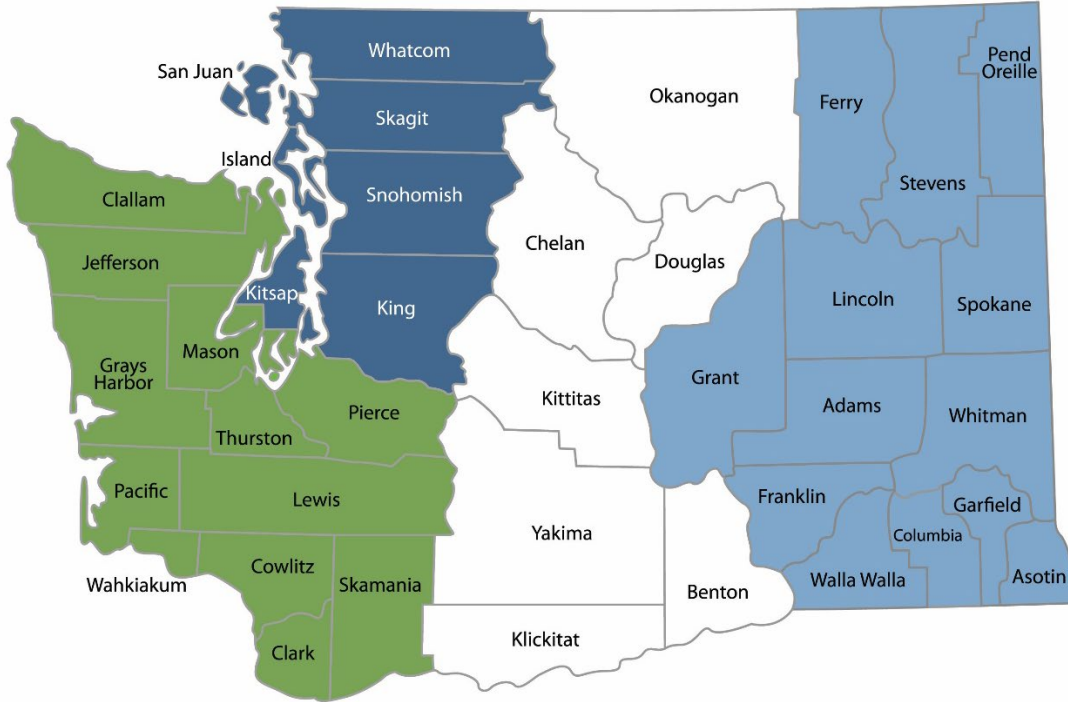
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¹ <http://www.ecology.wa.gov/contact>

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400
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Region	Counties Served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Concise Explanatory Statement

Chapter 173-408 WAC Landfill Methane Emissions

Air Quality Program
Washington State Department of Ecology
Olympia, WA

May 2024 | Publication 24-02-008



DEPARTMENT OF
ECOLOGY
State of Washington

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Acronyms and Abbreviations

CAA	Clean Air Act
CARB	California Air Resources Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	U.S. Environmental Protection Agency
GCCS	Gas Collection and Control System
HIC	Heat Input Capacity
LFG	Landfill Gas
LPLFs	Limited Purpose Landfills
MSW	Municipal Solid Waste
OR DEQ	Oregon Department of Environmental Quality
ppmv	Parts Per Million by Volume
RCW	Revised Code of Washington
SEM	Surface Emissions Monitoring

SEPA	State Environmental Policy Act
WAC	Washington Administrative Code
WIP	Waste in Place (total amount of solid waste placed in a landfill, estimated in tons)

Introduction

The purpose of a Concise Explanatory Statement is to:

- Meet the Administrative Procedure Act (APA) requirements for agencies to prepare a Concise Explanatory Statement (RCW 34.05.325).
- Provide reasons for adopting the rule.
- Describe any differences between the proposed rule and the adopted rule.
- Provide Ecology's response to public comments.

This Concise Explanatory Statement provides information on The Washington State Department of Ecology's (Ecology) rule adoption for:

Title:	Landfill Methane Emissions
WAC Chapter(s):	WAC 173-408
Adopted date:	May 13, 2024
Effective date:	June 13, 2024

To see more information related to this rulemaking or other Ecology rulemakings please visit our website: <https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking>.

Reasons for Adopting the Rule

In 2022, the Washington State Legislature passed the Landfills – Methane Emissions law (Chapter 70A.540 RCW) to reduce methane emissions from municipal solid waste (MSW) landfills in Washington.

Chapter 70A.540 RCW requires that Ecology adopt rules to implement the law.

RCW 70A.540.050 states that no location on a MSW landfill surface may exceed the following methane concentration limits:

- Five hundred parts per million by volume, other than nonrepeatable, momentary readings, as determined by instantaneous surface emissions monitoring; or
- An average methane concentration limit of 25 parts per million by volume as determined by integrated surface emissions monitoring.

The law requires these limits to go into effect beginning January 1 of the year following Ecology’s rule adoption, or upon commencing operation of a newly installed GCCS or modification of an existing GCCS, whichever is later. In addition, Ecology may postpone the effective date of these limits to accommodate significant technological improvements, such as the installation of an energy recovery device or devices, not to exceed 24 months after rule adoption.

If Ecology did not adopt rules to implement the law, then the statutory methane concentration limits described above could not go into effect.

Differences Between the Proposed Rule and Adopted Rule

RCW 34.05.325(6)(a)(ii) requires Ecology to describe the differences between the text of the proposed rule as published in the Washington State Register and the text of the rule as adopted, other than editing changes, stating the reasons for the differences.

There are some differences between the proposed rule filed on October 30, 2023, and the adopted rule filed on May 13, 2024. Ecology made these changes for all or some of the following reasons:

- In response to comments we received.
- To ensure clarity and consistency.
- To meet the intent of the authorizing statute.

The following content describes the changes and Ecology’s reasons for making them. Where a change was made solely for editing or clarification purposes, we did not include it in this section unless it was in response to a comment.

Section	Change	Reason
WAC 173-408-020 definition of “Air contaminant”	Added definition for “Air contaminant” as “has the same meaning as set forth in WAC 173-400-030.”	To improve consistency; and In response to a comment to define “air contaminant” in the rule, as this term is used in two other definitions
WAC 173-408-020 definition of “Enclosed combustor”	Replaced “flare, steam generating boiler, internal combustion engine, or gas turbine” with “firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.”	In response to a comment to align with provisions that are substantively similar to existing federal regulations
WAC 173-408-020 definition of “Facility” and “Facility Boundary”	Removed definitions of “Facility” and “Facility Boundary”	To improve clarity; and In response to a comment that the rule refers to landfills in some sections and facilities in other sections, which created confusion
WAC 173-408-020 WAC 173-408-080(2)(a)(iv), and (4)(b)(i) WAC 173-408-120(1)(a), (6)(a), (i), (ii), (iii), (iv), and (6)(b) WAC 173-408-160(1)(b)(v)	Changed reference dates for federal citations to “in effect on the date in WAC 173-400-025”	To improve clarity and consistency; and In response to a comment to reference WAC 173-400-025 to automatically incorporate federal rule updates.
WAC 173-408-020 definition of “Inactive area”	Removed definition of “inactive area”	In response to a comment that this definition creates ambiguity and problematic exemptions
WAC 173-408-020 definition of “Inactive municipal solid waste landfill”	Added definition for “Inactive municipal solid waste landfill,” which “means a municipal solid waste	To improve clarity; and In response to a comment on how a “Closed municipal waste landfill” is defined

Section	Change	Reason
	landfill that is no longer accepting solid waste for disposal and has been closed in accordance with the requirements set forth in WAC 173-304. For purposes of this rule, an inactive municipal solid waste landfill is subject to all requirements applicable to an active municipal solid waste landfill unless and until (1) the department or local authority determines the landfill is exempt in accordance with WAC 173-408-070(4)(b)(ii) or (2) the owner or operator submits a closure notification in accordance with WAC 173-408-170(8)”	under the law, which excludes landfills closed under WAC 173-304
WAC 173-408-020 definition of “Landfill gas”	Removed “untreated” from the defined term.	In response to a comment that the term “untreated” would exempt portions of the gas collection and control system from monitoring if components of the system contained treated “landfill gas”
WAC 173-408-070(4)(b)(ii)	Added “or inactive”	To improve clarity and for consistency with a response to a comment on how a “Closed municipal waste landfill” is defined under the law, which excludes landfills closed under WAC 173-304
WAC 173-408-080(2)(a)(vii)	Added “from the working face”	In response to a comment that the design plan should include language on mitigation measures to reduce methane from the working face of a landfill
WAC 173-408-080(2)(a)(viii)	Removed “or inactive”	To improve clarity; and

Section	Change	Reason
		In response to a comment to remove “inactive area” from the rule as this term creates ambiguity and problematic exemptions
WAC 173-408-080(2)(a)(xii)	Changed “within 18 months after approval of the design plan by the department or local authority in accordance with the approved design plan” to “not later than 18 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan”	In response to a comment that a GCCS should be installed and operational on a shorter timeline, following approval of a design plan
WAC 173-408-080(2)(a)(xiii)	Changed “within 30 months after approval of the design plan by the department or local authority in accordance with the approved design plan” to “not later than 30 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan”	In response to a comment that a GCCS should be installed and operational on a shorter timeline, following approval of a design plan
WAC 173-408-080(9)	Added “prevent or”	In response to a comment to add language on actions that would warrant the temporary shutdown of a GCCS
WAC 173-408-080(9)(b)	Added “no more than five calendar days following initial shutdown. In the event the collection and control system cannot be returned to operation in five calendar days following initial shutdown, the owner or operator must submit a notification to the department or local authority pursuant to WAC 173-408-140.”	In response to a comment to include language on a timeline for how long a GCCS can be temporarily shut down

Section	Change	Reason
WAC 173-408-090(1)(a)	Added “after an owner or operator has submitted a closure notification that has been approved, pursuant to WAC 173-408-170(8)” and “after closure”	In response to a comment that the criteria for removal of a GCCS be aligned with current federal requirements
WAC 173-408-090(1)(a)	Changed “methane production rates” to “gas flow”	In response to a comment to align language with current federal requirements
WAC 173-408-090(1)(b)	Added a new subsection: “The landfill has had no exceedances of the methane concentration limits, as determined by surface emissions monitoring conducted in accordance with WAC 173-408-100(2), on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.”	In response to a comment to clarify language for the allowance of shutdown and removal of a GCCS if the provisional shutdown monitoring requirements exhibit exceedances
WAC 173-408-100(4)	Added “provided that the owner or operator ensures these areas are no larger in size and no longer in duration than is necessary for the specified activity”	In response to a comment to eliminate broad exemptions from the methane concentration limits
WAC 173-408-110(1)(a)	Removed “exempt areas” Added “and the working face”	In response to comments to not allow for exempted areas from monitoring requirements, other than the working face
WAC 173-408-110(1)(a)	Added “The plan must be updated quarterly if changes are made to the monitoring traverse or working face”	To improve clarity and consistency with other requirements of the rule
WAC 173-408-110(1)(b)	Added “after all” corrective actions “and remonitoring” Removed “of any”	To improve clarity; and In response to a comment that the existing language on the notification requirement for corrective actions and

Section	Change	Reason
		remonitoring would add confusion and create a burden to landfills trying to comply with corrective action requirements
WAC 173-408-110(1)(c)(iii), (iv), (1)(d)(iii), and (1)(e)	Removed “that cannot be remediated within 10 calendar days”	To improve consistency with federal requirements and regulations; and In response to a comment that the rule should not allow for decreased monitoring as a result of remediating exceedances
WAC 173-408-110(2), and (2)(b) WAC 173-408-120(4) WAC 173-408-130(1) WAC 173-408-160(1)	Added “or third-party owner or operator”	To improve clarity and consistency; and In response to a comment to add language to the rule to clarify what requirements apply to “third-party owners or operators”
WAC 173-408-110(2)(a)(i)	Added “which may be recorded in 15-minute average increments”	In response to a comment requesting clarification on operating and source testing parameters for control devices
WAC 173-408-110(2)(c)	Changed “Any component leak must be tagged and repaired within 10 calendar days” to “Any component leak must be tagged, repaired, and remonitored within 10 calendar days”	To improve consistency; and In response to a comment to require remonitoring of any component leaks identified
WAC 173-408-120(1)(b)	Added a new subsection: “EPA Other Test Method 51 (OTM-51) as specified in Appendix II of this chapter”	In response to comments to adopt the latest technologies for monitoring
WAC 173-408-120(2)(b)	Added “at a MSW landfill with a carbon adsorption system”	In response to a comment to add clarity to this subsection of the rule.

Section	Change	Reason
WAC 173-408-120(2)(c)	Added “at a MSW landfill with a passive venting system”	In response to a comment to add clarity to this subsection of the rule.
WAC 173-408-120(3)(a)(i)	Added “except where alternatives to Method 21 are used”	In response to comments to clarify that a particular testing procedure only applies to EPA Method 21
WAC 173-408-120(3)(b)(iii)	Added “entirety of”	To improve clarity; and In response to a comment to add additional language to the final rule to address operational factors affecting surface methane emissions
WAC 173-408-130(2)(h)	Added a new subsection: “Recommendation of the local authority, if applicable”	In response to a comment that approved alternative compliance measures should not conflict with existing regulations and orders
WAC 173-408-130(3)(a)	Added “including additional information requested by a local authority for purposes of providing a recommendation for the department’s consideration under subsection (2)(h) of this section”	In response to a comment requesting clarity on a local authority’s role in evaluating alternative compliance measure requests
WAC 173-408-170(1), (1)(a), and (1)(b)	Removed “set forth in subsection (3) of this section” Added two new subsections: “The landfill information set forth in subsection (3)(b)(i) of this section” “The estimated waste in place, in tons, as of December 31st of the previous year”	To improve clarity and consistency with other requirements of the rule; and In response to a comment on initial reporting being burdensome to older, closed landfills.
WAC 173-408-170(6)	Added “and component monitoring pursuant to WAC 173-408-110(2)(c)”	In response to a comment to require annual reporting on component leak monitoring
WAC 173-408-170(8)	Added “in accordance with this subsection Except as	To improve clarity and for consistency with a response

Section	Change	Reason
	provided in (e) of this subsection, the closure notification must be submitted”	to a comment on how a “Closed municipal waste landfill” is defined under the law, which excludes landfills closed under WAC 173-304
WAC 173-408-170(8)(e)	<p>Added a new subsection:</p> <p>“In lieu of submitting the closure notification report within 30 days of ceasing to accept waste, the owner or operator of an inactive municipal solid waste landfill, as defined in WAC 173-408-020, may submit documentation to the department or local authority demonstrating that all of the following occurred prior to the effective date of this chapter:</p> <p>(i) The owner or operator notified the jurisdictional health department of the intent to implement an approved closure plan, in compliance with WAC 173-304-407(5)(a);</p> <p>(ii) The owner or operator commenced implementation of an approved closure plan within 30 days of ceasing to accept waste, in compliance with WAC 173-304-407(5)(b); and</p> <p>(iii) The owner or operator submitted all facility closure plan sheets and certification of closure, in compliance with WAC 173-304-407(5)(d)”</p>	To improve clarity and for consistency with a response to a comment on how a “Closed municipal waste landfill” is defined under the law, which excludes landfills closed under WAC 173-304

Section	Change	Reason
WAC 173-308-180(3)	Added a new subsection: “A “local authority”, as defined in WAC 173-408-020, may waive penalties under RCW 70A.15.3160, in accordance with subsection (2) of this section, in the event the owner or operator of the landfill is actively taking corrective actions to control any methane exceedances”	To improve clarity and consistency with other requirements of the rule; and In response to a comment to clarify jurisdictional authority regarding compliance and enforcement.
WAC 173-408-990 (Appendix II)	Added new section on methodology for OTM-51	In response to comments to adopt the latest technologies for monitoring

Topics

We grouped and organized comments and responses together by topic as follows:

- Alternative compliance measures
- CERCLA exemption
- Civil penalty
- Clean fuel standard
- Compliance and enforcement
- Cover properties
- Definitions
- Environmental justice
- Gas collection systems
- Gas control systems
- GCCS design and installation
- General comments, questions, or concerns
- General opposition
- General support
- Grant funding
- Implementation
- Interaction with other regulatory programs
- Jurisdiction
- Limited purpose landfills
- Methane concentration limits
- Monitoring
- Monitoring exceedances
- Permanent shutdown and removal of the GCCS
- Policy and purpose
- Recordkeeping requirements
- Repairs and temporary shutdown
- Reporting requirements
- Test methods and procedures
- Third party owners and operators

List of Commenters

We accepted comments during a formal public comment period that ran from October 30 to December 13, 2023. We received 41 comment submissions during the formal public comment period. Most submissions included several unique comments. These unique comments were organized by topic. We also accepted oral testimony at a public hearing held on December 6, 2023. This document responds to the public comments we received during the formal public comment period, including those received during the public hearing. We summarized comments under each topic with edits for clarity. You can see original content of the comments we received at our [online public comments website](#). These comments remain available online for two years after the rule adoption date. We grouped comments and organized them by topic. This is a complex rulemaking, and many issues and questions span multiple topics.

Associated Comment Code	Topic	Commenter	Affiliation
I- 1 -1	General comments, questions, or concerns	Paul Tabayoyon	
I- 1 -2	General comments, questions, or concerns	Paul Tabayoyon	
I- 1 -3	General comments, questions, or concerns	Paul Tabayoyon	
I- 2 -1	General support	Matthew Moore	
I- 3 -1	General support	Emily McBride	
I- 4 -1	General opposition	Lois Powell	
I- 5 -1	General support	Diane Landry	
I- 6 -1	General comments, questions, or concerns	Pamela W. Elicker	
I- 7 -1	General support	Hoper Barker	
I- 8 -1	Monitoring	Jacquelyn Green	
I- 8 -2	Cover properties	Jacquelyn Green	
I- 8 -3	Methane concentration limits	Jacquelyn Green	
I- 8 -4	Environmental justice	Jacquelyn Green	
I- 8 -5	Alternative compliance measures	Jacquelyn Green	
I- 8 -6	Definitions	Jacquelyn Green	
I- 9 -1	Monitoring	Kim Brighton	
I- 9 -2	Civil penalty	Kim Brighton	
I- 9 -3	Test methods and procedures	Kim Brighton	
I- 9 -4	Alternative compliance measures	Kim Brighton	

Associated Comment Code	Topic	Commenter	Affiliation
I- 9 -5	Monitoring	Kim Brighton	
I- 9 -6	Gas control systems	Kim Brighton	
I- 10 -1	General comments, questions, or concerns	Linda Averill	
I- 11 -1	Limited purpose landfills	Anonymous	
I- 12 -1	Definitions	Leslie Morgan	
I- 12 -2	Cover properties	Leslie Morgan	
I- 12 -3	Cover properties	Leslie Morgan	
I- 12 -4	Test methods and procedures	Leslie Morgan	
I- 12 -5	Compliance and enforcement	Leslie Morgan	
I- 12 -6	Environmental justice	Leslie Morgan	
I- 13 -1	Limited purpose landfills	Shelley Byington	
I- 14 -1	General comments, questions, or concerns	Elena Guilfoil	
I- 15 -1	Definitions	Janet Dobrowolski	
I- 15 -2	Limited purpose landfills	Janet Dobrowolski	
I- 15 -3	Jurisdiction	Janet Dobrowolski	
I- 15 -4	Monitoring	Janet Dobrowolski	
I- 15 -5	Monitoring exceedances	Janet Dobrowolski	
I- 15 -6	Cover properties	Janet Dobrowolski	
I- 15 -7	Monitoring	Janet Dobrowolski	
I- 15 -8	Monitoring	Janet Dobrowolski	
I- 15 -9	Test methods and procedures	Janet Dobrowolski	
I- 15 -10	Test methods and procedures	Janet Dobrowolski	
I- 15 -11	Test methods and procedures	Janet Dobrowolski	
I- 15 -12	Alternative compliance measures	Janet Dobrowolski	
I- 15 -13	Compliance and enforcement	Janet Dobrowolski	
I- 15 -14	Recordkeeping requirements	Janet Dobrowolski	
I- 15 -15	Reporting requirements	Janet Dobrowolski	
I- 15 -16	Monitoring	Janet Dobrowolski	
I- 15 -17	Monitoring	Janet Dobrowolski	
I- 15 -18	Monitoring	Janet Dobrowolski	
I- 15 -19	Test methods and procedures	Janet Dobrowolski	
I- 16 -1	Limited purpose landfills	Suellen Mele	

Associated Comment Code	Topic	Commenter	Affiliation
I- 16 -2	Monitoring	Suellen Mele	
I- 16 -3	Permanent shutdown and removal of the GCCS	Suellen Mele	
I- 16 -4	GCCS design and installation	Suellen Mele	
I- 16 -5	Monitoring	Suellen Mele	
I- 16 -6	Cover properties	Suellen Mele	
I- 16 -7	GCCS design and installation	Suellen Mele	
I- 16 -8	Alternative compliance measures	Suellen Mele	
I- 16 -9	Reporting requirements	Suellen Mele	
I- 16 -10	Recordkeeping requirements	Suellen Mele	
I- 16 -11	Reporting requirements	Suellen Mele	
I- 16 -12	Test methods and procedures	Suellen Mele	
I- 16 -13	Monitoring	Suellen Mele	
I- 16 -14	Monitoring exceedances	Suellen Mele	
I- 16 -15	Monitoring	Suellen Mele	
I- 18 -1	Policy and purpose	Peter Rimbos	
I- 18 -2	Test methods and procedures	Peter Rimbos	
I- 18 -3	Monitoring exceedances	Peter Rimbos	
I- 18 -4	Monitoring	Peter Rimbos	
I- 18 -5	Limited purpose landfills	Peter Rimbos	
I- 18 -6	Monitoring	Peter Rimbos	
I- 19 -1	Limited purpose landfills	William Lider	
I- 20 -1	General comments, questions, or concerns	Sarah Robinson	
I- 21 -1	Test methods and procedures	Suellen Mele	
I- 21 -2	GCCS design and installation	Suellen Mele	
I- 21 -3	Reporting requirements	Suellen Mele	
I- 22 -1	Alternative compliance measures	Leslie Morgan	
I- 22 -2	Cover properties	Leslie Morgan	
I- 22 -3	Test methods and procedures	Leslie Morgan	
I- 23 -1	Test methods and procedures	Janet Dobrowolski	
I- 23 -2	Monitoring	Janet Dobrowolski	
I- 23 -3	Monitoring	Janet Dobrowolski	
I- 24 -1	Limited purpose landfills	Nancy Lust	

Associated Comment Code	Topic	Commenter	Affiliation
I- 24 -2	Test methods and procedures	Nancy Lust	
I- 24 -3	General comments, questions, or concerns	Nancy Lust	
B- 1 -1	Clean fuel standard	Graham Noyes	Loci Controls, Inc.
B- 2 -1	Test methods and procedures	Kevin Singer	Bio Energy Washington
B- 2 -2	Monitoring	Kevin Singer	Bio Energy Washington
B- 2 -3	Gas collection systems	Kevin Singer	Bio Energy Washington
B- 2 -4	Gas collection systems	Kevin Singer	Bio Energy Washington
B- 2 -5	Definitions	Kevin Singer	Bio Energy Washington
B- 3 -1	Monitoring exceedances	George Duvendack	Waste Connections
B- 3 -2	Monitoring exceedances	George Duvendack	Waste Connections
B- 3 -3	Test methods and procedures	George Duvendack	Waste Connections
B- 3 -4	Test methods and procedures	George Duvendack	Waste Connections
B- 3 -5	Test methods and procedures	George Duvendack	Waste Connections
B- 4 -1	Test methods and procedures	David Barron	Sniffer Robotics
B- 4 -2	Test methods and procedures	David Barron	Sniffer Robotics
A- 1 -1	Implementation	John Dawson	Puget Sound Clean Air Agency
A- 1 -2	Interaction with other regulatory programs	John Dawson	Puget Sound Clean Air Agency
A- 1 -3	Third party owners and operators	John Dawson	Puget Sound Clean Air Agency
A- 1 -4	Alternative compliance measures	John Dawson	Puget Sound Clean Air Agency
A- 1 -5	Compliance and enforcement	John Dawson	Puget Sound Clean Air Agency
A- 1 -6	Test methods and procedures	John Dawson	Puget Sound Clean Air Agency
A- 2 -1	Interaction with other regulatory programs	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -2	Definitions	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -3	Gas control systems	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -4	Repairs and temporary shutdown	Pat D. McLaughlin	King County Solid Waste Division

Associated Comment Code	Topic	Commenter	Affiliation
A- 2 -5	Definitions	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -6	Monitoring exceedances	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -7	Test methods and procedures	Pat D. McLaughlin	King County Solid Waste Division
A- 2 -8	Civil penalty	Pat D. McLaughlin	King County Solid Waste Division
O- 1 -1	Reporting requirements	Ed Dzedzy	
O- 2 -1	CERCLA exemption	Jennifer Lennon	City of Spokane
O- 2 -2	CERCLA exemption	Jennifer Lennon	City of Spokane
O- 2 -3	Definitions	Jennifer Lennon	City of Spokane
O- 2 -4	Monitoring	Jennifer Lennon	City of Spokane
O- 2 -5	Definitions	Jennifer Lennon	City of Spokane
O- 2 -6	Gas control systems	Jennifer Lennon	City of Spokane
O- 2 -7	Gas control systems	Jennifer Lennon	City of Spokane
O- 2 -8	Test methods and procedures	Jennifer Lennon	City of Spokane
O- 2 -9	Jurisdiction	Jennifer Lennon	City of Spokane
O- 2 -10	Test methods and procedures	Jennifer Lennon	City of Spokane
O- 2 -11	Grant funding	Jennifer Lennon	City of Spokane
O- 2 -12	CERCLA exemption	Jennifer Lennon	City of Spokane
O- 2 -13	Definitions	Jennifer Lennon	City of Spokane
O- 2 -14	Definitions	Jennifer Lennon	City of Spokane
O- 2 -15	Recordkeeping requirements	Jennifer Lennon	City of Spokane
O- 2 -16	Test methods and procedures	Jennifer Lennon	City of Spokane
O- 3 -1	Limited purpose landfills	Nancy Lust	Friends of Rocky Top
O- 3 -2	Test methods and procedures	Nancy Lust	Friends of Rocky Top
O- 3 -3	General comments, questions, or concerns	Nancy Lust	Friends of Rocky Top
O- 4 -1	Policy and purpose	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 4 -2	GCCS design and installation	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 4 -3	Test methods and procedures	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of

Associated Comment Code	Topic	Commenter	Affiliation
			Industrious Labs and Zero Waste Washington
O-4-4	Test methods and procedures	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-5	Definitions	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-6	Monitoring	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-7	Monitoring exceedances	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-8	Monitoring	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-9	Reporting requirements	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-10	Reporting requirements	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-11	Cover properties	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-12	Definitions	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-13	Repairs and temporary shutdown	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-14	Gas collection systems	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O-4-15	GCCS design and installation	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of

Associated Comment Code	Topic	Commenter	Affiliation
			Industrious Labs and Zero Waste Washington
O- 4 -16	Permanent shutdown and removal of the GCCS	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 4 -17	Recordkeeping requirements	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 4 -18	Recordkeeping requirements	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 4 -19	Recordkeeping requirements	Mariah Harrod	Kampmeier & Knutsen, PLLC on behalf of Industrious Labs and Zero Waste Washington
O- 5 -1	Policy and purpose	Rod Whittaker	Washington Refuse & Recycling Association
O- 5 -2	Monitoring exceedances	Rod Whittaker	Washington Refuse & Recycling Association
O- 5 -3	Monitoring	Rod Whittaker	Washington Refuse & Recycling Association
O- 5 -4	Permanent shutdown and removal of the GCCS	Rod Whittaker	Washington Refuse & Recycling Association
O- 5 -5	Monitoring exceedances	Rod Whittaker	Washington Refuse & Recycling Association
O- 5 -6	Test methods and procedures	Rod Whittaker	Washington Refuse & Recycling Association
O- 6 -1	Policy and purpose	Larken Buchanan	Greater Maple Valley Unincorporated Area Council
O- 6 -2	Test methods and procedures	Larken Buchanan	Greater Maple Valley Unincorporated Area Council
O- 6 -3	Compliance and enforcement	Larken Buchanan	Greater Maple Valley Unincorporated Area Council
O- 6 -4	Monitoring	Larken Buchanan	Greater Maple Valley Unincorporated Area Council
O- 6 -5	Limited purpose landfills	Larken Buchanan	Greater Maple Valley Unincorporated Area Council
O- 6 -6	Monitoring	Larken Buchanan	Greater Maple Valley Unincorporated Area Council

Associated Comment Code	Topic	Commenter	Affiliation
O- 7 -1	General comments, questions, or concerns	Elyse Hochstadt	Spokane Zero Waste
O- 7 -2	Reporting requirements	Elyse Hochstadt	Spokane Zero Waste
O- 8 -1	Test methods and procedures	Ellie Garland	RMI
O- 8 -2	Reporting requirements	Ellie Garland	RMI
O- 8 -3	GCCS design and installation	Ellie Garland	RMI
O- 9 -1	Test methods and procedures	Heather Trim	Zero Waste Washington
O- 9 -2	GCCS design and installation	Heather Trim	Zero Waste Washington
O- 10 -1	Test methods and procedures	Katherine Blauvelt	Industrious Labs
O- 10 -2	Alternative compliance measures	Katherine Blauvelt	Industrious Labs
O-10 -3	Monitoring exceedances	Katherine Blauvelt	Industrious Labs
OTH- 1 -1	Limited purpose landfills	Scott Cave	Friends of Rocky Top
OTH- 1 -2	Limited purpose landfills	Scott Cave	Friends of Rocky Top
OTH- 1 -3	Limited purpose landfills	Scott Cave	Friends of Rocky Top
OTH- 1 -4	Limited purpose landfills	Scott Cave	Friends of Rocky Top
OTH- 1 -5	Limited purpose landfills	Scott Cave	Friends of Rocky Top
OTH- 2 -1	Test methods and procedures	Heather Trim	On behalf of 350 Spokane, 350 Tacoma, 350 Wenatchee, climate solutions, Earth Ministry, Defenders of Wildlife, Environmental Defense Fund, Environmental Integrity Project, Industrious Labs, Leage of Women Voters of Washington, Puget Soundkeeper, Seattle Aquarium, Spokane Zero Waste, Surfrider Foundation, Western Environmental Law Center, and Zero Waste Washington
OTH- 2 -2	GCCS design and installation	Heather Trim	On behalf of the organizations listed above
OTH- 2 -3	Reporting requirements	Heather Trim	On behalf of the organizations listed above

Response to Comments

We organized comments and responses by grouping them together by topic. Under each topic heading, you can see a summary of comments Ecology received for that topic followed by Ecology's specific responses to individual comments on that topic.

Alternative Compliance Measures

Commenters: Jacquelyn Green (I-8-5), Kim Brighton (I-9-4), Janet Dobrowolski (I-15-12), Suellen Mele (I-16-8), Leslie Morgan (I-22-1), John Dawson (A-1-4), Katherine Blauvelt (O-10-2)

Summary: Seven commenters provided comments, suggestions, or requested clarity on alternative compliance measures. The response below has several parts.

Five commenters expressed concerns that the availability of alternative compliance measures would provide loopholes for owners and operators of MSW landfills and weaken the rules adopted by Ecology. The commenters requested that Ecology remove alternative compliance measures from the rule.

Response to comments I-8-5, I-9-4, I-15-12, I-22-1, and O-10-2

Ecology acknowledges and appreciates these concerns regarding the availability of alternative compliance measures for various requirements of the rule. The authorizing statute requires Ecology to allow for certain alternative compliance measures. RCW 70A.540.100 states that “the owner or operator of a municipal solid waste landfill may request alternatives to the compliance measures, monitoring requirements, and test methods and procedures set forth in RCW 70A.540.040, 70A.540.060, and 70A.540.080, and the department’s implementing rules adopted pursuant to RCW 70A.540.020.” The cited sections from the authorizing statute set forth specific requirements for GCCS, monitoring, and test methods and procedures, and RCW 70A.540.020(3) requires Ecology to adopt rules to implement the law.

For this reason, Ecology must allow MSW landfills to apply for approval to use alternative compliance measures in lieu of meeting the specific requirements set forth in the above statutory sections and/or the requirements of Ecology’s rule implementing those statutory sections.

The authorizing statute also limits the circumstances under which Ecology can approve a request to use alternative compliance measures, and the rule implements those provisions. All requests to use alternative compliance measure must be submitted directly to Ecology in writing and will be subject to review before the request is approved or denied. Consistent with RCW 70A.540.100, Ecology must evaluate a number of criteria in determining whether to approve or disapprove a request to use alternative compliance measures. These criteria include the MSW landfill’s compliance history, as documented in inspection records, and surface monitoring records. Ecology may also request additional information as part of this evaluation process, and until the additional requested information is submitted, Ecology will take no action on approving or denying a request. As stated in WAC 173-408-130(3)(a), “Until the requested information is

submitted, the request will be determined as incomplete, and no department actions will be taken to approve or deny the request.”

Lastly, WAC 173-408-130(3)(c) provides that Ecology “must deny a request for alternative compliance measures if the request does not provide levels of performance, enforceability, or methane emissions control that are equivalent to those set forth in this chapter.” This provision is consistent with RCW 70A.540.100(5) in the authorizing statute, which provides clear direction for Ecology to deny requests for alternative compliance measures that do not meet the overarching objective of the authorizing law and rule, which is to reduce methane emissions from MSW landfills.

Two commenters said that requests for alternative compliance measures should be made available to the public for comment and review.

Response to comments I-8-5, I-16-8

Records maintained by state and local agencies are subject to public disclosure as required by the Public Records Act (Chapter 42.56 RCW). This includes written requests for alternative compliance measures once these requests are received by Ecology. Additionally, any records created by Ecology when reviewing, approving, or denying a written request for alternative compliance measures will also be subject to public disclosure upon request. Certain types of records are partially or fully exempt from disclosure based on exemptions set forth in the Public Records Act (PRA) and other statutes, such as records containing confidential business information (CBI) as defined in the state Clean Air Act (CAA), RCW 70A.15.2510. If Ecology receives a PRA request for records of requests for alternative compliance measures that contain exempt information such as CBI, the exempt information would be redacted from the responsive records prior to disclosure.

Regarding the request for a formal public comment process for alternative compliance measure submittals, Ecology feels that the statutory timeline for Ecology to review and either approve or disapprove requested alternatives is too short to accommodate a public comment period for each alternative compliance measure request that is submitted. RCW 70A.540.100(3) requires Ecology to “review the requested alternatives and either approve or disapprove the alternatives within 120 days.” Ecology believes that it would be infeasible to simultaneously perform a thorough review and analysis of the submitted materials and conduct meaningful public engagement within that short timeframe.

As explained in the response to comments I-8-5, I-9-4, I-15-12, I-22-1, and O-10-2 above, all alternative compliance measure requests must be submitted directly to Ecology in writing and will be subject to a thorough review before the request is approved or denied. Additionally, Ecology has the authority to evaluate different criteria, such as compliance history, inspection records, surface monitoring records, etc., in determining whether to approve or disapprove alternative compliance measures. Most importantly, Ecology is prohibited from approving a request for alternative compliance measures if it would not provide equivalent levels of enforceability and methane emissions control.

One commenter requested that the rule should clarify that alternative compliance measures approved under this rule only apply to the provisions of this rule and do not supersede other regulations or orders. The commenter also requested this section of the rule be revised to state

that any alternative compliance measures approved for regulations and orders outside of this rule would also need to be explicitly approved as alternative compliance measures for this rule.

Response to comment A-1-4

Thank you for your comment. Ecology believes it is unnecessary to include additional language in the rule to clarify that alternative compliance measures approved pursuant to WAC 173-408-130 are only applicable to this rule and do not supersede other regulations or orders. RCW 70A.540.100 of the authorizing statute explicitly limits the scope of alternative compliance measures—they can only be approved as alternatives to the requirements that are set forth in three specific sections of the authorizing law and Ecology’s rules adopted pursuant to those sections.

- RCW 70A.540.100(1) states: “The owner or operator of a municipal solid waste landfill may request alternatives to the compliance measures, monitoring requirements, and test methods and procedures set forth in RCW 70A.540.040, 70A.540.060, and 70A.540.080, and the department's implementing rules adopted pursuant to RCW 70A.540.020.”
- Similarly, WAC 173-408-130(1) states: “The owner or operator of a MSW landfill, or third-party owner or operator, may request alternatives to the compliance measures, monitoring requirements, and test methods and procedures set forth in WAC 173-408-080, 173-408-110, and 173-408-120.”

RCW 70A.540.100(3) requires that for an alternative compliance measure to be approved, a written request must be submitted to Ecology, and Ecology must review and either approve or disapprove of requested alternatives within 120 days. Ecology cannot approve a request if the proposed alternative compliance measures would not provide equivalent levels of enforceability and methane emissions controls.

During implementation, Ecology will review the requested alternatives and work with the appropriate jurisdictional authority to assess whether the requested alternative compliance measures conflict with existing regulations and orders. WAC 173-408-130(2)(h) specifies that in evaluating requests for alternative compliance measures, Ecology will consider the recommendation of the local authority, if applicable.

CERCLA Exemption

Commenters: Jennifer Lennon (O-2-1), (O-2-2), (O-2-12)

Summary: One commenter provided comments or suggestions on the CERCLA exemption process.

The commenter encourages Ecology to grant an outright exemption for MSW landfill sites with CERCLA action(s) present onsite because they stated this exemption was provided in the statute.

Response to comment O-2-1

Ecology’s rule incorporates this statutory exemption in WAC 173-408-040. The rule language reflects Ecology’s interpretation of the statutory language in RCW 70A.540.020(2)(a), which provides that the law “does not apply” to “landfills that . . . are

currently regulated under the comprehensive environmental response, compensation, and liability act, 42 U.S.C. chapter 103.”

Ecology believes the CERCLA exemption in RCW 70A.540.020(2)(a) was intended to reflect the CERCLA permitting exemption in federal law at 42 USC 9621(e)(1):

“No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely onsite, where such remedial action is selected and carried out in compliance with this section.”

The above provision enables CERCLA response actions to proceed without needing to comply with procedural permitting requirements that would otherwise apply to certain cleanup activities like soil excavation and storage of hazardous waste. However, the permit exemption only applies to EPA-approved cleanup activities that are conducted within a specific area designated as “onsite,” and only as long as those activities are carried out in compliance with CERCLA. The obligation to conduct such cleanup activities in compliance with CERCLA includes complying with all Applicable or Relevant and Appropriate Requirements (ARARs) identified in the applicable CERCLA decision documents.

The authorizing statute for this rule does not define or otherwise shed further light on the meaning of the phrase “currently regulated” as used in RCW 70A.540.020(2)(a). As a result, the exemption described in WAC 173-408-040 is based in part on Ecology’s interpretation of those two undefined terms, informed by the above comparison to the CERCLA permit exemption.

First, by specifying that the exemption is for landfills that are “currently” regulated under CERCLA, the Washington State Legislature (the legislature) clearly intended to limit the scope of the exemption to those CERCLA sites at which a response action is actively underway at the time the exemption is sought and granted. Ecology interprets this language to specifically not exempt landfills at which a CERCLA response action has been completed, regardless of whether the site has been closed out and de-listed from the National Priorities List (NPL) or is still subject to long-term monitoring and periodic reviews.

Second, because CERCLA is not a program under which entities are “regulated” as that term is commonly understood, Ecology interpreted the legislature’s use of that term as further limiting the scope of the exemption. While the use of “currently” limits the scope of the exemption temporally, Ecology interpreted the use of “regulated” to limit the scope of the exemption geographically—in particular, to the area designated as “onsite.” In order to remain exempt from permitting requirements under 42 U.S.C. § 9621(e)(1), CERCLA activities conducted onsite must comply with all ARARs identified by EPA in the applicable CERCLA decision documents. Accordingly, such onsite activities can be fairly characterized as being “regulated” under CERCLA and thus exempt under RCW 70A.540.020(2)(a).

Ecology recognizes that at facilities which are subject to CERCLA oversight, the degree of interaction between CERCLA oversight and non-CERCLA regulatory actions can vary by the particular circumstances of a facility. CERCLA response actions may not always address all facets of a landfill’s operations that otherwise require a permit. Ecology also

notes that the scope of the permitting exemption in CERCLA is focused on “the portion of any removal or remedial action” required by the CERCLA remedy, not on a facility’s activities generally.

It is also notable that the requirements of RCW 70A.540 and the rule are not implemented through a new permit system. Instead, they are implemented through the addition of the law’s methane emissions requirements to the existing system for permitting air emissions at MSW landfills.

As an example of the possible interactions between non-CERCLA regulatory actions at a “CERCLA-regulated landfill,” remedial actions at the Tacoma Landfill (TLF) have been subject to CERCLA since the facility was listed on the NPL in 1983. EPA selected a remedy for the cleanup in 1988. TLF remained open and continued to receive municipal solid waste under solid waste permits issued by the Tacoma-Pierce County Health Department (TPCHD) until it completed final closure in 2013. Those permits established the conditions for aspects of the operations at the landfill that the CERCLA remedial actions did not address, but in coordination with those aspects which the CERCLA remedial actions did address. Since completing its final closure and while still being subject to CERCLA, TLF has carried out its post-closure activities under a solid waste permit, issued by TPCHD in accordance with a memorandum of agreement with the City of Tacoma, TLF’s owner/operator. In addition, TLF continues to operate its landfill gas flare system under a permit from the Puget Sound Clean Air Agency while being subject to CERCLA.

Ecology’s objective in adding the language at section in WAC-173-408-030(1)(b) and WAC 173-408-040 is to clarify the extent to which the exemption might not be applicable where CERCLA remedy selection and implementation have not addressed requirements for landfill gas collection and control specifically, or for air emissions generally.

The commenter also requests that if municipal solid waste landfill sites do not receive an outright exemption from the rule, that Ecology provide an exemption from monitoring and reporting requirements as to align with section 6.3.6 of the Preliminary Regulatory Analysis.

Response to comment O-2-2

As explained in our response to comment O-2-1, Ecology’s experience has been that CERCLA response actions may not always address all facets of a landfill’s operations that otherwise require a permit. It is often the case that permits, with their associated monitoring and reporting requirements, will be issued by the appropriate permitting agencies for those operational facets that a CERCLA response action for a landfill does not specifically address.

Ecology acknowledges that the monitoring and reporting requirements of the methane emissions rule carry an additional cost to owners and operators of closed landfills, which was not anticipated in their original estimates of funds necessary to cover their post-closure maintenance and monitoring. However, the legislature recognized that potential impact and has appropriated funds for Ecology to establish a grant program to help landfill owners and operators offset some of the costs of compliance with the methane emissions rule.

The commenter requests that the criteria for a CERCLA superfund site be consistent with the implementing statute and be informed by similar rules adopted by the EPA, CARB and OR DEQ.

Response to comment O-2-12

Please see Ecology’s responses to comments O-2-1 and O-2-2. Ecology believes that the rule provides additional clarification of how the exemption should be applied on a site-specific basis in a manner consistent with the intent of the statute. Any site-specific determination will require Ecology to exercise some professional judgment regarding the evaluation of the particular circumstances of a CERCLA-listed landfill and the characteristics of its remedial action in the context of the rule’s clarifying criteria for exemption. However, in identifying those clarifying criteria through this rulemaking, Ecology believes it is providing regulated entities the full opportunity to participate in the rule’s development in accordance with RCW 34.05 - Administrative Procedure Act.

Civil Penalty

Commenters: Kim Brighton (I-9-2), King County Solid Waste Division (A-2-8)

Summary: Two commenters expressed concern or requested clarity on civil penalties associated with the rule.

One commenter expressed opposition to waivers for civil penalties issued under the rule.

Response to comment I-9-2

RCW 70A.540.120 states “The department shall waive penalties in the event the owner or operator of the landfill is actively taking corrective actions to control any methane exceedances.”

The authorizing law grants Ecology authority to waive penalties and *requires* Ecology to do so if corrective action(s) are being taken to resolve any exceedances. However, owners and operators of MSW landfills must take corrective action(s) to resolve exceedances, and provide supporting documentation, to receive a waiver. In addition, Ecology may reconsider a prior determination of eligibility for a waiver if the owner or operator fails to provide documentation regarding the implementation status of the identified corrective action(s). This process is described in WAC 173-408-180.

One commenter requested a revision to clarify that an exceedance of the surface methane limit is not a violation if the owner/operator is actively taking correction action(s).

Response to comment A-2-8

A decision by Ecology or a local authority to issue civil penalties for a violation is separate and distinct from the agency’s initial determination that a violation has occurred. Similarly, the statutory requirement for Ecology to waive penalties under certain circumstances does not restrict or diminish the underlying authority to determine a violation has occurred, nor does it negate such a determination once made.

The authorizing statute provides that “no location on a municipal solid waste landfill surface may exceed the . . . methane concentration limits” set forth in RCW 70A.54.050(1). As a result, any exceedance of the applicable concentration limit is a

violation of the statute and the rule. An exceedance also triggers additional requirements for recordkeeping, reporting, and conducting corrective action(s). Noncompliance with those additional requirements could constitute additional violations.

WAC 173-408-180 (Civil penalty) outlines the process for issuing civil penalties for violations of the authorizing statute and rule. In accordance with this section, exceedances of surface methane limits set forth in the statute and rule are violations that may be eligible for waiver of the civil penalty if corrective action(s) are taken to resolve any exceedances of surface methane limits.

WAC 173-408-180(2) states “The department will waive penalties under RCW 70A.15.3160 ... in the event the owner or operator of the landfill is actively taking corrective actions to control any methane exceedances.” Further, WAC 173-408-180(2)(a) requires Ecology to send advanced notice of a violation that may result in a civil penalty: “At least 30 calendar days prior to the department's issuance of a civil penalty, the department will send the owner or operator of the landfill a notice of violation ...”

Ecology believes that the exceedance and corrective action(s) requirements in the rule aligns with 40 CFR 60.765(c)(4), as stated in WAC 173-408-110(1)(c) and WAC 173-408-110(1)(d):

An owner or operator “... must record the date, location, and value of each exceedance, along with retest dates and results. The location of each exceedance must be clearly marked...”

“Corrective action must be taken by the owner or operator such as, but not limited to, cover maintenance or repair, and well vacuum adjustments, and the location must be remonitored within 10 calendar days of a measured exceedance.”

“If the remonitoring of the location shows a second exceedance, additional corrective action must be taken, and the location must be remonitored again within 10 calendar days...”

“If the remonitoring ... shows a third exceedance, the owner or operator must install a new or replacement well, or an alternative active methane control ... as needed to achieve compliance no later than 120 calendar days after detecting the third exceedance.”

Clean Fuel Standard

Commenters: Graham Noyes (B-1-1)

Summary: One commenter requested leveraging an existing regulatory program to incentivize additional LFG collection and control.

Response to comment B-1-1

Thank you for your comment. Your comment addresses issues that are outside the scope of the rulemaking, however, your comment will reside in Ecology’s business record for this action, in accordance with our public records and records retention procedures.

Compliance and Enforcement

Commenters: Leslie Morgan (I-12-5), Janet Dobrowolski (I-15-13), John Dawson (A-1-5), Larken Buchanan (O-6-3)

Summary: Four commenters expressed concern and requested clarity on how the rule will be enforced.

One commenter expressed the importance of compliance and enforcement of the adopted rule.

Response to comment I-12-5

Thank you for your comment. Chapter 173-408 WAC contains several provisions to ensure adherence to new regulations. This includes reporting requirements (WAC 173-408-170), source testing requirements for gas control devices (WAC 173-408-080), surface emissions monitoring requirements (WAC 173-408-110), and civil penalties for non-compliance (WAC 173-408-180).

One commenter expressed concern that sections of the rule mention compliance inspections but that it is not clear in the rule when or who conducts these inspections. The commenter also expressed concern that there is no mention of compliance inspections in the authorizing statute, Chapter 70A.540 RCW.

Response to comment I-15-13

Thank you for your comment. The applicable air permitting authority, either Ecology or the “local authority,” as defined in WAC 173-408-020, will have authority under RCW 70A.15.2200(2) of the Washington Clean Air Act to conduct on-site inspections as well as authority under RCW 70A.15.2040(4) to require access to records, books, files, and other information specific to the control, recovery, or release of methane at MSW landfills subject to this rule. For MSW landfills required to obtain an air operating permit, the owner or operator will also be required to submit a compliance plan addressing the applicable requirements in WAC 173-408, for approval by Ecology or the local authority. The applicable air permitting authority will be responsible for compliance inspections.

Further, the requirements of this rule will be incorporated into the existing permitting programs for Ecology and jurisdictional clean air agencies (local authority). All permitting and compliance requirements will be handled by Ecology or the local authority.

One commenter expressed concern and requested that clarity be added to the rule on whether (monitoring) exceedances are violations or if violations only occur if corrective actions are not taken.

Response to comment A-1-5

Thank you for your comment. See Ecology’s response to comment A-2-8 on page 25. Further guidance will be provided to the local Clean Air Agencies on how this will be implemented.

One commenter expressed that when there is an exceedance it should be made clear which regulatory agency will be overseeing the corrective action(s) timeline, so that all agencies are operating under the same rules.

Response to comment O-6-3

Thank you for your comment. The applicable air permitting agency enforcing the substantive requirements of WAC 173-408 will be responsible overseeing the corrective action timelines. These agencies are defined as an “authority” or “local authority” in WAC 173-408-020.

Cover Properties

Commenters: Jacquelyn Green (I-8-2), Leslie Morgan (I-12-2), (I-12-3), (I-22-2), Janet Dobrowolski (I-15-6), Suellen Mele (I-16-6), Mariah Harrod (O-4-11)

Summary: Five commenters expressed concerns and suggestions on how cover properties should be regulated in the rule.

Four commenters expressed that there should be limitations on the area and time the “working face” of a landfill is allowed to remain open. The commenters also expressed concern over operational practices involving cover materials.

Response to comments I-8-2, I-12-2, I-16-6, I-22-2

Thank you for your comments. While these comments are related to gas emissions from MSW landfills, they directly involve activities already subject to the operating requirements of Criteria for Municipal Solid Waste Landfills, Chapter 173-351 WAC, and are more properly addressed to Ecology’s Solid Waste Management Program. The Air Quality Program will pass these recommendations along to SWM staff for their consideration.

One commenter requested that Ecology remove the definition for “inactive area.”

Additional response to comment I-16-6

Thank you for your comment. After consideration, Ecology agrees that the definition and use of the phrase “inactive area” creates ambiguity and is problematic to the extent it could be interpreted to exempt such areas from the rule’s requirements for installing and operating a GCCS. We have removed the definition of “inactive area” in WAC 173-408-020 and the reference to inactive areas in WAC 173-408-080(2)(a)(viii).

One commenter expressed that the working face should not have an exception from requirements of the rule and that it should also be subject to monitoring.

Response to comment I-12-3

Thank you for your comment. RCW 70A.540.050(3)(a) of the authorizing statute, specifically exempts the “working face of the landfill” from the methane concentration limits mandated by the statute (500 ppmv as determined by instantaneous SEM, and an average concentration of 25 ppmv, as determined by integrated SEM). In WAC 173-408-020, Ecology has defined “working face” as “the open area of a MSW landfill where solid waste is deposited daily and compacted with landfill equipment.” The purpose of monitoring is to evaluate compliance with applicable requirements. Because the statute specifically exempts the working face of a landfill from the surface concentration limits, Ecology will not require SEM of the working face of landfills.

Ecology expects that the primary impact of cover materials on methane emission will occur while waste is under interim cover, as that is usually a longer period than the interval that waste spends under only daily cover. It's unclear whether the information that might be developed for a comparative analysis of daily cover materials with respect to their mitigation of methane emissions would outweigh the disruption to a landfill's waste disposal operations for the time that the monitoring on a working face would be performed. Further, MSW landfills must adhere to existing state (WAC 173-351-200) and federal (40 CFR § 258.21) requirements for amount and type of daily cover.

One commenter expressed the need to define and categorize areas with "intermediate cover" as to not exclude these areas from requirements of the rule.

Response to Comment I-15-6

All areas of a landfill subject to this rule will be required to comply with the surface emission monitoring requirements, except for the working face. For example, WAC 173-408-110(1) states that the "owner or operator of a MSW landfill with a gas collection and control system must conduct quarterly instantaneous or integrated surface monitoring of the entire landfill surface." The "landfill surface," as defined in WAC 173-408-020, "means the area of the landfill under which decomposable solid waste has been placed, excluding the working face." Implementation would remain subject to the enforcement discretion of Ecology or the "local authority," as defined in WAC 173-408-020, with jurisdiction over the landfill.

One commenter requested language be added to address cover material placement, more frequent monitoring of all areas of the landfill surface with cover penetrations, distressed vegetation, cracks, or seeps, and more robust reporting and recordkeeping of cover properties at landfills.

Response to comment O-4-11

The commenter provides several recommendations related to the operational factor of landfill cover. These recommendations are related to gas emissions from MSW landfills, but as they directly involve activities already subject to the operating requirements of Criteria for Municipal Solid Waste Landfills, WAC 173-351, they are more properly addressed to Ecology's Solid Waste Management Program. The Air Quality Program will pass the recommendations along to SWM staff for their consideration.

Regarding monitoring of landfill surface areas with cover penetrations, distressed vegetation, cracks, or seeps, Ecology has added "entirety of" in WAC 173-408-120(3)(b)(iii) based on this comment. However, Ecology will not require monitoring of these areas monthly. Please see Ecology's response to comment I-16-5 on page 58 for our explanation on this.

Definitions

Commenters: Jacquelyn Green (I-8-6), Leslie Morgan (I-12-1), Janet Dobrowolski (I-15-1), Kevin Singer (B-2-5), King County Solid Waste Division (A-2-2) (A-2-5), Jennifer Lennon (O-2-3), (O-2-5), (O-2-13), (O-2-14), Mariah Harrod (O-4-5), (O-4-12)

Summary: Seven commenters requested to change, clarify, or add definitions. Some commenters requested more than one definition change.

One commenter requested that Ecology assign what type of landfill each facility is, rather than allowing landfills to self-categorize.

Response to comment I-8-6

Thank you for your comment. Our authorizing statute creates the scope for which types of landfills it applies to. RCW 70A.540.020 states that the law “applies to all municipal solid waste landfills that received solid waste after January 1, 1992, except as provided in subsection (2).” Subsection (2) exempts three types of MSW landfills that received waste after that date: those that receive “only hazardous waste”; those that are “currently regulated” under CERCLA; and those that receive “only inert waste or nondecomposable wastes.”

Consistent with the statutory definition in RCW 70A.540.010(11), Ecology’s rule defines a “Municipal solid waste landfill” as a “discrete area of land or an excavation that receives municipal solid waste, including household waste, and that is not a land application site, surface impoundment, injection well, or pile.”

Both “active” and “closed” MSW landfills that received waste after January 1, 1992, are subject to the law, but different requirements apply to landfills in each category. Under RCW 70A.540.030(2), the waste-in-place threshold that triggers the requirement to submit a landfill gas heat input capacity report is lower for an “active” MSW landfill (450,000 tons) than it is for a “closed” MSW landfill (750,000 tons). The authorizing law provides definitions for “Active municipal solid waste landfill” and “Closed municipal solid waste landfill” in RCW 70A.540.010(1) and (5), respectively. Additionally, our rule incorporates these statutory definitions in WAC 173-408-020.

The rule also provides definitions that clarify specific types of landfills that are exempt from requirements of the law and the rule: these include a “Limited purpose landfill,” landfills that receive or received only “hazardous waste(s),” and a “CERCLA regulated landfill.”

In summary, the authorizing law and rule include definitions to specify which types of landfills are subject to the rule, and which ones are exempt from certain requirements.

One commenter requested clarification on how the “working face” of the landfill is defined.

Response to comment I-12-1

Thank you for your inquiry regarding how the “working face” of a landfill is defined. While the authorizing statute does not define the “working face” of a landfill, our rule contains a definition of this specific area on a landfill.

WAC 173-408-020 contains the following definition: “Working face” “means the open area of a MSW landfill where solid waste is deposited daily and compacted with landfill equipment.” For more information on cover properties, please see our response to comments I-8-2, I-12-2, I-16-6, I-22-2 on page 29.

One commenter requested additional definitions be added to the adopted rule.

Response to comment I-15-1

Thank you for your comment. Please note that WAC 173-408-020 already contains a definition for “local authority”: “Authority” or “local authority” means any air pollution

control agency whose jurisdictional boundaries are coextensive with the boundaries of one or more counties.

Regarding definitions for instantaneous and integrated surface emissions monitoring, Ecology agrees that it is important to make a distinction between the two monitoring methods, but rather than creating definitions for these two terms, we will issue implementation guidance which describes the process for conducting these two different types of surface emissions monitoring.

One commenter requested clarification on whether its electricity generation process is defined under the rule.

Response to comment B-2-5

Thank you for your comment. Based on the definitions for “Energy recovery device” and “Gas control system,” the electricity generation *process* itself is not defined by these terms, but the equipment used to generate the electricity may fall under one of these two categories:

WAC 173-408-020 defines an “Energy recovery device” as “...any combustion device that uses landfill gas to recover energy in the form of steam or electricity including, but not limited to, gas turbines, internal combustion engines, boilers, and boiler-to-steam turbine systems.” Given this definition, any equipment that combusts landfill gas to recover energy in the form of electricity is considered an “Energy recovery device” under the rule.

Consistent with RCW 70A.540.010(10), WAC 173-408-020 defines a “Gas control system” as “...any portion of a gas collection and control system that disposes of or treats collected landfill gas by one or more of the following means: Combustion; gas treatment for subsequent sale, or sale for processing offsite, including for transportation fuel and injection into a natural gas pipeline.” Given this definition, any equipment that is part of a GCCS, and that disposes of, or treats collected LFG by any of the methods above is considered a “Gas control system” under the rule.

One commenter requested that a defined term be consistent with another rule. The commenter also requested a definition be added.

Response to comment A-2-2

Thank you for your comment. Ecology has added a definition for “Air contaminant” in WAC 173-408-020: “Air contaminant” has the same meaning as set forth in WAC 173-400-030.

Response to comment A-2-5

Thank you for your comment. Ecology did not add a definition of integrated surface emissions monitoring in the rule; however, we will release implementation guidance describing how to conduct integrated surface emissions monitoring after the rule is adopted.

One commenter requested clarity on previously defined terms which determine applicability to the rule. The commenter also requested revisions to two other defined terms.

Response to comment O-2-3

Thank you for your comment. Ecology is aware that a “Closed municipal solid waste landfill,” as defined in RCW 70A.540.010(5) of the authorizing statute, as well as the authorizing law’s statutory applicability date of 1/1/1992, creates a gap for MSW landfills that closed under WAC 173-304, as opposed to WAC 173-351.

To address the gap between the statutory definitions for “active” and “closed” MSW landfills, Ecology added a definition of “inactive municipal solid waste landfill” as one that is no longer accepting solid waste for disposal and has been closed in accordance with the requirements set forth in WAC 173-304. For purposes of this rule, an inactive municipal solid waste landfill is subject to all requirements applicable to an active municipal solid waste landfill unless and until (1) the department or local authority determines the landfill is exempt in accordance with WAC 173-408-070(4)(b)(ii) or (2) the owner or operator submits a closure notification in accordance with WAC 173-408-170(8).”

Under this rule, an “Inactive municipal solid waste landfill” must comply with the requirements that an “Active municipal solid waste landfill” will have to comply with once the rule is adopted. However, an “inactive” MSW landfill is also eligible to become exempt in accordance with WAC 173-408-070(4)(b)(ii), or upon submission of a closure notification in accordance with WAC 173-408-170(8)(e), as allowed under WAC 173-408-060(2)(b), -070(3)(b), and -070.

Ecology understands that the gap created between the statute’s applicability date of 1/1/1992 and the effective date for landfill closure requirements under WAC 173-351, places a potential burden on “inactive” municipal solid waste landfills. That is why Ecology has added a process through rulemaking, within the bounds of the authorizing statute, to exempt inactive MSW landfills below a certain size or landfill gas heat input capacity threshold.

To expand on this, after an initial waste in place report is submitted as required in WAC 173-408-170(1), inactive MSW landfills with under 450,000 tons of waste in place may submit a closure notification in accordance with WAC 173-408-170(8), as allowed under WAC 173-408-060(2)(b). Ecology has added language to clarify how inactive municipal solid waste landfills can submit a closure notification, as follows:

WAC 173-408-170(8): “The owner or operator of a MSW landfill that ceases to accept waste must submit a closure notification to the department or local authority in accordance with this subsection. Except as provided in (e) of this subsection, the closure notification must be submitted within 30 days of ceasing to accept waste.”

WAC 173-408-170(8)(e): “In lieu of submitting the closure notification report within 30 days of ceasing to accept waste, the owner or operator of an inactive municipal solid waste landfill, as defined in WAC 173-408-020, may submit documentation to the department or local authority demonstrating that all of the following occurred prior to the effective date of this chapter.

- (i) The owner or operator notified the jurisdictional health department of the intent to implement an approved closure plan, in the compliance with WAC 173-304-407(5)(a);

(ii) The owner or operator commenced implementation of an approved closure plan within 30 days of ceasing to accept waste, in compliance with WAC 173-304-407(5)(b); and

(iii) The owner or operator submitted all facility closure plan sheets and certification of closure, in compliance with WAC 173-304-407(5)(d).”

As explained above, inactive MSW landfills must comply with the same requirements as active MSW landfills under the rule. Accordingly, an inactive MSW landfill that has greater than 450,000 tons of waste in place, as determined by the initial waste in place report, must also submit an initial heat input capacity report in accordance with WAC 173-408-070(2) and WAC 173-408-170(2). Inactive MSW landfills that demonstrate that they have less than 3.0 million British thermal units per hour recovered may submit a closure notification as described above in WAC 173-408-170(8), and as allowed under WAC 173-408-070(3)(b). Inactive MSW landfills that demonstrate a heat input capacity of 3.0 million British thermal units per hour recovered or greater, must either install and operate a GCCS in accordance with WAC 173-408-080 or demonstrate that after four consecutive quarterly monitoring periods there is no measured methane concentration of 200 ppm by volume or greater using instantaneous surface monitoring, in accordance with WAC 173-408-070(4) (b).

Response to comment O-2-5

The terms “landfill” and “facility” as used in the proposed rule were intended to have equivalent meanings. This is similar to usage in Chapter 173-351 WAC, Criteria for Municipal Solid Waste Landfills, which explicitly defines the two terms as equivalent. Accordingly, we have removed the definition of “facility” and all uses of that term from the rule and replaced them with references to the “landfill.” Ecology believes that meaning of related terms such as “landfill area” in the rule is sufficiently clear in the particular contexts where they are used.

Regarding a determination by Ecology on the applicability of the rule to a specific landfill with unique circumstances, Ecology and the local air authority likely will need to consult with the owner/operator to determine the appropriate extent of the final rule’s applicability.

Response to comment O-2-13

Thank you for your comment. Ecology had already revised the definition of “Owner” to specify that an “Owner” only needs to be one entity described in (a) through (c) of the definition.

Response to comment O-2-14

Thank you for your comment. Here is the current definition of “Waste in place,” from WAC 173-408-020:

Waste in place means the total amount of solid waste placed in the MSW landfill estimated in tons. The solid waste density is assumed to be 1,300 pounds per cubic yard, and the decomposable fraction is assumed to be 70 percent by weight, unless the department or local authority approves alternative values.

One commenter requested that a defined term be revised to align with the current federal standard. The commenter also requested that language be removed from a defined term.

Response to comment O-4-5

Thank you for your comment. Ecology appreciates your concern that the inclusion of “Nonrepeatable, momentary readings” could add ambiguity as to what constitutes an “Exceedance,” however “Nonrepeatable, momentary readings” is language used in the authorizing statute when describing exceedances of methane concentration limits determined by instantaneous surface monitoring.

Ecology created a definition for both an “Exceedance” and “Nonrepeatable, momentary readings” to align with the methane concentration limit mandates set forth in RCW 70A.540.050(1)(a) and (b). For instantaneous surface monitoring, an “Exceedance” is any reading above “Five hundred parts per million by volume, other than nonrepeatable, momentary readings, as determined by instantaneous surface emissions monitoring...”

Further, to align with RCW 70A.540.020(3) of the authorizing statute, which states that Ecology’s adopted rules “must be informed by landfill methane regulations adopted by the California air resources board, the Oregon environmental quality commission, and the United States environmental protection agency,” Ecology has created a definition for “Nonrepeatable, momentary readings” that is consistent with both CARB and the OR DEQ.

Response to comment O-4-12

Thank you for your comment on how “landfill gas” is defined regarding the process of component leak testing. Ecology has removed “untreated” from the definition of “Landfill gas” and the definition, per WAC 173-408-020, now reads ““Landfill gas” means any raw gas derived through a natural process from the decomposition of organic waste deposited in a MSW landfill, from the evolution of volatile species in the waste, or from chemical reactions of substances in the waste. It is Ecology’s intent to require component leak monitoring of all components containing landfill gas, whether the “Landfill gas” is treated or untreated.

Regarding the method for measuring component leaks, WAC 173-408-120(1) states that any “instrument used for the measurement of methane must be a hydrocarbon detector or other equivalent instrument approved by the department or local authority that meets the following calibration, specifications, and performance criteria, as applicable:

(a) EPA Reference Method 21, Determination of Volatile Organic Compound Leaks, 40 C.F.R. Part 60, Appendix A (in effect on the date in WAC 173-400-025), which is incorporated by reference”

Ecology has adopted Method 21 by reference, including the component leak methodology in section 8.3.1.

Environmental Justice

Commenters: Jacquelyn Green (I-8-4), Leslie Morgan (I-12-6)

Summary: Two commenters expressed social and environmental justice concerns about a landfill operating in their community.

Response to comment I-8-4

Thank you for your comment. Ecology appreciates and empathizes with your concerns regarding landfills operating in and around schools and historically underserved communities. The history of landfills, hazardous waste facilities, and heavy industry in marginalized communities is complex, and has created a multitude of social, racial, and environmental justice issues over the decades.

Although Ecology does not have authority under RCW 70A.540 to regulate the siting of MSW landfill facilities, we have analyzed potential environmental justice concerns that could stem from this rule development. This analysis informed our State Environmental Policy Act (SEPA) determination, which is a required part of our rulemaking process.

In the analysis of potential environmental justice concerns stemming from this rulemaking, we examined the potential impacts of increased combustion of methane due to requirements of our rule. Based on research conducted, Ecology concluded that although the combustion of methane from various sources (flares, internal combustion engines, boilers, etc.) has the potential to increase emissions of nitrous oxide and sulfur dioxide, the benefits of capturing and combusting landfill gas outweigh the costs due to more serious impacts created by the unmitigated release of landfill gas into the surrounding air. This conclusion is supported from both an environmental and public health perspective. This analysis can be found in our “SEPA Supplemental Staff Report,” which can be found on the [SEPA Register](#)².

Further, any MSW landfills that are regulated by our rule will be subject to air quality permitting, regardless of where these landfills are sited and operating. The purpose of this rulemaking is to reduce methane emissions from MSW landfills statewide, and the reduction of these emissions will not only benefit the atmosphere and climate, but also communities that live in or near MSW landfill sites.

Response to comment I-12-6

Thank you for your comment. Ecology empathizes with your concerns regarding communities that have been historically marginalized. As stated in the above response, Ecology appreciates the depth of environmental, social, and racial justice issues associated with the historic siting of landfills, and other types of polluting industries in and adjacent to marginalized communities.

When rulemaking for Chapter 173-408 WAC began³, Ecology undertook an analysis of potential environmental justice concerns that could stem from this rulemaking. This analysis informed Ecology’s “SEPA Supplemental Staff Report,” which can be found on the [SEPA Register](#)⁴.

² <https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=202305176>

³ This rulemaking was announced before July 1, 2023, which is when the Heal Act’s required environmental justice assessment process began.

⁴ <https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=202305176>

Ecology understands that marginalized communities bear a disproportionate burden of the climate crisis, and it is our hope that this rulemaking will help reduce the public health and climate impacts caused by the unmitigated release of landfill gas into the surrounding air and atmosphere, reducing further harm to these communities.

Gas Collection Systems

Commenters: Kevin Singer (B-2-3), (B-2-4), Mariah Harrod (O-4-14)

Summary: Two commenters expressed concern regarding requirements for gas collection systems.

One commenter expressed concern that the rule omits requirements for minimum gas collection efficiencies. The commenter also noted that there was no leak rate calculation in the rule to determine methane leak rates for treatment and processing systems.

Response to comment B-2-3

Thank you for your comment. Ecology believes that optimizing gas collection efficiency is very important in meeting the overall goal of minimizing methane emissions into the ambient air, as well as maximizing the co-benefits of LFG-to-energy projects.

There is no current and standard modeling approach to account for collection efficiency, which is why our methodology assumes 75% collection efficiency, the current industry standard. Ecology appreciates the additional data contained in the “Landfill Gas Collection Assessment” report which you attached to your comment. It is noted that in pages 13-14 of the report, the firm who compiled the report developed an LFG recovery potential model, which can forecast LFG recovery rates based on optimization of the GCCS. However, The EPA’s AP42 model assumes a 75% collection efficiency, and this is the assumed collection efficiency used in other landfill methane rules.

Further, the “Landfill Gas Collection Assessment” report highlights the numerous technical obstacles to gas collection systems that have an impact on the optimal operation of the system. As outlined in the report, collection efficiency can be impacted by several factors including leachate from the waste mass, LFG wellhead operation, as well as the design of horizontal and vertical wells when building out the system. Water levels in waste mass vary greatly in MSW landfills across the state based on geographical location. Given this, creating a new collection efficiency requirement could create a burden on landfills based on conditions out of their control.

Regarding collection system design, Ecology included requirements in the proposed and final rule, which can be found in WAC 173-408-080(2)(a)(ii), (iii), (ix), (x), (xi), and (xv), as well as WAC 173-408-080(3)(b) through (f). These requirements, which apply to the initial and amended design plan, as well as operation of the GCCS, are meant to ensure that LFG is collected from the whole waste area and directed towards a control method so that there are no leaks above the exceedance limits (as set forth in the rule). Ultimately, if a system is not running efficiently, the likely outcome will be exceedances found during quarterly surface emissions monitoring events, which require corrective action(s), pursuant to WAC 173-408-110(1)(c) and (d) of the rule.

Response to comment B-2-4

Ecology has determined that MSW landfills should be permitted to use industry best practices and engineering judgement to calculate leak rates. However, leak detection involves screening components with a portable instrument to detect methane leaks using EPA Reference Method 21. This corresponding screening value and corresponding EPA protocol can be used to calculate leak rates for treatment and processing system components.

One commenter expressed concern that exemptions for landfills undergoing the process of “well raising” conflicts with the statutory goal of capturing gas from largest emissions sources at sites, and strays from California and Oregon’s regulatory frameworks.

Response to comment O-4-14

Thank you for your comment. WAC 173-408-080(8) requires owners or operators of MSW landfills undergoing the process of well-raising to add or compact new fill in the vicinity of the new well. It also requires owners and operators to seal and cap the well extension until the well is connected to a vacuum source. If the previous conditions are not met the landfill must meet the requirements of WAC 173-408-080 (3)(a) and (b) and (7).

Ecology understands the need to mitigate emissions from areas of the landfill, and from components that are part of a GCCS, however, well-raising is a process that some landfill owners and operators will have to undergo to ensure their collection system is functioning properly and efficiently. Ecology believes the rules adopted in WAC 173-408-080(8)(a), and (b), as described above, will mitigate emissions from wells undergoing this process.

Gas Control Systems

Commenters: Kim Brighton (I-9-6), King County Solid Waste Division (A-2-3), Jennifer Lennon (O-2-6), (O-2-7)

Summary: Three commenters expressed concern on requirements for gas control systems and requested revisions and clarification on requirements for control devices.

One commenter expressed concern with the operation of candlestick (open) flares, the lack of source testing for these devices, and requested stronger regulations around these devices.

Response to comment I-9-6

Thank you for your comment. The authorizing statute, RCW 70A.540.040(4), specifically allows the use of open flares under the following conditions:

- (a) “The open flare must meet the requirements of 40 C.F.R. Sec. 60.18 (as last amended by 73 Fed. Reg. 78209, December 22, 2008);
- (b) An open flare installed and operating prior to December 31, 2022, may operate until January 1, 2032, unless the owner or operator demonstrates to the satisfaction of Ecology or the local authority that the landfill gas heat input capacity is less than 3,000,000 million British thermal units per hour....

- (c) The owner or operator may temporarily operate an open flare during the repair or maintenance of the gas control system, or while awaiting the installation of an enclosed flare, or to address off-site gas migration issues. Any owner or operator seeking to temporarily operate an open flare must submit a written request to the department or local authority...”

One commenter requested that rule language be revised to exempt open flares that meet existing federal requirements.

Response to comment A-2-3

Thank you for your comment. Ecology cannot allow for the indefinite use of open flares that meet federal regulations due to the requirements of RCW 70A.540.040(4)(b): “An open flare installed and operating prior to December 31, 2022, may operate until January 1, 2032, unless the owner or operator demonstrates to the satisfaction of Ecology or the local authority that the landfill gas heat input capacity is less than 3.0 million BTUs per hour.

However, in accordance with RCW 70A.540.040(4)(c): “The owner or operator may temporarily operate an open flare during the repair or maintenance of the gas control system, or while awaiting the installation of an enclosed flare, or to address off-site gas migration issues” if an owner or operator requests alternative compliance measures as required by WAC 173-408-130.

One commenter requested clarification on operating and source testing parameters for control devices and suggested a revision to the rule. The commenter also requested clarification on the frequency of source testing for gas control devices based on the statutory compliance date.

Response to comment O-2-6

Thank you for your comment. After consideration, Ecology has decided to add a 15-minute averaging period to the temperature monitoring requirement for WAC 173-408-110(2)(a)(i). This aligns with other air quality requirements averaging periods in the WAC and will allow for landfills to align their data averaging periods across their facilities.

The temperature parameter range for the gas control device should be the range of combustion temperatures that achieve 99 percent methane destruction. Gas control devices must be operated within the parameter ranges established during the initial or most recent source test.

Response to comment O-2-7

Thank you for your comment. Ecology will be issuing implementation guidance to support landfills and local clean air agencies in assisting in compliance with the requirements of the rule.

According to the authorizing statute, in RCW 70A.540.040(8):

“If a gas control device is *currently in compliance* with source testing requirements as of June 9, 2022, the owner or operator must conduct the source test no less frequently than once every five years. If a gas control device is currently not in compliance with source testing requirements as of June 9, 2022, or if a subsequent source test shows the gas

control device is out of compliance, the owner or operator must conduct the source test no less frequently than once per year until two subsequent consecutive tests both show compliance. Upon two subsequent consecutive compliant tests, the owner or operator may return to conducting the source test no less frequently than once every five years.”

Accordingly, if an owner or operator can demonstrate that their control device(s) are in compliance with source testing requirements as of the above specified date, then they can resume source testing once every five years for these control devices.

GCCS Design and Installation

Commenters: Suellen Mele (I-16-4), (I-16-7), (1-21-2), Mariah Harrod (O-4-2), (O-4-15), Ellie Garland (O-8-3), Heather Trim (O-9-2), (OTH-2-2)

Summary: Four commenters expressed concern on current requirements for the GCCS design plan and installation of a GCCS.

Four commenters requested a shorter timeframe for the design, installation, and expansions of gas collection and control systems.

Response to comments I-16-4, I-21-2, O-4-2, O-8-3, O-9-2, OTH-2-2

Thank you for your comments. Ecology considered the timelines for design, installation, and expansion of gas collection and control systems.

The rule requires that for landfills that meet the criteria to require a GCCS, but where there is no GCCS installed, or where an installed GCCS doesn't meet the rule's GCCS performance requirements, the landfill owner or operator must submit a design plan for a GCCS within one year of the rule's effective date. Once a design plan is submitted, Ecology or the local authority must make its determination on approval within 120 days.

After consideration, Ecology has revised WAC 173-408-080(2)(a)(xii) and (xiii) to add clarity to the timeline requirements for installation and operation of a GCCS, following approval of the design plan. More information on this is detailed in response to comment O-4-15 on page 43.

Additional response to comment O-4-2

Thank you for your comments and suggestions on additions to design plan requirements. Ecology believes it is unnecessary to add additional language on gas collection from cells or areas of the landfill. WAC 173-408-080(2)(a)(ix) already requires that the “design plan must demonstrate how the gas collection and control system will handle the expected gas generation flow rate from the entire area of the MSW landfill and collect gas at an extraction rate to comply with the surface methane emission limits in WAC 173-408-100(2) and the component leak standard in subsection (3)(b) of this section.” Operationally, a landfill must also meet this requirement, as required by RCW 70A.540.040(2) of the authorizing statute.

Regarding installation of a GCCS based on heat input capacity, all active MSW landfills that have greater than 450,000 tons of waste in place, or closed landfills that have greater than 750,000 tons of waste in place, must submit an initial HIC report, as required by WAC 173-408-070(2). This report must be submitted within 90 days of the effective date

of the rule and will be used to determine whether an owner or operator must install a GCCS (if they do not already have one in place). Given this, there is no need for landfills to estimate when they will reach the HIC threshold identified in WAC 173-408-070(4). Additionally, MSW landfills that do not meet the HIC threshold of 3.0M btu/hr recovered, as reported on the initial HIC report, will have to submit an annual HIC report, pursuant to WAC 173-408-070(3). For landfills that must install a GCCS based on these threshold determinations, a design plan must be submitted within one year after the effective date of the rule, or within one year of detecting any landfill surface leak of 200 ppmv or greater, as required by WAC 173-408-080(2).

Regarding the suggested addition of language on temporary measures to control gas before the required installation and operation date of a GCCS, Ecology feels that this addition would be overly burdensome for owners and operators of MSW landfills and could also create confusion around timeline requirements. Owners and operators will need to build out a GCCS that meets all the design and timeline requirements specified in WAC 173-408-080(2)(a).

Ecology, however, agreed that the proposed rule lacked clarity on when owners or operators, of both closed and active landfills, must have a GCCS installed and operational, and we have revised the rule. Please see the response to comment O-4-15 for more information on this.

One commenter requested language be added to design plan requirements for gas collection and control systems. The commenter also requested removing language on “closed or inactive” areas on active landfills. Lastly, the commenter requested language be added to require a notification prior to initiating actions stated in WAC 173-408-080(2)(a)(vii).

Response to comment I-16-7

Thank you for your comments on GCCS design plan requirements. The requirements of the design plan, as specified in WAC 173-408-080(2)(a), already denote what *must* be in a design plan before it is approved by Ecology or the local authority. Once received, Ecology or the local authority has 120 days to review the design plan and will disapprove any design plan that does not meet the requirements of WAC 173-408-080(2)(a).

After consideration, Ecology agrees that any possible mitigation measures to prevent the release of methane from the working face should be described in the design plan. Accordingly, we have revised WAC 173-408-080(2)(a)(vii) as follows: “The design plan must include a description of potential mitigation measures to be used to prevent the release of methane or other air pollutants into the ambient air from the working face; during the installation or preparation of wells, piping, or other equipment...”. Ecology has also added language in WAC 173-408-110(4) in an effort to reduce the size and duration of the working face. Please see the response to comment O-4-6 for more information on this revision to the rule.

Regarding removing the language on “closed or inactive” areas on an active landfill, Ecology agrees with your assessment that the term “inactive” creates ambiguity and is problematic due to the extent it could be interpreted to exempt such areas from the rule’s requirements of installing and operating a GCCS. Accordingly, we have removed “or inactive” from WAC 173-408-080(2)(a)(viii).

Regarding a notification to Ecology or the local authority for any actions described in WAC 173-408-080(2)(a)(vii), Ecology has considered this, but will not be require a notification before a MSW landfill initiates these actions. Ecology already requires extensive recordkeeping for these actions, as described in WAC 173-408-160(1)(a)(xiv), (xv), and (xvi). It is also Ecology’s intent, as stated in WAC 173-408-110(1), to require quarterly monitoring of the whole “landfill surface,” as defined in WAC 173-408-020, which includes all areas of the landfill where decomposable waste has been placed, excluding the working face. For more information on this, please see the response to comment O-4-6.

One commenter requested timelier installation and operation of a GCCS.

Response to comment O-4-15

Thank you for your comment. After consideration, Ecology agrees that the requirements in WAC 173-408-080(2)(a)(xii), and (xiii) lacked clarity, due to conflicting timelines for submittal and review of the design plan and when a GCCS must be installed and operational. Accordingly, we have revised to the following sections of the rule:

WAC 173-408-080(2)(a) (xii): “Any owner or operator of an active MSW landfill must install and operate a gas collection and control system not later than 18 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan.”

WAC 173-408-080(2)(a)(xiii): “Any owner or operator of a closed MSW landfill must install and operate a gas collection and control system not later than 30 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan.”

Regarding component leak evaluation and enforceability, exceedances for component leaks must include a notification to Ecology or the local authority, after corrective action(s) and remonitoring, pursuant to WAC 173-408-110(c). Ecology has also revised the rule to require reporting on component monitoring; more information on this can be found in response to comment I-16-11 on page 81.

Regarding alignment with Oregon’s rules on wellhead monitoring (OAR 340-239-0600(3)), Ecology has decided not to adopt requirements around monitoring and reporting of oxygen, nitrogen, and temperature exceedances. It has been Ecology’s intent to adopt rules that focus on methane capture, collection, and monitoring to identify exceedances. Owners and operators will have to make regular adjustments and repairs to a GCCS to ensure that the equipment is operating properly and does not create any safety concerns; the purpose of WAC 173-408-110(3) is to identify positive pressure readings that will affect collection of methane so corrective action(s) can be taken.

General Comments, Questions, or Concerns

Commenters: Paul Tabayoyon (I-1-1), (I-1-2), (I-1-3), Pamela Elicker (I-16-1), Linda Averill (I-10-1), Elena Guilfoyle (I-14-1), Sarah Robinson (I-20-1), Nancy Lust (I-24-3), (O-3-3), Elyse Hochstadt (O-7-1)

Summary: Seven commenters provided comments, expressed concerns, or asked questions that we categorized as general.

Three commenters provided comments and asked questions that we categorized as general.

Response to comments I-1-1, I-1-2, I-1-3, I-6-1, I-10-1

Thank you for taking the time to comment on Ecology’s proposed rulemaking. Your comment addresses issues that are outside the scope of this rulemaking, therefore no formal response is provided. However, your comment will reside in Ecology’s business record for this action, in accordance with our public records and records retention procedures.

Four commenters provided comments and suggestions on rule revisions or expressed concerns that we categorized as general.

Response to comment I-14-1

Ecology appreciates your general comments and suggested revisions. We have replaced all federal incorporation dates by reference with “in effect on the date in WAC 173-400-025”. We have also removed unnecessary language to increase readability of the rule and align with plain talk principles.

Response to comment I-20-1

Ecology appreciates your comment and concerns on the negative impacts of improper waste disposal and its links to methane generation and climate change.

Regarding reducing methane emissions from MSW landfills, Washington is the fourth state to adopt stricter requirements than current federal standards. The legislature directed Ecology to create rules to achieve this goal, and we believe we have developed a strong rule.

We have also strengthened the rule since proposing it in key areas. These areas include adopting a new test method to allow landfills to use the EPA-approved OTM-51 (drone) method for monitoring; tightening up requirements for frequency of monitoring for closed MSW landfills; and adding language to the rule to limit the size and duration of areas of the landfill that are prone to the highest leaks of methane, such as the working face.

Ecology also appreciates your comment regarding municipal compost pickup, however your comment addresses issues that are outside the scope of this rulemaking, therefore no formal response is provided. However, your comment will reside in Ecology’s business record for this action, in accordance with our public records and records retention procedures.

Response to comment I-24-3

Thank you for your comment. These concerns are outside of the scope of this rule and are more properly addressed under Washington’s Solid Waste Handling Standards, WAC 173-350. Those standards do not specify allowable slopes on LPLFs, but the issue raised by the commenter is also related to the setback of a landfill’s waste disposal area from the property line. WAC 173-350 does establish a minimum setback of 100 feet between

the LPLF's active area and the property line. By law, authority for enforcement of the Solid Waste Handling Standards resides with the local health department.

Response to comment O-3-3

Thank you for your comment. As part of our rulemaking process, and as required by the Administrative Procedure Act (RCW 34.05.325), Ecology has read, considered, and responded to all comments received.

Response to comment O-7-1

Ecology appreciates your concern regarding the incineration of green waste, however your comment addresses issues that are outside the scope of this rulemaking, therefore no formal response is provided. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

General Opposition

Commenters: Lois Powell (I-4-1)

Summary: One commenter expressed general opposition to the rule on the basis that they believe there are more important concerns that need to be addressed.

Response to comment I-4-1

Ecology appreciates the concerns expressed. The authorizing statute specifically directs Ecology to adopt rules to implement and enforce certain types of requirements and restrictions to reduce emissions of methane from MSW landfills in Washington. This statutory directive reflects a determination by the legislature that taking action to address climate change is necessary and that this regulatory framework will help address the climate crisis.

General Support

Commenters: Matthew Moore (I-2-1), Emily McBride (I-3-1), Diane Landry (I-5-1), Hope Barker (I-7-1)

Summary: Four commenters expressed general support of this rulemaking.

Three commenters expressed support for the rule in its entirety or requested additional actions.

Response to comments I-2-1, I-3-1, I-7-1

Ecology appreciates your support of the rule.

Additional response to comment I-2-1

Ecology appreciates your concerns regarding the impacts of waste disposal on the environment, but these issues are outside the scope of this rulemaking. However, Ecology's Solid Waste Management Program is working on this issue. The Organics Management Law (OMA), which was passed by the legislature in 2022, requires diversion of organic materials away from landfill disposal and towards food rescue programs and organics management facilities. A directive of part 4 of the OMA was to launch the Food Center (Washington Center for Sustainable Food Management), whose

purpose is to connect individuals and organizations across the food system to divert food waste and wasted food away from landfill disposal. In April of this year, the Food Center launched Food Waste Prevention Week, which is an education and behavior change campaign that aims to help Washingtonians redirect their food and organic waste to rescue or recovery efforts.

Additional response to comment I-7-1

Thank you for your comment. Chapter 173-408 WAC is the new rule regulating landfill methane emissions in the state of Washington.

Ecology appreciates your concern regarding development on existing landfill sites, however your comment addresses issues that are outside the scope of this rulemaking, therefore no formal response is provided. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

One commenter expressed support for providing funding to landfill owners or operators to comply with requirements of the rule.

Response to comment I-5-1

Ecology appreciates your support. For more information on grant funding, please see response to comment O-2-11 below.

Grant Funding

Commenters: Jennifer Lennon (O-2-11)

Summary: One commenter expressed concerns about the costs associated with this rulemaking and asked whether Climate Commitment Act funds would cover costs associated with this rule.

Response to comment O-2-11

Thank you for your question about seeking CCA funds to comply with the requirements of the rule. As part of the 2023-2025 state budget, the legislature appropriated money from the Climate Commitment Account, which is provided solely for Ecology to administer a grant program for landfills to comply with the requirements established in Chapter 70A.540 RCW, and Ecology's rule adopted pursuant to the authorizing statute. Ecology has already begun the grant development process and anticipates that grant funding will be made available starting in 2025.

Implementation

Commenters: John Dawson (A-1-1)

Summary: One commenter requested that Ecology provide thorough and ongoing training to co-regulators on various rule requirements.

Response to comment A-1-1

Thank you for your comment. Ecology recognizes the need for training for co-regulators. Ecology anticipates providing training opportunities and guidance during the

implementation phase of the rulemaking process. More information will be available after adoption of the rule.

Interaction with Other Regulatory Programs

Commenters: John Dawson (A-1-2), King County Solid Waste Division (A-2-1)

Summary: Two commenters requested clarification on the interaction between the rule and existing regulations and requested rule revisions.

One commenter requested that it be made clear that certain requirements of the rule do not supersede existing rules and regulations.

Response to comment A-1-2

Thank you for your comment. The authorizing statute, RCW 70A.540, and adopted rule, do not supersede other state regulatory programs. Ecology has determined the requirements of WAC 173-408 add stringency to existing federal and state requirements. Ecology has determined that no change to the rule is required.

WAC 173-408 creates new substantive requirements for MSW landfills in Washington. Local Clean Air Agencies or Ecology will be required to include the rule's requirement in their permitting for MSW landfills.

One commenter provided suggestions and requested revisions of the rule to align with existing federal requirements.

Response to comment A-2-1

Ecology appreciates your comments and suggestions. Ecology has revised the definition of "Enclosed combustor" to align with the EPA's definition in 40 CFR 60.761, as follows, "'Enclosed combustor' means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor."

Regarding alignment with federal language in 40 CFR 60.762(b)(2)(v)(B), Ecology has decided to replace "methane production rates" with "gas flow" as follows:

WAC 173-408-090(1)(a): "The gas collection and control system has been in operation for at least 15 years after an owner or operator has submitted a closure notification that has been approved, or the owner or operator demonstrates to the satisfaction of the department or local authority that, due to declining gas flow, the MSW landfill will be unable to operate the gas collection and control system for a 15-year period after closure...". However, it should be noted that the requirements for permanent shutdown and removal of a GCCS, as described in WAC 173-408-090 are substantively different than the EPA's requirements.

Regarding exempting landfills from portions of the rule if those landfills are subject to existing federal regulations, the authorizing statute does not provide for such an expansive exemption, and in many cases the authorizing statute and our rule have established stricter requirements as compared to existing federal requirements. For example, WAC 173-408-120(3)(a)(ii) requires that quarterly SEM be conducted in a "walking pattern [that] must be no more than 25-foot spacing intervals and must traverse

each monitoring grid.” This is more stringent than the federal requirement of a 30-meter walking pattern, and all MSW landfills subject to the requirements of the rule must adhere to the new requirements. However, our rule does *not* require owners or operators to conduct two different monitoring events in a quarter when they are also subject to existing federal SEM requirements.

Further, if the rule were to explicitly state that owners or operators are in compliance with particular state requirements by virtue of meeting the current federal requirements, this may create a scenario where state requirements are ultimately not met due to federal rules being amended. In these situations, Ecology would have to amend the rule based on any changes made to federal rules.

Lastly, it is Ecology’s intention to issue implementation guidance to affected parties after the rule is in effect. This guidance will contain a comparison of existing federal requirements and those of the adopted rule.

Jurisdiction

Commenters: Janet Dobrowolski (I-15-3), Jennifer Lennon (O-2-9)

Summary: Two commenters expressed concern with jurisdictional oversight of the rule.

One commenter requested clarity on the definition of a “local authority” and expressed concerns that there are different levels of jurisdiction in charge of oversight of rule requirements, as opposed to a central authority that has oversight.

Response to comment I-15-3

Thank you for your questions and comments. WAC 173-408-020 defines “Authority” or “local authority” as “... any air pollution control agency whose jurisdictional boundaries are coextensive with the boundaries of one or more counties.” This definition comes from our authorizing statute, in RCW 70A.540.010(4). In the context of this rule, a “local authority” is one of the local clean air agencies, which manage most of the air quality in Washington. There are seven local clean air agencies who have jurisdiction and oversight of air quality over multiple counties across the state; Ecology also has jurisdiction and oversight of air quality over multiple counties across the state, where there isn’t a local authority.

Ecology regularly works in partnership with local clean air agencies to enforce clean air regulations. Local clean air agencies manage and enforce federal, state, and local regulations in their jurisdictions. Our authorizing statute, RCW 70A.540, mandates which agency, i.e., Ecology or a “local authority,” has oversight on requirements of the law and rule. For example, RCW 70A.540.070 (Records and reporting requirements) describes which types of records or reports should be submitted to Ecology or the “local authority” or both in one case. RCW 70A.540.070(3) states “The owner or operator of a municipal solid waste landfill that ceases to accept waste must submit a closure notification to the department *or* local authority within 30 days of ceasing to accept waste.” RCW 70A.540.070(5) states “The owner or operator of either an active municipal solid waste landfill ... or a closed municipal solid waste landfill ... must prepare an annual report for the period of January 1st through December 31st of each year Each annual report must be submitted to the department and local authority during the subsequent calendar

year...”. In the former example, the authorizing statute gives owners or operators of MSW landfills the option to submit a closure notification report to *either* Ecology *or* the “local authority”; in the latter example, an annual report must be submitted to *both* Ecology *and* the “local authority”. Ecology believes that in cases where the authorizing statute gives owners or operators the option to submit reports to either Ecology or the “local authority,” the “local authority” should be the receiver of these reports as they are the authority of those jurisdictions. In other cases, such as the annual report, both Ecology and the “local authority” will receive reports as mandated by the authorizing statute.

One commenter asked why local authorities and Ecology had oversight of different rule requirements, and asked whether this process would be affected if local authorities adopted their own rules.

Response to comment O-2-9

Thank you for your questions and comments. The authorizing statute, RCW 70A.540, specifies the jurisdictional applicability for certain requirements of the law and rule. Where the applicable agency is not specified in the authorizing statute, the Washington CAA governs. For example, the requirements of WAC 173-408-180 (Civil penalty) are built off RCW 70A.540.120 (Violation of chapter – Civil penalty). RCW 70A.540.120 of the authorizing statute states, “Any person who violates this chapter or any rules that implement this chapter may incur a civil penalty pursuant to RCW 70A.15.3160.” Under RCW 70A.15.3160, Ecology and local authorities may assess civil penalties for air quality violations committed within their respective jurisdictions. As a result, a local authorities may issue civil penalties to landfills within their jurisdiction for violations of this rule.

Ecology and local authorities may also exercise enforcement discretion and reduce or waive penalties for violations of the Washington CAA when appropriate. This ability to reduce or waive penalties as an exercise of enforcement discretion extends to violations of this rule as well. However, the authorizing statute for this rule specifically *requires* Ecology to waive penalties in certain circumstances: “The department shall waive penalties in the event the owner or operator of the landfill is actively taking corrective actions to control any methane exceedances.” This section of the authorizing statute requires only Ecology to waive penalties in such a circumstance; it does not impose the same requirement on local authorities.

WAC 173-408-180 reflects the intent of the legislature on which agency has the obligation to waive penalties for violations of the law and rule. To add clarity to the rule, Ecology has added the following language in WAC 173-408-180(3), “A “local authority.” as defined in WAC 173-408-020, may issue, and waive its own penalties for any violations pursuant to this chapter.”

Similar to RCW 70A.540.120 of the authorizing law, RCW 70A.540.100 mandates that the “department,” or Ecology, oversee the process of receiving and either approving or disapproving of alternative compliance measures for certain requirements of the rule. This is stated in RCW 70A.540.100(1), “...Any alternatives requested by the owner or operator must be submitted in writing to the *department*.” Because the authorizing law mandates that all alternative compliance measures be submitted to Ecology, Ecology will

make all decisions regarding alternative compliance measures, as laid out in WAC 173-408-130. However, in recognition of the local authorities' jurisdiction, Ecology has added new language to WAC 173-408-130 regarding Ecology's consideration of the "recommendation of the local authority, if applicable," and to specify that a local authority may request additional information from the landfill for purposes of providing such a recommendation.

Lastly, the Washington CAA allows local authorities to adopt more stringent requirements for sources within their jurisdictions. RCW 70A.15.3000(2)(b) and 70A.15.3050(2) provide that an authority may adopt more stringent emission standards and emission control requirements for any type of source except residential solid fuel burning devices. If a local authority adopts its own MSW landfill methane rule and requires that alternative compliance measures be approved by its agency, then an owner or operator of a MSW landfill will have to work with both Ecology and the local clean air agency who has adopted the rule to obtain approval.

Limited Purpose Landfills

Commenters: Anonymous (I-11-1), Shelley Byington (I-13-1), Janet Dobrowolski (I-15-2), Suellen Mele (I-16-1), Peter Rimbo (I-18-5), William Lider (I-19-1), Nancy Lust (I-24-1), (O-3-1), Larken Buchanan (O-6-5), Scott Cave (OTH-1-1), (OTH-1-2), (OTH-1-3), (OTH-1-4), (OTH-1-5)

Summary: Nine commenters expressed concern about the exclusion of Limited Purpose landfills (LPLFs) from the rule and requested that LPLFs be subject to some or all requirements of the rule. Some of the commenters also expressed concern with the operations at specific landfill sites.

Response to comments I-11-1, I-13-1, I-15-2, I-16-1, I-18-5, I-19-1, I-24-1, O-3-1, O-6-5, OTH-1-1, OTH-1-2, OTH-1-3, OTH-1-4, OTH-1-5

Ecology acknowledges that LPLFs may present the potential to generate methane emissions. However, Ecology is directed to conduct this rulemaking by Chapter 70A.540 RCW. We have not included LPLFs in the rule because RCW 70A.540 is specific in being applicable to MSW landfills. LPLFs are a distinct category from MSW landfills under the Washington Solid Waste Management Act and the rules implementing that Act. For example, WAC 173-350-100 states: "Limited purpose landfills do not include . . . municipal solid waste landfills regulated under chapter 173-351 WAC." As a result, Ecology interprets the authorizing law's specific applicability to MSW landfills as necessarily excluding LPLFs.

This conclusion is supported by legislative history. What is now codified as RCW 70A.540 was introduced in the 2022 Legislative Session as House Bill (HB)1663. Ecology notes that the original language of HB1663 included LPLFs within its scope of applicability. However, the legislature subsequently passed a substitute version of HB1663 in which the applicability was limited to MSW landfills. Consequently, Ecology believes that while the legislature initially considered making methane emissions from LPLFs subject to the landfill methane emission law, it ultimately made a deliberate policy decision to limit the statute's applicability to MSW landfills and exclude LPLFs from the requirements of the law.

There are also technical reasons for not addressing LPLFs using the approach of the current landfill methane emissions law. While LPLFs as a category might receive a wide range of waste types, individual LPLFs are often limited to specific waste types which will influence a particular LPLF's potential to generate methane. For example, a LPLF which receives only hog fuel boiler ash or tear-off material from roofing contractors would be expected to have a negligible potential to produce methane, while a LPLF receiving a high proportion of industrial wastewater sludges or food processing waste could have a significant methane generating potential.

The methodology for determining applicability of gas collection and control requirements in this rule is based on documented and quantified relationships between methane-generating potential and disposed waste mass that are specific to the municipal solid waste type. Those sorts of relationships have generally not been established for most other waste types that might be disposed in a LPLF, so that no ready basis is available for estimating the potential methane generation of a LPLF from the mass of whatever unique mix of waste types might be disposed in it.

With this lack of relevant data and the variability in mixes of waste types across the LPLF sector, a landfill-specific approach would likely be necessary to determine if the GCCS requirements of this rule should apply to any specific LPLF. That approach would probably have to be independent of disposed waste mass and methane-generating potentials and rely more directly on monitoring of landfill methane emissions as a basic criterion for applicability. Ecology believes that even if we were not limited by statute in our authority on this issue, implementing such an approach is outside of the scope of the methodology prescribed in RCW 70A.540.

Additional response to comment I-11-1

Please see the general response above regarding the limits on Ecology's authority to extend the applicability of this rule to LPLFs, and on the ability to apply the methodology regarding the technical issues with using the methods prescribed in RCW 70A.540 to LPLFs. As outlined above, Ecology does not have the authority to regulate LPLFs under RCW 70A.540, and therefore your comment on the operations at the two LPLFs in Yakima County addresses issues that are outside the scope of the action we are considering, therefore no formal response is provided. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment I-13-1

Thank you for your comment. Ecology appreciates and empathizes with your concerns regarding the operation of a limited purpose landfill in your county. As outlined above, Ecology does not have the authority to regulate LPLFs under RCW 70A.540.

The comment also identifies concerns regarding compliance and enforcement of permits at specific LPLFs. These concerns are outside of the scope of this rule and are more properly addressed under Washington's Solid Waste Handling Standards, WAC 173-350. Ecology notes that LPLFs are required by WAC 173-350 to perform groundwater monitoring. By law, authority for enforcement of the Solid Waste Handling Standards resides with the local health department. However, your comment will reside in

Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment I-19-1

Thank you for your comment. Ecology appreciates and empathizes with your concerns regarding the potential safety hazards that unmitigated methane present. As outlined above, Ecology does not have the authority to regulate LPLFs under RCW 70A.540. The focus of concerns expressed in the comments are primarily about the redevelopment of a specific site for residential use; the site is a reclaimed sand and gravel mine, not a landfill. The developer has engaged with Ecology's Toxics Cleanup Program regarding some of the issues with the site under the Voluntary Cleanup Program. However, most decisions regarding land use at the site, including any required mitigation of hazards of methane emissions to be incorporated into the development, are the purview of the local government and are outside of the scope of this rule. Your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment I-24-1

Thank you for your comment. Ecology appreciates and empathizes with your concerns regarding the potential fire hazards that unmitigated methane present. As outlined above, Ecology does not have the authority to regulate LPLFs under RCW 70A.540. The comment also identifies concerns regarding compliance and enforcement of permits at specific LPLFs. These concerns are outside of the scope of this rule and are more properly addressed under Washington's Solid Waste Handling Standards, WAC 173-350. By law, authority for enforcement of the Solid Waste Handling Standards resides with the local health department. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment O-3-1

Thank you for your comment. Ecology appreciates and empathizes with your concerns regarding the operation of a limited purpose landfills in your county. As outlined above, Ecology does not have the authority to regulate LPLFs under RCW 70A.540.

The comment also identifies concerns regarding compliance and enforcement of permits at specific LPLFs. These concerns are outside of the scope of this rule and are more properly addressed under Washington's Solid Waste Handling Standards, WAC 173-350. By law, authority for enforcement of the Solid Waste Handling Standards resides with the local health department. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment OTH-1-1

Thank you for your comment. This comment questions the consistency of Ecology's efforts to reduce greenhouse gases since the rule doesn't extend its applicability to methane emissions from LPLFs. With this rule, Ecology is carrying out the direction of the legislature as stated in RCW 70A.540, in accordance with the scope of the statute.

Ecology's interpretation of the scope of that direction is discussed in the general response above.

The comment also expresses concerns about the effectiveness of the systems for regulatory oversight and degree of enforcement regarding other aspects of operations at specific LPLFs. The commenter's concerns include emissions of other non-methane air pollutants and compliance with solid waste permit conditions. Those issues are beyond the scope of this rule, both in its applicability and its subject matter. Some of the specific concerns expressed by the commenter are within the purview of the local clean air authority. Other specific concerns are more properly addressed under Washington's Solid Waste Handling Standards, WAC 173-350. By law, authority for implementing the Solid Waste Handling Standards resides with the local health department. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment OTH-1-3

Thank you for your comment. Please see the response above regarding the limits on Ecology's authority to extend the applicability of this rule to LPLFs.

The comment also identifies concerns regarding compliance and enforcement of permits at a specific LPLF, which is also a listed site under the Model Toxics Control Act (MTCA). By law, authority for enforcement of the Solid Waste Handling Standards resides with the local health department. Authority for enforcement under MTCA resides with Ecology; in the case of the landfill cited by the commenter, MTCA is being implemented by Ecology's Solid Waste Management Program. Given this, these concerns are outside of the scope of this rule and are more properly addressed under Washington's Solid Waste Handling Standards, WAC 173-350 and the MTCA Cleanup Regulation, WAC 173-340. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment OTH-1-4

Thank you for your comment. Please see the general response above regarding the limits on Ecology's authority to extend the applicability of this rule to LPLFs.

The comment also identifies concerns about previous methane monitoring at a specific LPLF to illustrate a generalized comment about the effectiveness and reliability of methane monitoring for LPLFs. The existing solid waste regulations for LPLFs include facility standards for control of migration of explosive gases from a landfill to adjoining properties. The focus of those standards is protection of immediate health and safety against explosive hazard, which is outside of the scope of this rule. However, your comment will reside in Ecology's business record for this action, in accordance with our public records and records retention procedures.

Additional response to comment OTH-1-5

Thank you for your comment and recommendations. Please see the general response above regarding the limits on Ecology's authority to extend the applicability of this rule to LPLFs.

Such recommendations are outside the scope of this rule. However, your comment will reside in Ecology’s business record for this action, in accordance with our public records and records retention procedures.

Methane Concentration Limits

Commenters: Jacquelyn Green (I-8-3)

Summary: One commenter requested that landfills only be allowed to expand if the landfill is in compliance with the rule’s methane concentration limits.

Response to comment I-8-3

Thank you for your comment. The authorizing statute, Chapter 70A.540 RCW does not give Ecology authority to make decisions on permitting and expansion activities at MSW landfill sites impacted by the law and rule. MSW landfill permitting activities are regulated under WAC 173-351-700, as well as any additional requirements overseen by the local health departments and local clean air agencies.

Monitoring

Commenters: Jacquelyn Green (I-8-1), Kim Brighton (I-9-1), (I-9-5), Janet Dobrowolski (I-15-4), (I-15-7), (I-15-8), (I-15-16), (I-15-17), (I-15-182), (I-23-2), (I-23-3) Suellen Mele (I-16-2), (I-16-5), (I-16-13), (I-16-15), Peter Rimbo (I-18-4), (I-18-6), Kevin Singer (B-2-2), Jennifer Lennon (O-2-4), Mariah Harrod (O-4-6), (O-4-8), Rod Whittaker (O-5-3), Larken Buchanan (O-6-4), (O-6-6)

Summary: Ten commenters expressed concern over the current monitoring requirements. Some of the commenters requested that monitoring requirements be more stringent, and other commenters requested less stringent requirements.

Five commenters expressed concern that the rule excludes too many areas of a landfill from monitoring. Some of the commenters want all surfaces of the landfill monitored, and others want monitoring of every area other than the active working face.

Response to comments I-8-1, I-15-8, I-16-13, B-2-2, O-4-6

Thank you for your comments and concerns on exempted areas from monitoring and areas of landfills that are prone to higher methane emission leaks. The intent of the monitoring requirements in the rule is to require monitoring of the entire “Landfill surface,” which is defined in WAC 173-408-020 as “... the area of the landfill under which decomposable solid waste has been placed, excluding the working face.” Per WAC 173-408-110 (monitoring), MSW landfills with a GCCS “... must conduct quarterly instantaneous or integrated surface monitoring of the landfill surface...”. Per WAC 173-408-120(3)(a), “The entire landfill surface must be divided into individually identified 50,000 square foot grids. The grids must be used for both instantaneous and integrated surface emissions monitoring.” Accordingly, all areas of the landfill where decomposable solid waste has been placed must be monitored, except for the daily “working face,” as defined in WAC 173-408-020.

Additional response to comment O-4-6

RCW 70A.540.050(3) of the authorizing statute lists certain areas of the landfill surface that are not subject to the methane concentration limits stated in the section. As stated in RCW 70A.540.050(3), these areas include:

- “(a) The working face of the landfill;
- (b) Areas of the landfill surface where the landfill cover material has been removed for the purpose of installing, expanding, replacing, or repairing components of the landfill cover system, the landfill gas collection and control system, the leachate collection and removal system, or a landfill gas condensate collection and removal system;
- (c) Areas of the landfill surface where the landfill cover material has been removed for law enforcement activities requiring excavation; or
- (d) Areas of the landfill in which the landfill owner or operator, or a designee of the owner or operator, is engaged in active mining for minerals or metals.”

Although these areas are not subject to the methane concentration limits set forth in RCW 70A.540.050(1)(a) and (b), the areas described in (b) through (d) above are still subject to quarterly SEM. It is Ecology’s intent to require monitoring of the whole “Landfill surface” as defined in WAC 173-408-020, which requires monitoring of “... the area of the landfill under which decomposable solid waste has been placed, excluding the working face.” Further, landfill owners or operators must keep records of any actions described in (b) through (d), including a description of the actions, affected areas, start and finish dates of the action, and a description of mitigation measures taken to minimize methane emissions. WAC 173-408-160(1)(a)(xiv) through (xvi) contain the recordkeeping requirements for these following actions.

Ecology agrees that areas affected by these actions should be controlled to minimize potential methane emissions, and after careful consideration we have revised WAC 173-408-100(4) as follows “The requirements of this section do not apply to the following areas, provided that the owner or operator ensures these areas are no larger in size and no longer in duration than is necessary for the specified activity.”.

One commenter also expressed concern with the allowance of excluded areas in the surface monitoring design plan.

Additional response to comment I-15-8

Thank you for your comment. After consideration, Ecology agrees that the previous language on “exempt areas” in the required surface monitoring plan does not align with the SEM requirements in WAC 173-408-110(1), which state that an “owner or operator of a MSW landfill with a gas collection and control system must conduct quarterly instantaneous or integrated surface monitoring of the *entire landfill surface* according to this subsection...”.

In response to your comment and to be consistent with SEM requirements, Ecology has removed “exempt areas” from WAC 173-408-110(1)(a) and has revised this subsection accordingly: a “surface monitoring design plan must be developed that includes a topographical map that, at a minimum, clearly identifies the monitoring traverse and the working face, and describes the rationale for any site-specific deviations. The plan must be updated quarterly if changes are made to the monitoring traverse or working face, and

the surface monitoring design plan must be provided upon request by the department or local authority.”

Four commenters expressed concern with allowing landfills to self-monitor. Some of these commenters requested that independent outside companies only be used for monitoring, as well as reporting monitoring results.

Response to comments I-9-1, I-15-7, I-18-6, I-23-3, O-6-6

Thank you for your comments on self-monitoring. In many cases, owners or operators of larger MSW landfills who currently comply with the federal quarterly surface monitoring requirements already hire outside contractors to conduct SEM. Ecology feels that it would be an economic burden to require smaller MSW landfills across the state – who previously have not had to comply with the federal SEM requirements – to hire and contract out their quarterly SEM to meet the requirements of the rule. These smaller MSW landfills will have the option to hire independent outside contractors to conduct monitoring, but Ecology will not require this by rule.

Additionally, the rule’s requirements for SEM align with those adopted by CARB, OR DEQ and the EPA, none of whom require outside, independent contractors to conduct surface emissions monitoring. The authorizing statute in RCW 70A.540.020 directs Ecology to adopt rules that “must be informed by landfill methane regulations adopted by the California air resources board, the Oregon environmental quality commission, and the United States environmental protection agency.”

Additional responses to comments I-18-6, O-6-6

Similar to SEM requirements, Ecology will not require any reports required by the rule to be submitted by certified, independent companies. Ecology understands the importance of the veracity of reports received, which is why all reports must be accompanied with a certification, in accordance with WAC 173-408-150 (Certification), as follows:

“Any application form, report, compliance certification, or other information submitted pursuant to this chapter shall contain the following written certifications made and signed by the person making the submission:

- (1) "I certify under penalty of perjury under the laws of the state of Washington that I am duly authorized to make this submission on behalf of the party that is required to provide the information contained therein pursuant to Chapter 173-408 WAC."
- (2) "I certify under penalty of perjury under the laws of the state of Washington that, based on information and belief formed after reasonable inquiry, all statements and information contained in the submitted document are true, accurate, and complete."”

Five commenters expressed that monitoring should be conducted at a higher frequency than quarterly. Some of the commenters requested that drone monitoring be required, and at a higher frequency.

Response to comments I-9-5, I-15-17, I-16-2, I-18-4, I-23-2, O-6-4

Thank you for your comments on monitoring frequency. The EPA’s existing requirements, which many MSW landfills in Washington must currently comply with, require quarterly SEM. Additionally, both OR DEQ (OAR 340-239-0600(1)), and

CARB's (95469(a)) rules require quarterly SEM. Ecology feels that requiring a more stringent SEM frequency would deviate from the statutory intent set forth in RCW 70A.540.020(3), which states that "...rules adopted by the department must be informed by landfill methane regulations adopted by the California air resources board, the Oregon environmental quality commission, and the United States environmental protection agency." Although the statute does not specifically state that Ecology's rule must be identical to the rules adopted by these agencies, in this case the more stringent rules on frequency of monitoring would create a significant economic burden to newly impacted entities, as well as create a situation where MSW landfills that already must comply with the federal requirements will have to follow two different regulatory pathways for monitoring.

Additional response to comments I-9-5, I-15-17

Please see the general response above regarding frequency of monitoring. Regarding the use of drones, or "Unmanned aerial system(s)," newly defined in our rule under WAC 173-408-020, please see responses to comments I-9-3, I-12-4, I-15-9, I-16-12, I-18-2, I-21-1, I-22-3, I-23-1, I-24-2, B-2-1, B-3-3, B-4-1, O-3-2, O-6-2, O-8-1, O-9-1, O-10-1, OTH-2-1 under the "Test Methods and Procedures" topic header.

Additional response to comments I-18-4, O-6-4

Please see the general response above regarding frequency of monitoring. Regarding the use of drones, or "Unmanned aerial system(s)," newly defined in our rule under WAC 173-408-020, please see responses to comments I-9-3, I-12-4, I-15-9, I-16-12, I-18-2, I-21-1, I-22-3, I-23-1, I-24-2, B-2-1, B-3-3, B-4-1, O-3-2, O-6-2, O-8-1, O-9-1, O-10-1, OTH-2-1 under the "Test Methods and Procedures" topic header.

Ecology is aware that MSW landfills across the state face vastly different weather patterns, and that low and high-pressure weather events, precipitation, wind, as well as other elements, all affect methane measurements during monitoring events. Our rule already contains requirements for monitoring with the goal of reducing variability of methane measurements. These requirements are as follows:

WAC 173-408-120(3)(a)(iii): "Surface testing must be terminated when the average wind speed exceeds five miles per hour, or the instantaneous wind speed exceeds 10 miles per hour. Surface testing can continue when the average wind speed is five miles per hour or less. The department or local authority may approve alternatives to this wind speed surface testing termination for MSW landfills consistently having measured winds in excess of these specified limits."

WAC 173-408-120(3)(a)(iv): "Surface emissions testing must be conducted only when there has been no measurable precipitation in the preceding 72 hours. The department or local authority may approve alternatives to this procedure for MSW landfills that cannot meet the requirements of this subsection."

WAC 173-408-120(3)(a)(v): "Monitoring should be conducted during average barometric pressure conditions to the extent possible."

Two commenters requested that component and wellhead monitoring requirements should be strengthened.

Response to comment I-15-4

Thank you for your comment on monitoring of GCCS components. Our rule already contains a requirement for quarterly monitoring component monitoring in WAC 173-408-110(2)(c), as follows: “Components containing landfill gas must be monitored quarterly for leaks. Any component leak must be tagged and repaired within 10 calendar days, and the department or local authority must be notified pursuant to subsection (1)(b) of this section.”

“Component”, as defined in WAC 173-408-020, “means any equipment that is part of a gas collection and control system and that contains landfill gas including, but not limited to, wells, pipes, flanges, fittings, valves, flame arrestors, knock-out drums, sampling ports, blowers, compressors, or connectors.” This includes components in the system that are under positive pressure.

Response to comment I-16-5

Thank you for your comments on component and wellhead monitoring. Ecology agrees that the component leak and corrective action(s) process should align with the 10-day corrective action(s) and remonitoring process for instantaneous and integrated surface emissions monitoring. We have revised the language in WAC 173-408-110(2)(c) as follows: “Components containing landfill gas must be monitored quarterly for leaks. Any component leak must be tagged, repaired, and remonitored within 10 calendar days, and the department or local authority must be notified pursuant to subsection (1)(b) of this section.”

Regarding wellhead monitoring, Ecology does not feel that is necessary to require a notification for positive wellhead gauge pressure measurements. Wells are considered “Components” as defined in WAC 173-408-020 under our rule, and therefore any well component leaks above 500 ppmv will require corrective action(s), remonitoring, and a notification to Ecology or the local authority. Any positive pressure readings at the wellhead, measured during the required monthly monitoring requirement outlined in WAC 173-408-110(3), require corrective action(s) and retesting pursuant to that section.

Additionally, records of any positive wellhead gauge pressure measurements must be kept and provided to Ecology or the local authority within five business days of a request. Records of the following must be kept:

WAC 173-408-160(1)(a)(viii): “Records of any positive wellhead gauge pressure measurements, the date of the measurements, the well identification number, and the corrective action taken, pursuant to WAC 173-408-110(3).”

Two commenters expressed that both instantaneous and integrated surface monitoring be required.

Response to comments I-15-16, O-4-8

Thank you for your comments on instantaneous and integrated SEM. Both instantaneous and integrated SEM can be used by owners and operators of MSW landfills when conducting SEM; however, Ecology cannot require that both methods be used, because of the legislative intent of the authorizing law, as follows:

RCW 70A.540.060(1): “The owner or operator of a municipal solid waste landfill with a gas collection and control system must conduct instantaneous *or* integrated surface monitoring of the landfill surface according to the requirements specified in implementing rules adopted...”.

Ecology acknowledges that CARB and OR DEQ require use of both methods and RCW 70A.540.020(3) states Ecology’s rules “must be informed by landfill methane regulations adopted by the California air resources board, the Oregon environmental quality commission...” However, in this case, the authorizing statute precludes requiring both types of monitoring.

Additional response to comment I-15-16

Thank you for your questions on the differences between exceedances found through instantaneous versus integrated SEM. The monitoring grid requirements apply to both methods of monitoring and apply to all MSW landfills, regardless of their size. WAC 173-408-120(3)(a) states “The entire landfill surface must be divided into individually identified 50,000 square foot grids. The grids must be used for both instantaneous and integrated surface emissions monitoring.” The grid requirements are part of the methodology for how MSW landfills must conduct monitoring, but an exceedance of the methane concentration limits (i.e., 500 ppmv for instantaneous monitoring and 25 ppmv for integrated monitoring) is marked as a single exceedance, regardless of what method, and must have corrective action(s) taken and be resolved or else it will become a violation.

One commenter expressed that event-driven monitoring be required, and that event-driven monitoring be reportable to the local authority.

Response to comment I-15-18

Thank you for your comments and for providing accompanying documentation and pictures. Ecology understands concerns related to LFG ballooning events, as you’ve described in your comment; however, we will not be requiring SEM at a greater frequency than quarterly. If an owner/operator of a MSW landfill, through their required quarterly SEM, finds exceedances while monitoring any areas that exhibit ballooning, they will have to initiate corrective action(s), remonitor, and notify Ecology or the local authority within two working days. Our rule requires that all areas of the “landfill surface” be monitored, except for the “working face,” both terms defined in WAC 173-408-020; given this, any areas of final or intermediate cover that experience ballooning will have to be monitored.

Further, Ecology already includes design plan requirements (WAC 173-408-080(2)) meant to address the interaction between different types of cover and the GCCS’s ability

to collect gas. For example, WAC 173-408-080(2)(a)(ii) requires that the “following issues must be addressed in the design plan: Depths of solid waste; solid waste gas generation rates and flow characteristics; cover properties; gas system expandability; leachate and condensate management...”. WAC 173-408-080(2)(a)(ix) states, “The design plan must demonstrate how the gas collection and control system will handle the expected gas generation flow rate from the entire area of the MSW landfill and collect gas at an extraction rate to comply with the surface methane emission limits in WAC 173-408-100(2) and the component leak standard in subsection (3)(b) of this section.” For reference, the component leak standard described above is 500 ppmv, and the surface methane emission limits are 500 ppmv, as determined by instantaneous SEM, and an average concentration of 25 ppmv as determined by integrated SEM.

One commenter expressed that the rule be strengthened around monitoring of surface areas with cover penetrations, distressed vegetation, cracks and/or seeps.

Response to comment I-16-5

Thank you for your comment. WAC 173-408-120(3) describes the required test methods and procedures for SEM. All the test methods and procedures established in this section are a required part of the quarterly SEM requirements as stated in WAC 173-408-110(1), “... The owner or operator of a MSW landfill with a gas collection and control system must conduct quarterly instantaneous or integrated surface monitoring of the landfill surface according to this subsection and the procedures specified in *WAC 173-408-120(3)*.” This includes the provision in WAC 173-408-130(3)(b)(iii), “...landfill surface areas with cover penetrations, distressed vegetation, cracks, or seeps must be inspected visually and with a hydrocarbon detector.”

Ecology agrees that requiring SEM of these particular areas is important; however, we are not going to require SEM at a frequency of more than quarterly. It is required that these areas be monitored as part of the quarterly SEM requirement.

One commenter expressed concern with the added financial burden of additional monitoring and requested that landfills that have been closed for a number of years be allowed to monitor at less frequency and at a less stringent serpentine path.

Response to comment O-2-4

Thank you for your comment. Ecology appreciates and empathizes with your concerns over costs due to the rule’s SEM requirements. Ecology has considered the potential financial burden of stricter monitoring requirements for closed MSW landfills, especially those owned by public entities. It is Ecology’s intent to require quarterly monitoring at tighter spacing intervals for MSW landfills that have higher methane generation rates. Ecology realizes that closed, or inactive, MSW landfills that meet the applicability of the authorizing statute – in that they received solid waste after January 1, 1992 – have the potential for significant declines in methane production after being closed for several years. The authorizing statute, in section RCW 70A.540.030, creates a pathway for closed or inactive MSW landfills to be exempt from the requirements of the law and rule if they can meet the following requirements:

RCW 70A.540.030(2): “Each owner or operator of either an active municipal solid waste landfill having greater than or equal to 450,000 tons of waste in place or a closed municipal solid waste landfill having greater than or equal to 750,000 tons of waste in place must calculate the landfill gas heat input ... and must submit a landfill gas heat input capacity report to the department or local authority.”

RCW 70A.540.030(2)(b): “If the landfill gas heat input capacity is greater than or equal to 3,000,000 British thermal units per hour recovered, the owner or operator must either:

(i) Comply with the requirements of this chapter and the department's implementing rules; or

(ii) Demonstrate to the satisfaction of the department or local authority that after four consecutive quarterly monitoring periods there is no measured concentration of methane of 200 parts per million by volume or greater using the instantaneous surface monitoring procedures specified Based on the monitoring results, the owner or operator must do one of the following:

(A) If there is any measured concentration of methane of 200 parts per million by volume or greater from the surface of an active, inactive, or closed municipal solid waste landfill, comply with this chapter and the department's implementing rules...

(C) If there is no measured concentration of methane of 200 parts per million by volume or greater from the surface of a closed or inactive municipal solid waste landfill, *the requirements of this chapter and the department's implementing rules adopted... no longer apply...*”.

For closed MSW landfills that cannot demonstrate surface methane concentration levels of less than 200 ppmv, via instantaneous surface monitoring, over four consecutive quarterly monitoring periods, and therefore are unable to be exempt from further requirements, Ecology has adopted rules for reduced monitoring frequency at larger spacing intervals for closed landfills that exhibit no monitored exceedances after four consecutive quarterly monitoring periods. These rules can be found in WAC 173-408-110(1)(c), (d), and WAC 173-408-120(3).

Lastly, grant funding will be made available to some entities impacted by the authorizing law and rule. More information on this can be found in the response to comment O-2-11 on page 44.

One commenter requested that that exemptions for monitoring steep/slippy slopes and other dangerous areas be added into the rule.

Response to comment O-5-3

Thank you for your comments on monitoring exemptions for steep/slippy slopes and other dangerous areas. After careful consideration, Ecology has decided not to revise language in WAC 173-408-110(1)(a) to specifically exclude these areas from SEM.

Ecology allows for alternative compliance measures to monitoring requirements (WAC

173-408-130(1)), and we feel that is more prudent to assess requested alternatives on a case-by-case basis instead of allowing an exemption for surface monitoring of these areas.

Further, Ecology has adopted the EPA approved OTM-51 method for monitoring (WAC 173-408-120(1)(b) and Appendix II of the rule), which allows for SEM to be conducted by “Unmanned Aerial Systems,” as defined in WAC 173-408-020, which would allow for the areas described above to be monitored without the potential safety hazards that personnel face when conducting monitoring via Method 21. It is Ecology’s intent to require monitoring of the whole “landfill surface” except for the “working face,” both terms being defined in WAC 173-408-020, and we believe that the approved use of OTM-51 allows for monitoring of areas that prove to be more difficult, or unsafe, as opposed to Method 21.

Monitoring Exceedances

Commenters: Janet Dobrowolski (I-15-5), Suellen Mele (I-16-4), Peter Rimbo (I-18-3), George Duvendack (B-3-1), (B-3-2), King County Solid Waste Division (A-2-6), Mariah Harrod (O-4-7), Rod Whittaker (O-5-2), (O-5-5), Katherine Blauvelt (O-10-3)

Summary: One commenter expressed concern with the exceedance and corrective action(s) follow-up timeline. The commenter requested that notifications for an exceedance take place before corrective action is taken.

Response to comment I-15-5

Thank you for your comments and questions on the exceedance, corrective action(s), and notification timeline. It should first be noted that Ecology has revised WAC 173-408-110(1)(b) to require that an “owner or operator of a MSW landfill must notify the department or local authority within two working days after all corrective actions and remonitoring”.

Exceedances must be corrected and remonitored within 10 calendar days, and a notification to Ecology or the local authority must be made within two working days of corrective actions. This is the *maximum* allotted time to correct any exceedances and notify the appropriate agency. If an owner or operator records a second exceedance in the same location, found through remonitoring, they will have another 10 days to make corrective action(s), remonitor, and then two working days to notify the appropriate agency. Owners or operators that record a third exceedance in the same location will have to take more drastic corrective action(s) and will have a maximum of 120 calendar days to achieve compliance. These requirements are as follows:

WAC 173-408-110(1)(c) and (d): “Any reading exceeding the limit specified in WAC 173-408-100 (2)(a) must be recorded and reported as an exceedance and the following actions must be taken:”

WAC 173-408-110(1)(c)(ii): “Corrective action must be taken by the owner or operator such as, but not limited to, cover maintenance or repair, and well vacuum adjustments,

and the location must be remonitored within 10 calendar days of a measured exceedance.”

WAC 173-408-110(c)(ii)(A): “If the remonitoring of the location shows a second exceedance, additional corrective action must be taken, and the location must be remonitored again within 10 calendar days of the second exceedance.”

WAC 173-408-110(c)(ii)(B): “If the remonitoring required by (c)(ii)(A) of this subsection shows a third exceedance, the owner or operator must install a new or replacement well, or an alternative active methane control approved by the department or local authority, as needed to achieve compliance no later than 120 calendar days after detecting the third exceedance.”

As evidenced by the above requirements, corrective action(s) mean that the leak must be fixed and remonitored. If there is a second exceedance, then further corrective actions and monitoring must be taken. If there is a third exceedance, then an owner or operator may need to replace a well or install a new one to fix the issue, and they have a maximum of 120 calendar days to achieve compliance. This exceedance, corrective action, remonitoring, and notification timeline applies to *all* exceedances that are found during monitoring.

Three commenters expressed concern with provisions allowing closed landfills to monitor annually after four consecutive quarters of monitoring without exceedances. One commenter requested that a provision allowing a more flexible monitoring traverse, after four successful consecutive quarters of monitoring at a tighter traverse, be deleted.

Response to comment I-16-14

Thank you for your comments on exceptions to quarterly monitoring. Ecology understands and appreciates that monitoring is the most important tool in determining whether an MSW landfill is leaking high concentrations of methane from the landfill surface. This is why our rule requires a walking pattern of 25-foot spacing intervals, as opposed to the existing federal requirements of 30-meter intervals. However, Ecology believes that it would be a significant burden on MSW landfills, especially those considered closed, to require continuous quarterly monitoring at 25-foot spacing intervals, if the owners and operators of these landfills consistently demonstrate no exceedances found on the landfill surface. In some situations, closed MSW landfills may be at declining stages of the methane generation curve, reducing the need for more frequent monitoring at a tighter traverse.

Additionally, the provisions that allow less frequent monitoring, and/or monitoring at a 100-foot traverse, as opposed to a 25-foot traverse, creates an economic incentive for owners and operators of landfills to ensure that their GCCS is operating efficiently, covers a large enough area of the landfill to collect all the gas over decomposable solid waste, and that they have sufficient cover – in all areas except for the working face – to reduce surface methane emissions, and GCCS component leaks, to the extent possible. The overarching goal of the authorizing statute, and Ecology’s rule, is to limit leaks of methane from the landfill surface and from the GCCS, and if MSW landfills can

demonstrate that they can consistently achieve this goal, then we feel it is an unnecessary burden to continue to require the most stringent monitoring requirements for these landfills.

Further, MSW landfills that are allowed to monitor at 100-foot spacing intervals – due to demonstrating no exceedances over four consecutive quarters of monitoring at 25-foot spacing intervals – will have to return to 25-foot spacing intervals upon finding any exceedances “that cannot be remediated within 10 calendar days, or upon any exceedances detected during a compliance inspection,” as stated in WAC 173-408-120(3)(a)(ii)(A).

Similarly, closed landfills that are allowed to monitor annually, will have to return to quarterly monitoring upon any exceedances. More information on this revised rule is in the response to comments O-4-7 and O-10-3 below.

Response to comments O-4-7, O-10-3

Thank you for your comments on allowances for decreased monitoring upon finding and remediating exceedances. After careful consideration, Ecology agrees that exceedances themselves, as opposed to exceedances that are remediated, are more indicative of whether closed landfills should be required to monitor quarterly or annually.

Accordingly, we have revised WAC 173-408-110(1)(c)(iii), (iv), and WAC 173-408-110(1)(d)(iii), and WAC 173-408-110(1)(e) to read: “Any exceedances of the limits specified in WAC 173-408-100 (2)(b) detected during the annual monitoring event will result in a return to quarterly monitoring of the landfill.”

One commenter requested clarification on which regulatory agency oversees the exceedance/corrective action pathway.

Response to comment I-18-3

Thank you for your comment on clarification of regulatory oversight of monitoring exceedances. WAC 173-408-110(1)(b) states that an “owner or operator of a MSW landfill must notify the department or local authority within two working days after all corrective actions and remonitoring taken to address exceedances...”

Accordingly, the only agencies that have authority to oversee corrective action(s) made are Ecology and each “local authority,” which is defined in WAC 173-408-020: "Authority" or "local authority" means any air pollution control agency whose jurisdictional boundaries are coextensive with the boundaries of one or more counties. In some cases, a local clean air agency will be the jurisdictional authority, and in other cases Ecology will be the jurisdictional authority.

Three commenters requested clarification on the exceedance/corrective action and notification process and expressed concern that the current rule creates confusion and unnecessary burden for landfills on this issue.

Response to comment B-3-1

Thank you for your comments on the corrective action(s), remonitoring, and notification timeline. After careful consideration of the comment, Ecology agrees that the proposed language on required notifications for exceedances could likely create confusion, especially in instances where there are multiple exceedances that require multiple corrective action(s). Additionally, Ecology recognizes that in many scenarios it makes sense for an owner or operator to schedule a remonitoring event that covers multiple corrective actions.

Accordingly, Ecology has revised WAC 173-408-110(1)(b), as follows: “The owner or operator of a MSW landfill must notify the department or local authority within two working days after all corrective actions and remonitoring taken to address exceedances detected pursuant to (c) or (d) of this subsection, and subsection (2)(c) of this section.”

Note, however, that the required corrective action(s) and remonitoring timeline, is still within 10 calendar days, as specified in WAC 173-408-110(1)(c)(ii) and WAC 173-408-110(d)(ii).

Response to comment B-3-2

Thank you for your comment on actions required for re-monitoring and third exceedances. After careful consideration of your comment, Ecology has decided not to revise the language in WAC 173-408-110(1)(c)(ii)(B). Ecology believes that owners and operators should take proactive steps in forecasting any issues identified in their collection systems, such as improperly functioning wells, and schedule any repairs or new installations accordingly. Ecology realizes that there is the possibility of extended periods of inclement weather which may impact an owner or operator’s ability to meet the 120-calendar day timeline to achieve compliance, especially if the source of the exceedance is hard to locate. However, this is why our authorizing statute and rule allow for alternative compliance measures for certain requirements of the rule. As stated in WAC 173-408-130(1), “(1) The owner or operator of a MSW landfill may request alternatives to the compliance measures, monitoring requirements, and test methods and procedures set forth in WAC 173-408-080, 173-408-110, and 173-408-120.” If an owner or operator foresees issues with meeting the 120-day timeline for achieving compliance, they may request, in writing, an alternative timeline to Ecology, as outlined in WAC 173-408-130.

Lastly, in accordance with WAC 173-408-180 (Civil penalty), Ecology will waive penalties in the event an owner or operator is actively taking corrective actions to control any methane exceedances. This process is described in WAC 173-408-180(1)(b), as follows:

“(b) In order to demonstrate eligibility for waiver of a civil penalty under this subsection, the owner or operator of the landfill must provide the following information to the department within 30 calendar days of issuance of the notice of violation:

(i) A description of all corrective action(s) that have been initiated to control methane exceedances;

- (ii) A description of all corrective action(s) that are being planned to control methane exceedances, including an implementation schedule of the actions;
- (iii) Any supporting documentation associated with the corrective actions; and
- (iv) A written certification meeting the requirements of WAC 173-408-150.”

For landfills located in a local authority’s jurisdiction, the local authority may waive penalties under the same circumstances but is not required to do so by the statute.

Response to comment A-2-6

Thank you for your comment on the required notification timeline for corrective action(s). Ecology realizes that there are not any current parallel federal requirements regarding notifications for corrective action(s) made to address exceedances; however, we believe that this rule will help ensure that corrective action(s) are made in a timely manner. WAC 173-408-170(6)(c) requires that all exceedances and corrective actions taken be reported on an annual basis, but this rule does not create oversight on whether the corrective actions are made within 10 calendar days, as required by WAC 173-408-110(1)(c)(ii) and (1)(d)(ii). This would create a situation where the implementation of WAC 173-408-180 (Civil penalty) is ineffective due to exceedances and corrective actions only being reported annually.

Further, the requirement in WAC 173-408-110(1)(b) does not explicitly state that notifications be made via reporting. Ecology wants to give flexibility on how the required notifications are made, which is why we require that “Any communications, submittals, or requests required by this chapter must be in a format acceptable to the department or the local authority...”, pursuant to WAC 173-408-140.

Lastly, WAC 173-408-110(1)(b) states that “...the owner or operator of a MSW landfill may request alternative compliance measures to replace the requirements of this subsection pursuant to WAC 173-408-130.” This rule creates additional flexibility for owners and operators, in the event that owners and operators need additional time to take corrective action(s) due to reasons beyond their control.

Response to comment O-5-2

Thank you for your comment on the required notification timeline for corrective action(s). As stated in the above response, Ecology realizes that there are not any current parallel federal requirements regarding notifications for corrective action(s) made to address exceedances; however, we believe that this rule will help ensure that corrective action(s) are made in a timely manner. WAC 173-408-170(6)(c) requires that all exceedances and corrective actions taken be reported on an annual basis, but this rule does not create oversight on whether the corrective actions are made within 10 calendar days, as required by WAC 173-408-110(1)(c)(ii) and (1)(d)(ii). This would create a situation where the implementation of WAC 173-408-180 (Civil penalty) is ineffective due to exceedances and corrective actions only being reported annually.

One commenter expressed concern with the removal of language before the rule was proposed and requests that Ecology add this language back into the adopted rule.

Response to comment O-5-5

Thank you for your comments on removal of language from WAC 173-408-110(1)(c)(iii), (d)(iii), and (e). Ecology realizes that both CARB, as well as OR DEQ, allow for annual monitoring of “any closed or inactive areas on an active MSW landfill,” however after careful consideration Ecology has decided to leave this language out of the adopted rule.

First, we believe that the term “inactive area,” when referring to an active MSW landfill, can lend itself to confusion and lead to a situation where areas on an active MSW landfill that are still generating methane gas are mistakenly categorized as “inactive” and interpreted as being exempt from the rule’s requirements. It is for this reason that we have removed the definition of “inactive area” from the rule. More information on this can be found in response to comment I-16-6 on page 29.

Permanent Shutdown and Removal of the GCCS

Commenters: Suellen Mele (I-16-3), Mariah Harrod (O-4-16), Rod Whittaker (O-5-4)

Summary: Three commenters requested clarification or revisions to the permanent shutdown and removal process.

One commenter requested clarifying language for the allowance of shutdown and removal of a GCCS if the provisional shutdown monitoring requirements exhibit exceedances. The commenter also requested monitoring at a tighter grid throughout the whole provisional shutdown process.

Response to comment I-16-3

Thank you for your comment. After careful consideration, Ecology has revised the rule to include compliance with the SEM concentration limits as a condition that also must be met before a landfill may initiate a provisional shutdown of its GCCS. Specifically, the SEM concentration limits must be met on three successive test dates. This parallels the nonmethane organic compound compliance requirements for GCCS removal in 40 CFR 63.1957(b)(3).

WAC 173-408-090 has been revised, as follows: “The owner or operator of a closed or inactive MSW landfill may propose to the department or local authority that a gas collection and control system be decommissioned and removed provided the following requirements are met:

(b) The landfill has had no exceedances of the methane concentration limits, as determined by in surface emissions monitoring conducted in accordance with WAC 173-408-100(2), on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart.”

Regarding the required walking pattern for SEM to shut down a GCCS, Ecology disagrees that the walking pattern should consist of 25-ft spacing intervals for each required SEM event. Ecology has already added language, in WAC 173-408-090(1)(b),

as described above, to require three successive SEM events before a MSW landfill can undergo provisional shutdown, and eventually shutdown and removal, of the GCCS.

One commenter requested clarity on the 15-year operational provision, also requests that the rule be aligned with a federal removal criteria standard.

Response to comment O-4-16

Ecology is revising the rule to include the conditions that the landfill must be closed, and the owner or operator has submitted a closure notification that has been approved by Ecology or the local authority in accordance with WAC 173-408-170(8). These conditions are parallel to the federal requirements for GCCS removal in 40 CFR 63.1957(b)(1).

WAC 173-408-090 has been revised as follows: “The owner or operator of a closed or inactive MSW landfill may propose to the department or local authority that a gas collection and control system be decommissioned and removed provided the following requirements are met:

(1)(a) The gas collection and control system has been in operation for at least 15 years after an owner or operator has submitted a closure notification that has been approved, pursuant to WAC 173-408-170(8), or the owner or operator demonstrates to the satisfaction of the department or local authority that, due to declining gas flow, the MSW landfill will be unable to operate the gas collection and control system for a 15-year period after closure...”

Additionally, WAC 173-408-170(8)(b) requires that an “owner or operator of the landfill must submit a 30-year projection of their estimated HIC calculation, according to the procedures in Appendix I, as part of this report.”

One commenter requested that the length of monitoring required during provisional shutdown of the GCCS be shortened to align with California’s landfill methane rule.

Response to comment O-5-4

After considering the California Air Resources Board landfill methane emissions rule’s language on the process and criteria for a permanent shutdown of a GCCS, Ecology concluded that the additional detail in this rule would provide better clarity and predictability for owners and operators of landfills that must comply with the rule’s GCCS provisions. In requiring eight quarters of monitoring that meets the methane SEM compliance standard, the rule takes an approach that parallels compliance and confirmational monitoring requirements in other Ecology rules where a regulated entity is seeking to exit regulatory oversight.

Ecology notes the commenter’s reference to rules issued by the California Air Resources Board and the Southern California Air Quality Management District (SCAQMD). In reviewing those rules, Ecology found that four quarters of compliant data is identified in the CARB rule as a criterion for other purposes than supporting a decision on the permanent shutdown and removal of a GCCS. In the cited SCAQMD rule, four quarters of compliant data is used as a criterion for temporary exemption from certain requirements of that rule, subject to periodic review. It does not appear to be used as a criterion for permanent shutdown and removal of a GCCS.

Policy and Purpose

Commenters: Peter Rimbo (I-18-1), Mariah Harrod (O-4-1), Rod Whittaker (O-5-1), Larken Buchanan (O-6-1)

Summary: Four commenters expressed concern that the rule deviates from the intent of the authorizing statute.

Two commenters expressed concern that the rule will only apply to certain portions of landfills and requested that the final rule apply to all parts of landfills.

Response to comments I-18-1, O-6-1

Thank you for your comment. Our rule has adopted numerous requirements for the purposes of collecting and controlling methane generated from MSW landfills which are subject to the authorizing law and rule. Our authorizing law, however, does exempt certain areas on a MSW landfill from the methane concentration limits specified in RCW 70A.540.050(1)(a) and (b). RCW 70A.540.050(3) describes which areas are not subject to these concentration limits, as follows:

“(3) The requirements of this section do not apply to:

- (a) The working face of the landfill;
- (b) Areas of the landfill surface where the landfill cover material has been removed for the purpose of installing, expanding, replacing, or repairing components of the landfill cover system, the landfill gas collection and control system, the leachate collection and removal system, or a landfill gas condensate collection and removal system;
- (c) Areas of the landfill surface where the landfill cover material has been removed for law enforcement activities requiring excavation; or
- (d) Areas of the landfill in which the landfill owner or operator, or a designee of the owner or operator, is engaged in active mining for minerals or metals.

To clarify, the statutory provisions quoted above do not mean that these areas of a MSW landfill are not subject to other requirements of the rule (such as monitoring), but that they are not subject to the methane concentration limits stated in RCW 70A.540.050 of the authorizing statute.

One commenter expressed concern that the statute’s mandate to create rules that are informed by other regulatory agencies has led to a replication of more lenient requirements from existing rules and has requested that Ecology strengthen rules to achieve the statute’s goal of reducing methane emissions from landfills.

Response to comment O-4-1

Thank you for your comments. Ecology appreciates your concern regarding adopting a rule that adheres to the mandate set forth in the authorizing law, Chapter 70A.540 RCW. Ecology believes it has developed a strong rule, and throughout the rule development process has carefully considered numerous comments and concerns from a wide variety of stakeholders. These comments helped shape rule development, and in many cases strengthened the rule based on these comments.

By design, the authorizing statute replicates many of the baseline requirements set forth in CARB's landfill methane regulation, including waste in place reporting (RCW 70A.540.030) (§ 95463), landfill gas heat input capacity calculations (70A.540.030)(§ 95463), gas collection and control system requirements (70A.540.040(3))(§ 95464(b)), (70A.540.040(4))(§ 95464(b)(2)), and the methane concentration limits specified in 70A.540.050(1)(§ 95465(a), to name a few. Given this, many of the requirements in our rule are mandated by requirements in our authorizing law that replicate CARB's landfill methane regulation. We believe these are strong requirements and have given us a foundation on which to build the rule.

There are many requirements of the rule that align with existing federal requirements for the purposes of avoiding duplicative requirements for larger MSW landfills that must comply with federal requirements. Some of these major requirements include maximum methane concentration limits, as determined by instantaneous surface monitoring, and the timeline for corrective action(s) for exceedances identified through SEM. We also adopted some of the more stringent requirements from Oregon's rule, such as design plan requirements and requirements for the permanent shutdown and removal of the GCCS.

In some instances, we adopted rules that are more stringent than those adopted by California or Oregon due to the requirements of the authorizing statute. These include creation of a process to exempt MSW landfills that have current CERCLA response action(s) onsite, set forth in WAC 173-408-040; initial waste in place reporting, as required in WAC 173-408-060; initial heat input capacity reporting, as required in WAC 173-408-070; removal of language that would allow for annual monitoring "of any closed or inactive areas on an active landfill"; removal of language that would allow for closed or inactive MSW landfills to monitor upon remediating exceedances found within 10 calendar days; requiring a 30-year projection of estimated heat input capacity for landfills that are closing, as required in WAC 173-408,170(8)(b); allowing other approved EPA test methods for monitoring; and, adoption of the EPA-approved OTM-51 monitoring method, for the purposes of giving owners and operators flexibility in utilizing new technologies for monitoring.

Throughout this rulemaking, Ecology has met with both CARB and the OR DEQ on numerous occasions to discuss the efficacy of implementation of their rules. This engagement was vital in making determinations on which rules would be most effective for the goal of collecting and controlling more methane from MSW landfills impacted by the rule. This engagement helped us make a determination on requirements that would increase administrative and/or operational burden for owners or operators of landfills without much benefit in reducing methane emissions.

Thank you for your comment requesting a confirmation that Ecology's adopted rule conforms with the applicable standards under our authorizing statute and federal law. Our authorizing statute, RCW 70A.540, creates many explicit requirements for MSW landfills, in which Ecology has adopted into the rule. These requirements include definitions of terms in RCW 70A.540.010; application of rules in RCW 70A.540.020; waste in place reporting and calculation of landfill gas heat input capacity in RCW 70A.540.030; gas collection and control system requirements in RCW 70A.540.040; methane concentration limits in RCW 70A.540.050; monitoring requirements in RCW 70A.540.060; records and reporting requirements in RCW 70A.540.070; requirements for

test methods in RCW 70A.540.080; GCCS capping or removal in RCW 70A.540.090; alternative compliance measures in RCW 70A.540.100; request for demonstration in RCW 70A.540.110; requirements for violation of the statute, in RCW 70A.540.120; and, requirements for assessment and collection of fees in RCW 70A.540.130. Where explicitly stated, requirements from the authorizing statute are adopted into the rule, as mandated by the statute.

In other instances, Ecology is given a mandate by the statute to adopt additional rules, pursuant to RCW 70A.540.020(3), as follows:

- (3) The department must adopt rules to implement this chapter. The rules adopted by the department must be informed by landfill methane regulations adopted by the California air resources board, the Oregon environmental quality commission, and the United States environmental protection agency.

Ecology's rules must be informed by the regulatory agencies listed in RCW 70A.540.020(3), though they do not need to replicate them. Ecology has adopted rules that align with the applicable standards under federal law for the purposes of avoiding administrative and operational burden for larger MSW landfills that already must meet federal requirements, though this is not required for Ecology to do. Many requirements of the rule, as mandated by the authorizing statute, are more stringent than current federal requirements of MSW landfills (e.g., waste in place thresholds to determine applicability to further requirements of the rule.)

One commenter requested that the rule stay consistent with CARB's landfill methane regulation.

Response to comment O-5-1

Thank you for your comment and engagement during the development of the statute and rule. As described in the response to comment O-4-1 above, Ecology is aware that the authorizing statute, RCW 70A.540, replicates many of the baseline requirements set forth in CARB's landfill methane regulation. Ecology is also aware that some owners and operators of MSW landfills in Washington also own or operate MSW landfills in California. By design, our adopted rule aligns with many of the requirements in CARB's landfill methane regulation; for instance, the waste in place and heat input capacity calculation thresholds in determining further applicability to the rule match California's requirements. Ecology feels that the alignment of these major requirements will ease the burden for owners and operators who must comply with multiple jurisdictions' requirements.

However, pursuant to RCW 70A.540.020(3), Ecology's rules adopted must be "informed by" CARB (as well as the Oregon environmental quality commission and EPA), but do not need to replicate them unless expressly mandated by the authorizing statute.

California's rule was adopted in 2010, and since that time the regulatory landscape and information gathered to make informed regulatory decisions has changed, and Ecology saw opportunities to strengthen the adopted rule in numerous areas, while still using CARB's rule as a guide. As described in the last paragraph of the response to comment O-4-1 above, Ecology met with CARB numerous times throughout the rulemaking process to discuss the reasoning and intent behind their rule; these discussions informed the shaping of our adopted rule.

Recordkeeping Requirements

Commenters: Janet Dobrowolski (I-15-14), Suellen Mele (I-16-10), Jennifer Lennon (O-2-15), Mariah Harrod (O-4-17), (O-4-18), (O-4-19)

Summary: Four commenters requested clarification and suggested revisions to recordkeeping requirements.

One commenter requested clarification on recordkeeping for methane monitoring surface readings.

Response to comment I-15-14

Thank you for your comment and request for clarification on recordkeeping. Ecology requires recordkeeping for all instantaneous surface readings of both 200 ppmv or greater, as well as readings above 500 ppmv, pursuant to WAC 173-408-160(1)(a)(v) and (vi). The difference is that areas that exhibit readings above 500 ppmv are considered an “exceedance,” as defined in WAC 173-408-020, and must be remediated (corrective action) and remonitored, as required in WAC 173-408-110(1)(c)(ii), (ii)(A), and (ii)(B). The 200 ppmv surface methane measurement will be used as a determination of applicability to further requirements of the rule, as required by RCW 70A.540.030(2)(b)(ii)(A), (B), and (C), of the authorizing statute.

One commenter requested that a key recordkeeping requirement should align with Oregon’s rule, and that the records should be in electronic format and available to the public.

Response to comments I-16-10

Thank you for your comment. Ecology does not require that records be maintained in an electronic format; however, when there is a record request made by Ecology or the local authority, as required by WAC 173-408-160, the requested records “must be in a format acceptable to the department [Ecology] or the local authority”, as stated in WAC 173-408-140. Once these records are submitted to the appropriate agency, they are subject to public records requests.

Ecology appreciates your recommendation to require records of all instantaneous surface readings of 100 ppmv or greater, which aligns with Oregon’s rule, however, Ecology has decided to require records of readings of 200 ppmv or greater to align with the statutory requirements in RCW 70A.540.050(2)(b)(ii)(A), (B), and (C). No change to the rule required.

Thank you for your comment and request to maintain records on mitigation measures for the release of methane from the “working face,” as defined in WAC 173-408-020. Ecology does not require records for mitigation measures to minimize methane emissions from the working face of landfills, however we included language to WAC 173-408-100(4) (methane concentration limits) in order to minimize the size and duration of the daily working face, as follows:

“(4) The requirements of this section do not apply to the following areas, provided that the owner or operator ensures these areas are no larger in size and no longer in duration than is necessary for the specified activity:

(a) The “working face” of the landfill, as defined in WAC 173-408-020;”

One commenter expressed concern with a requirement for maintaining and providing historical records of waste in place.

Response to comment O-2-15

Thank you for your comment and request for clarification on records (and reporting) for waste in place for MSW landfills that have been in operation before these records were required. Ecology only requires current records (and reporting) of waste in place. WAC 173-408-160(1)(a)(ix) requires records kept for the “Annual solid waste acceptance rate and the current amount of waste in place.”

Additionally, the first required waste in place report only requires “The estimated waste in place, in tons, as of December 31st of the previous year”, as stated in WAC 173-408-170(1)(b). As the rule is adopted in 2024, the waste in place report requires an estimated waste in place as of December 31st, 2023.

One commenter requested that Ecology adopt Oregon’s language on recordkeeping for various elements of the rule.

Response to comment O-4-17

Thank you for your comments on aligning recordkeeping requirements with Oregon’s existing rule. Many of our recordkeeping requirements already align with Oregon’s requirements. When Ecology proposed our rule, we removed “non-routine maintenance and construction activity” from the language, and revised the language as follows:

WAC 173-408-160(1)(a)(xiv): “Records of any actions involving disturbance or removal of areas of the landfill surface where the landfill cover material has been removed for the purpose of installing, expanding, replacing, or repairing components of the landfill cover system, the landfill gas collection and control system, the leachate collection and removal system, or a landfill gas condensate collection and removal system.” Ecology appreciates your informal comment on this section and agreed that “non-routine maintenance and construction activity” was ambiguous, which prompted us to revise this subsection when we proposed our rule. In addition to including records on any actions described above in WAC 173-408-160(1)(a)(xiv), we also require the following to be included in recordkeeping for this subsection:

- (A) A description of the actions being taken, the areas of the MSW landfill that will be affected by these actions, the reason the actions are required, and any landfill gas collection system components that will be affected by these actions.
- (B) Disturbance or removal start and finish dates, projected equipment installation dates, and projected shut down times for individual gas collection system components.
- (C) A description of the mitigation measures taken to minimize methane emissions and other potential air quality impacts.

Regarding recordkeeping on waste in place, Ecology requires records kept on the “Annual solid waste acceptance rate and the *current amount of waste in place*,” as required by WAC 173-408-160(1)(a)(ix). Ecology feels it is unnecessary and overburdensome to require owners and operators to keep records on monthly solid waste acceptance rate, and current waste composition. When owners and operators calculate

their heat input capacity, to meet the requirements of WAC 173-408-070, they will have to also calculate their ANDOC, or Anaerobically Degradable Organic Carbon, and use waste composition values to do so. This methodology is in Appendix I of the rule.

Regarding recordkeeping for instantaneous surface readings, Ecology is aligning with California's rule and requiring records to be kept for "all instantaneous surface readings of 200 ppmv or greater," as required by WAC 173-408-160(1)(a)(v). The reason we require records for surface readings of 200 ppmv or greater, as opposed to 100 ppmv, is because the 200 ppmv concentration is a metric used in determining further applicability to the statute and rule, as described in RCW 70A.540.030(2)(b)(ii), (ii)(A), (ii)(B), and (ii)(C) of the authorizing statute.

One commenter requested that the rule require comprehensive records for open flares.

Response to comments O-4-18, O-4-19

Thank you for your comment. Ecology's intention for recordkeeping requirements on the operation of open flares is based on the statutory requirement that open flares meet federal requirements, as follows:

RCW 70A.540.040(4)(a): "The open flare must meet the requirements of 40 C.F.R. Sec. 60.18 (as last amended by 73 Fed. Reg. 78209, December 22, 2008)". Ecology requires the following recordkeeping on open flares, for the lifetime of each flare:

WAC 173-408-160(1)(b)(v): "For an open flare: The flare type (i.e., steam-assisted, air-assisted, or nonassisted); all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 C.F.R. § 60.18 (as last amended by 73 Fed. Reg. 78209 (December 22, 2008)), which is incorporated by reference herein; and records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent."

As stated above, Ecology already requires records on pilot or flare flame monitoring and bypass flow rate measurements. Ecology has decided, in other instances, to not require other records on open flares that we have deemed unnecessary in making a determination on whether the open flare can meet the statutory requirement of methane destruction efficiency, as required by RCW 70A.540.040. This decision was also made, in part, due to the statutory requirement that open flares must be phased out by the date set forth in the statute in RCW 70A.540.040(4)(b).

Repairs and Temporary Shutdown

Commenters: King County Solid Waste Division (A-2-4), Mariah Harrod (O-4-13)

Summary: Two commenters requested revisions on requirements for repairs and temporary shutdown of a GCCS.

One commenter requested an addition to the language to include an event that would require temporary shutdown of the system.

Response to comment A-2-4

Thank you for your comment. Ecology agrees that “preventing or extinguishing” landfill fires would both necessitate the temporary shutdown of a GCCS, due to safety concerns. Ecology has revised WAC 173-408-090 as follows: “The requirements of subsections (3)(a) and (b) and (7) of this section do not apply to individual landfill gas collection system components that must be temporarily shut down to repair or modify components of the gas collection system, to connect new landfill gas collection system components to the existing system, to prevent or extinguish landfill fires...”.

One commenter requested an addition to the language to include a timeline for how long a system can be temporarily shut down for.

Response to comment O-4-13

Thank you for your comment. Ecology agrees with your assertion that the existing language was unclear regarding when a GCCS should be operable following repairs or temporary shutdown of the system. Ecology also understands that in some situations, it will be unfeasible to return a GCCS to operation in five days due to action(s) that necessitate the shutdown. Ecology has revised this section of the rule to specify the timeline requested in the comment, and has also added language to accommodate for situations where the timeline cannot be met, as follows:

WAC 173-408-080(9)(b): “Efforts to repair the collection or control system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation no more than five calendar days following initial shutdown. In the event the collection and control system cannot be returned to operation in five calendar days following initial shutdown, the owner or operator must submit a notification to the department or local authority pursuant to WAC 173-408-140.”

Reporting Requirements

Commenters: Janet Dobrowolski (I-15-15), Suellen Mele (I-16-9), I-16-11), (I-21-3), Ed Dzedzy (O-1-1), Mariah Harrod (O-4-9), (O-4-10), Elyse Hochstadt (O-7-2), Ellie Garland (O-8-2), Heather Trim (OTH-2-3)

Summary: Seven commenters expressed concern and want clarification on the rule’s reporting requirements. Some of the commenters requested additional reporting requirements.

Four commenters expressed that reports, namely surface methane emissions reports, should be made available to the public in a timely manner.

Response to comments 1-21-3, O-7-2, O-8-2, OTH-2-3

Thank you for your comments and for voicing concerns on timeliness and transparency for reports submitted. Ecology believes that our rule already requires both timely and thorough reporting on numerous requirements. For example, our notification process for surface methane exceedances requires a notification to Ecology or the local authority “within two working days after all corrective actions and remonitoring taken to address exceedances,” pursuant to WAC 173-408-110(1)(b). Additionally, reporting is required for all surface emissions monitoring events, as required by WAC 173-408-170(6):

(a) Date(s) of all monitoring;

- (b) Location of the monitoring grid coordinates on a topographic map; and
- (c) Measured concentration of methane in ppmv, exceedances, and all corrective actions taken.

Ecology realizes the importance of transparency and accessibility to the public for reports submitted. Although Ecology cannot require that records and reports that are in the sole possession of private entities be accessible to the public, any records (including reports and other documentation) maintained by state and local agencies are available for public inspection as required by the Public Records Act (RCW 42.56). There are exemptions for certain types of records that can be requested; See Ecology’s response to comments I-8-5 and I-16-8 on page 21.

Additional response to comment I-21-3

As stated in response to comments I-8-5 and I-16-8, regarding a public comment process for alternative compliance measure submittals, Ecology believes that the timeline for owners and operators of MSW landfills to request alternative compliance measures and Ecology to review, and either approve or disapprove requested alternatives, is too short to hold a public comment period for each alternative compliance measure request that is submitted.

Additionally, and as explained in the response to comments I-8-5, I-9-4, I-15-12, I-22-1, and O-10-2 (Alternative compliance measures), all alternative compliance measure requests must be submitted directly to Ecology in writing and will be subject to a thorough review before the request is approved or denied. Additionally, Ecology has the authority to evaluate different criteria, such as compliance history, inspection records, surface monitoring records, etc., in making a determination on whether to approve or disapprove alternative compliance measures.

Additional response to comment OTH-2-3

Regarding electronic reporting, Ecology is developing an electronic reporting for all initial reports required by WAC 173-408-170(1) and (2), and all annual reports required by WAC 173-408-170(3), (4), (5), (6), and (7). The requirement for electronic reporting is not adopted into the rule, however, WAC 173-408-140 requires that “Any communications, submittals, or requests required by this chapter must be in a format acceptable to the department or the local authority, as applicable.”

One commenter requested clarification on which agency will be reviewing and analyzing reports and expressed concern with multiple jurisdictions receiving and reviewing reports.

Response to comment I-15-15

Thank you for your comments and inquiries on review and analysis of reporting data. RCW 70A.540.070 creates the requirements for which agency reports must be submitted to. In some cases, either Ecology or the “local authority,” as defined in WAC 173-408-020, will review reports received. For example, RCW 70A.540.070(3), (4), and (6), requires that certain reports be submitted to Ecology *or* the local authority, as follows:

“(3) The owner or operator of a municipal solid waste landfill that ceases to accept waste must submit a closure notification to the department or local authority within 30 days of ceasing to accept waste.

(4) The owner or operator of a municipal solid waste landfill must submit a gas collection and control system equipment removal report to the department or local authority within 30 days of well capping or the removal or cessation of operation of the gas collection, treatment, or control system equipment.

(6) The owner or operator of an active municipal solid waste landfill with fewer than 450,000 tons of waste in place must submit a waste in place report to the department or local authority.”

One specific report, the annual report (WAC 173-408-170(3)), must be submitted to *both* Ecology and the local authority, as required by RCW 70A.540.070(5): “The owner or operator of either an active municipal solid waste landfill with 450,000 or more tons of waste in place or a closed municipal solid waste landfill with 750,000 or more tons of waste in place must prepare an annual report for the period of January 1st through December 31st of each year... Each annual report must be submitted to the department and local authority during the subsequent calendar year...”.

The data in the reports described above, specifically the annual report required by WAC 173-408-170(3), and which must be submitted to both Ecology and the local authority, will be used in implementation of the rule. For example, the annual waste in place report, as required by WAC 173-408-170(4), will be used for the purposes of determining whether active MSW landfills exceed the threshold of 450,000 tons of waste in place and must meet further requirements of the rule. The annual surface emissions monitoring report will contain data on all monitoring events, including all exceedances found and resulting corrective action(s) taken, as well as other required metrics, pursuant to WAC 173-408-170(6). This data will primarily be used in determining ongoing compliance during implementation of the rule. The annual report also requires information on GCCS operations, pursuant to WAC 173-408-170(7). This includes the total volume and average composition of landfill gas collected, the percent of methane destruction efficiency of gas control devices, and copies of source tests for gas control devices. This data will be used for numerous purposes, including compliance, and will be important in assessing the efficiency of gas collection and control systems in collecting and destroying methane generated from the landfill.

One commenter expressed that all reports and plans required by the rule should be submitted electronically, made available to the public upon request, and that electronic submission should be specified in the rule. The same commenter also strongly recommended that document submissions go to both Ecology and the local authority.

Response to comment I-16-9

Thank you for your comment. Regarding requiring submission of reports electronically, please see response to comment OTH-2-3.

Ecology has made the determination that other submittals, such as reports and plans, can be submitted in any format, if the format is acceptable to the Ecology or the local authority as stated in WAC 173-308-140. Other reports, such as the closure notification and the equipment removal report, must be submitted to either Ecology or the local authority pursuant to RCW 70A.540.070(3) and (4), depending on where the landfill is

located, and we believe that the local authorities should make the determination on what format they would like to receive reports.

In a previous response to comments I-8-5 and I-16-8, we have explained that all records maintained by state and local agencies are subject to public disclosure pursuant to the Public Records Act (RCW 42.56). This includes any reports and plans, once submitted to Ecology and/or the local authorities.

Additionally, and as directed by the authorizing statute, RCW 70A.540.070 (Records and reporting requirements), certain reports must be submitted to Ecology *and* the local authority, while others must be submitted to either Ecology *or* the local authority.

For example, RCW 70A.540.070(5) states that “each annual report must be submitted to the department and local authority,” and RCW 70A.540.070(3) states that “the owner or operator... that ceases to accept waste must submit a closure notification to the department or local authority.”

One commenter requested that language for reporting on GCCS operations be added to the rule.

Response to comment I-16-11

Thank you for your comments and requests for additional reporting for various requirements of the rule. After careful consideration, Ecology has decided to require annual reporting on component leak monitoring and has revised WAC 173-408-170(6) as follows:

“(6) Surface emissions monitoring report: Any owner or operator who conducts surface emissions monitoring pursuant to WAC 173-408-110(1), and component monitoring pursuant to WAC 173-408-110(2)(c), must include the following information in the annual report required by subsection (3) of this section:

- (a) Date(s) of monitoring;
- (b) Location of the monitoring grid coordinates on a topographic map; and
- (c) Measured concentration of methane in ppmv, exceedances, and all corrective actions taken.”

Thank you for your comment on treated gas being shipped offsite. While Ecology agrees that different methods of transport for any treated gas that is shipped offsite may impact overall emissions, WAC 173-408 is solely focused on reducing emissions from sources at a landfill, and therefore consider this comment out of scope.

Regarding adding reporting requirements for repairs and temporary shutdown of gas collection and control systems, Ecology believes that requiring reporting on this would be overly burdensome to owners and operators of landfills, as well as for agency staff who must review these reports. It is for this reason that we only require reporting on elements that we feel are most crucial to aid in compliance during implementation of the rule. For example, requiring reporting on monitoring, exceedances, and corrective action(s) taken. For other requirements of the rule, we felt that extensive recordkeeping suffices. Ecology requires extensive recordkeeping for any actions that would lead to a temporary shutdown of a GCCS, including a description of the mitigation measures taken to prevent the release of methane or other emissions into the ambient air, during these actions. These

records, along with all the other records required by the rule, must be provided by the owner or operator to the department or local authority within five business days of a request, as required by WAC 173-408-160(1).

One commenter expressed concern with reporting requirements for smaller, closed landfills that have closed under an existing WAC, and requested that these landfills be exempt from reporting requirements.

Response to comment O-1-1

Thank you for your comment. Ecology understands that there are many smaller, closed MSW landfills across the state that will likely not need to meet further requirements of the rule, other than the initial waste in place reporting requirements specified in WAC 173-408-060(1) and WAC 173-408-170(1). RCW 70A.540.020 states that “This chapter [the law] applies to all municipal solid waste landfills that received solid waste after January 1, 1992...”, and the required initial waste in place report is crucial in determining whether MSW landfills will need to meet the requirements of RCW 70A.540.030(2) of the authorizing statute, as well as possible further requirements.

For a detailed discussion of the rule’s definitions and requirements for “active,” “closed,” and “inactive” MSW landfills, see Ecology’s response to comments O-2-3 on page 33. Ecology has developed a process for inactive municipal solid waste landfills, which closed under Chapter 173-304 WAC and report less than 450,000 tons of waste in place, as required by initial reporting, to be exempt from further requirements of the rule. More information on this process can be found in response to comment O-2-3.

Additionally, Ecology understands initial reporting may create a burden for smaller, inactive MSW landfills, and we have revised the rule to only require basic information to meet the initial waste in place reporting requirements under WAC 173-408-170(1):

(1) Each owner or operator of a MSW landfill that meets the requirements of WAC 173-408-060(1) must submit an initial waste in place report to the department. The report must be submitted within 90 days of the effective date of this chapter and include the following information:

(a) The facility information set forth in subsection (3)(b)(i) [MSW landfill name, owner and operator, address, and facility/site ID (FS ID) number] of this section.

(b) The estimated waste in place, in tons, as of December 31st of the previous year.

Inactive MSW landfills that report more than 450,000 tons of waste in place, will also have to submit an initial landfill gas heat input capacity report in accordance with WAC 173-408-170(2).

One commenter requested that all monitoring readings be reported and recorded and requested that owners and operators report their surface emissions monitoring in a timelier manner.

Response to comment O-4-9

Thank you for your comment on recording and reporting methane readings. Ecology understands that most hydrocarbon detectors are equipped with technology that allows for instantaneous recordings of methane measurement readings. However, Ecology is

only concerned with reporting of readings that are considered an “exceedance,” as defined in WAC 173-408-020. The required reporting for exceedances, as well as location of the monitoring grid coordinates, measured concentration of methane, and corrective action(s) taken, is important information that will be used during implementation and enforcement of the rule, and it is Ecology’s intent to decrease the administrative burden of reporting – for both owners and operators and agency staff reviewing reports – by only requiring information necessary in order to achieve this goal.

The commenter also requested that the rule’s language be revised to align with OR DEQ’s reporting requirements.

Response to comment O-4-10

Thank you for your comment on aligning with OR DEQ’s rule language on surface emissions reporting. After careful consideration, Ecology has decided to not revise the rule to align with Oregon’s surface emissions reporting requirements. It has been Ecology’s intent throughout the rulemaking process to decrease the burden of reporting requirements, for both owners and operators of MSW landfills, as well as for agency staff who must review reports, and instead adopt rules that focus on remediating exceedances as soon as possible and require reporting of these events on an annual basis. Instead of increasing frequency of reporting on surface methane monitoring, we have adopted a notification process, as required by WAC 173-408-110(1)(b), as follows:

“The owner or operator of a MSW landfill must notify the department or local authority within two working days after all corrective actions and remonitoring taken to address exceedances detected pursuant to (c) or (d) of this subsection, and subsection (2)(c) of this section. The notification must include a description of the corrective actions taken.”

This notification is required for exceedances detected during instantaneous, integrated, and GCCS component monitoring. Ecology believes that reporting is an integral tool in assisting compliance and increasing transparency, which is why we require annual reporting of all corrective actions taken to address instantaneous, integrated, and GCCS component monitoring exceedances, pursuant to WAC 173-408-170(6). However, we believe that our required notification process is more effective in identifying and addressing exceedances, as opposed to additional reporting on these actions.

Test Methods and Procedures

Commenters: Kim Brighton (I-9-3), Leslie Morgan (I-12-4), (I-22-3), Janet Dobrowolski (I-15-9), (I-15-10), (I-15-11), (I-15-19), (I-23-1), Suellen Mele (I-16-12), (I-21-1), Peter Rimbo (I-18-2), Nancy Lust (I-24-2), (O-3-2), Kevin Singer (B-2-1), George Duvendack (B-3-3), (B-3-4), (B-3-5), David Barron (B-4-1), (B-4-2), John Dawson (A-1-6), King County Solid Waste Division (A-2-7), Jennifer Lennon (O-2-6), (O-2-8), (O-2-10), (O-2-16), Mariah Harrod (O-4-3), (O-4-4), Rod Whittaker (O-5-6), Larken Buchanan (O-6-2), Ellie Garland (O-8-1), Heather Trim (O-9-1), (OTH-2-1), Katherine Blauvelt (O-10-1)

Summary: Eighteen commenters provided a variety of comments on the rule’s test methods and procedures section.

Seventeen commenters expressed that the latest technologies be used for monitoring. Some commenters suggested allowing for drone monitoring, others want to see it expressly authorized or as the required method under the rule.

Response to comments I-9-3, I-12-4, I-15-9, I-16-12, I-18-2, I-21-1, I-22-3, I-23-1, I-24-2, B-2-1, B-3-3, B-4-1, O-3-2, O-6-2, O-8-1, O-9-1, O-10-1, OTH-2-1

Thank you for your comments. After careful consideration, Ecology has decided to adopt OTM-51 as an approved alternative to EPA Reference Method 21 (WAC 173-408-120(1)(a)). Ecology has revised rule language, as follows:

WAC 173-408-120(1): “Hydrocarbon detector specifications: Any instrument used for the measurement of methane must be a hydrocarbon detector or other equivalent instrument approved by the department or local authority that meets the following calibration, specifications, and performance criteria, as applicable:

- (a) EPA Reference Method 21, Determination of Volatile Organic Compound Leaks, 40 C.F.R. Part 60, Appendix A (as last amended 65 Fed. Reg. 61744 (October 17, 2000)), which is incorporated by reference herein, except as follows:
 - (i) "Methane" replaces all references to volatile organic compounds (VOC).
 - (ii) The calibration gas shall be methane.
- (b) EPA Other Test Method 51 (OTM-51) as specified in Appendix II of this chapter.
- (c) Other approved EPA test methods with concurrent department or local authority approval.”

Ecology has also added a section, Appendix II, into the rule outlining the required methodology for use of OTM-51.

Ecology, however, will not be *requiring* that monitoring be done by OTM-51, and allows for one of the other EPA-approved methods described above in WAC 173-408-120(1).

Six commenters requested that remote sensing technologies for monitoring, either by satellites or planes, be leveraged to identify “super-emitter” events. Some commenters expressed that these technologies should be required as part of the monitoring process.

Response to comments I-16-12, O-3-2, O-4-3, O-4-4, O-8-1, O-10-1, OTH-2-1

Thank you for your comments regarding the use of aerial surveys and/or satellite monitoring to identify leaks and plumes from the surface of MSW landfills. Ecology agrees that these technologies have and will continue to be important in identifying super-emitter events of methane as the technologies become more readily available. Ecology will continue to assess the efficacy of leveraging these technologies to meet the requirements of the rule; however, at this time, Ecology will not be requiring their use in order to identify methane leaks at MSW landfills.

Additional response to comment I-16-12

Thank you for your comment. Ecology has determined there is already a mechanism for third parties to report issues, concerns, or complaints to Ecology or the local air quality

authority which includes satellite data indicating leaks. Ecology has determined that an additional mechanism is not required for the rule.

Additional response to comments O-4-3

Thank you for your comment. After consideration Ecology has revised the language to clarify that this particular methodology only applies to Method 21.

WAC 173-408-120(3)(a)(i) “Testing must be performed by holding the hydrocarbon detector's probe within three inches of the landfill surface while traversing the grid except where alternatives to EPA Reference Method 21 are used.”

Additional response to comment OTH-2-1

Thank you for your comment. Ecology has determined there is already a mechanism for third parties to report issues, concerns, or complaints to Ecology or the local air quality authority which includes satellite data indicating leaks. Ecology has determined that an additional mechanism is not required for the rule.

One commenter expressed concern and wants clarification on the gap between the rule’s monitoring test methods and procedures with local permitting test methods and procedures. The commenter also expressed concern with areas that may be potentially excluded from monitoring.

Response to comment I-15-10

Thank you for your comments. Ecology has determined that the 50,000 square foot grids align with both the California and Oregon landfill methane regulations.

Landfills will be required to report monitoring values and corresponding grid coordinates as required by WAC 173-408-170(6). That data will be available to Ecology or the local clean air agency (local authority) for compliance review. Chapter 173-408 WAC establishes substantive emissions requirements which jurisdictional clean air agencies are required to enforce within their jurisdictions. The landfill methane rule’s surface emissions monitoring traverse requirements are more stringent than the federal or current state standards. The local permitting authority must enforce the more stringent local and state regulations.

Three commenters expressed concern with a requirement for hydrocarbon monitoring methodology, either because it precludes the use of other monitoring technologies or because of climactic constraints. One commenter suggested a revision to this requirement.

Response to comments I-15-11, O-2-16, O-4-3

Thank you for your comment. After consideration Ecology has revised the language to clarify that this particular methodology only applies to Method 21.

WAC 173-408-120(3)(a)(i) “Testing must be performed by holding the hydrocarbon detector's probe within three inches of the landfill surface while traversing the grid except where alternatives to EPA Reference Method 21 are used.”

Additional response to O-2-16

Thank you for your question. In the case where a landfill has on-site conditions not conducive to accurate and timely monitoring, they may request alternative compliance

measures (WAC 173-408-130) to replace the requirements of the monitoring section subject to approval from the local permitting authority.

Additional response to O-4-3

Thank you for your comments. After consideration, Ecology has adopted the EPA approved OTM-51 method for monitoring (WAC 173-408-120(1)(b) and Appendix II of the rule), which allows for surface emissions monitoring to be conducted by “Unmanned Aerial Systems,” as defined in WAC 173-408-020, which would allow for the areas described above to be monitored. At this time, Ecology is only accepting EPA-approved methods for methane detection.

Two commenters suggested revisions to the monitoring walking pattern spacing requirements following no exceedances after four consecutive quarters of monitoring.

Response to comments B-3-4, A-2-7

Thank you for your comments and suggestions. Ecology understands that the required monitoring grids described in WAC 173-408-120(3)(a) may shift or change if the owner or operator moves from 25 to 100-ft spacing intervals while conducting SEM. Ecology is allowing flexibility for both owners and operators in determining how these grids should be established, and only requires that the 50,000 square foot grids cover the entire surface of the landfill, with the exception of the working face, and that the owner or operator meets the walking pattern requirements in WAC 173-408-120(3). If the grids need to shift due to a change in the walking pattern, Ecology requires that the surface monitoring plan be updated to accommodate this change, as required by WAC 173-408-110(1)(a).

Three commenters expressed concern with the current wind speed testing requirements and suggested revisions to the language.

Response to comments B-3-5, B-4-2, O-2-10

Thank you for your comments. Ecology recognizes the difficulty of topography and variation in conditions across facilities. For this reason, Ecology or the local authority may approve alternatives to wind speed surface testing, as stated in WAC 173-408-120(3)(a)(iii): “The department or local authority may approve alternatives to this wind speed surface testing termination for MSW landfills consistently having measured winds in excess of these specified limits.” Landfills can request alternative compliance measures under WAC 173-408-130.

Two commenters requested clarification on the current heat input capacity calculation methodology.

Response to comments A-1-6, O-2-8

Ecology conducts its own State-level waste characterization studies. Ecology will issue further implementation guidance on waste characterization using EPA, state, and local data.

For landfills with carbon adsorptions systems the landfill gas HIC must be determined with the actual landfill gas flow rate and the methane concentration in percent by volume. For landfills with passive venting systems the landfill must choose the higher value of either: the first order decay methane calculation or the actual landfill gas flow rates and

the methane concentration in percent by volume. Site-specific data may be substituted when available. The local permitting authority is responsible for accepting site-specific data from landfills within their jurisdiction.

One commenter requested that we remove a monitoring test method requirement to align with California's rule.

Response to comment O-5-6

Thank you for your comment. During the rulemaking process and talks with regulators from CARB, Ecology determined that requirements for additional fidelity in data were necessary, which is why we have included this language.

Third Party Owners and Operators

Commenters: John Dawson (A-1-3)

Summary: One commenter suggested additions to the rule in multiple sections to highlight what requirements third party owners and operators are subject to.

Response to comment A-1-3

Thank you for your comment. Ecology has considered the suggestions for changes to language and has made the following changes to the rule to improve clarity:

- WAC 173-408-110(2): “The owner or operator, or third-party owner or operator, of a MSW landfill with a gas collection and control system must monitor the system according to the following procedures”;
- WAC 173-408-110(2)(b): “The owner or operator, or third-party owner or operator, may request alternative compliance measures to replace the requirements of this subsection in accordance with WAC 173-408-130”;
- WAC 173-408-120(4): “The owner or operator of a MSW landfill, or third-party owner or operator of a landfill gas control system, must measure leaks using a hydrocarbon detector meeting the requirements of subsection (1) of this section”;
- WAC 173-408-130(1): “The owner or operator of a MSW landfill, or third-party owner or operator, may request alternatives to the compliance measures, monitoring requirements, and test methods and procedures set forth in WAC 173-408-080, 173-408-110, and 173-408-120”; and
- WAC 173-408-160(1): “The owner or operator of a MSW landfill, or a third-party owner or operator, must maintain records as prescribed in this subsection”.