

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

IN THE MATTER OF APPROVING A ) Proposed Decision Regarding  
NEW CONTAMINANT SOURCE AT ) **ORDER No. 08AQ-C087**  
ROOSEVELT REGIONAL LANDFILL ) First Revision

To: **Regional Disposal Company**  
**Roosevelt Regional Landfill**  
**500 Roosevelt Grade Road**  
**Roosevelt, Washington 99356**

1.0 PROJECT SUMMARY:

On June 26, 2008, Regional Disposal Company submitted a Notice of Construction application to the Department of Ecology (Ecology) to install and operate a second landfill gas collection and destruction system (“landfill gas flare”) at the existing Roosevelt Regional Landfill near Roosevelt, Klickitat County, Washington. The ~~proposed-John Zinc~~ free-standing and shrouded flare will process up to 6,000 standard cubic feet of landfill gas per minute.

A June 30, 2009, source test of the installed flare, revealed that hydrogen chloride emissions are emitted at a higher rate than originally considered. Subsequent analyses, demonstrates that a higher hydrogen chloride emission rate results in ambient impacts below the Acceptable Source Impact Level and thus is approved herein.

The Department of Ecology APPROVES this proposal by issuing this ORDER. The project location is 500 Roosevelt Grade Road in Roosevelt, Washington within Section 27, Township 4 North, Range 21 East, Willamette Meridian, in Klickitat County.

In relation to the above, the Department of Ecology, State of Washington, pursuant to Revised Code of Washington (RCW) 70.94.152, makes the following determinations:

- 1.1 The proposed source qualifies as a new source of air contaminants under Washington Administrative Code (WAC) 173-400-110, and a new source of toxic air pollutants under WAC 173-460-040.
- 1.2 The proposed source is not a new major stationary source or major modification to a major stationary source that is subject to the Prevention of Significant Deterioration permitting requirements of WAC 173-400-700 through 750.
- 1.3 The proposed source will be located in an area which is in attainment or unclassifiable for all criteria pollutants.

- 1.4 The proposed source, if constructed and operated as herein required, will not delay the attainment date for an area not in attainment, or cause or contribute to a violation of any ambient air quality standard. Impacts from the project were evaluated using AERMOD, a refined dispersion model recommended by the United States Environmental Protection Agency (EPA). All potential criteria and toxic air pollutant emissions comply with the ambient air quality standards and the requirements of Chapter 173-460 WAC, Controls for New Sources of Toxic Air Pollutants, respectively.
- 1.5 The proposed source, if constructed and operated as herein required, will be in accordance with applicable rules and regulations, as set forth in Chapter 173-400 WAC and Chapter 173-460 WAC, and the operation thereof, at the location proposed, will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, and emission standards adopted under Chapter 70.94 RCW.
- 1.6 The proposed source, if constructed and operated as herein required, will employ Best Available Control Technology (BACT) to control emission of criteria pollutants, and Best Available Control Technology for Toxics (T-BACT) to control emission of toxic air pollutants.
- 1.7 The project has satisfied the environmental review requirements of the State Environmental Policy Act (SEPA). A *Final Supplemental Environmental Impact Statement* (Final SEIS) was issued by Klickitat County Planning Department, acting as lead agency, on February 25, 2002.

**THEREFORE, IT IS ORDERED** that the project as described in said Notice of Construction application and more specifically detailed in plans, specifications and other information submitted to the Department of Ecology in reference thereto, is approved for construction, installation and operation, provided the following conditions are met:

## 2.0 APPROVAL CONDITIONS

### 2.1 LAWS AND REGULATIONS

- 2.1.1 The proposed project shall comply with all current state laws and regulations, including Chapter 70.94 RCW, Washington Clean Air Act; Chapter 173-400 WAC, General Regulations for Air Pollution Sources; and Chapter 173-460 WAC, Controls for New Sources of Toxic Air Pollutants.

2.1.2 The proposed project shall comply with all current federal laws and regulations, including Title 40, Code of Federal Regulations (CFR), Part 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills.

2.2 ESTIMATED EMISSIONS

The project may produce up to the following estimated annual emissions under the ordered physical and operational conditions:

Pollutant	Emissions	
Particulate Matter (PM <sub>10</sub> )	26.5	tons per year
Particulate Matter (PM <sub>2.5</sub> )	26.5	tons per year
Carbon Monoxide (CO)	70.7	tons per year
Nitrogen Oxides (NO <sub>x</sub> )	53.0	tons per year
Sulfur Dioxide (SO <sub>2</sub> )	70.7	tons per year
Volatile Organic Compounds (VOC)	17.7	tons per year
Nitric Oxide	34.6	tons per year
Hydrogen Chloride (HCl)	<del>70.7</del> 40,283	pounds per year
Hydrogen Sulfide (H <sub>2</sub> S)	70.7	pounds per year
<b>Organic Toxic Air Pollutants (TAPs)</b>		
1,1,1-Trichloroethane	6.1	pounds per year
1,1,2 Trichloro-1,2,2-trifluoroethane	8.6	pounds per year
1,1,2,2-Tetrachloroethane	7.7	pounds per year
1,1,2-Trichloroethane	6.1	pounds per year
1,1-Dichloroethane	4.4	pounds per year
1,1-Dichloroethane	4.5	pounds per year
1,2 Dichloro-1,1,2,2-tetrafluoroethane	7.8	pounds per year
1,2 Dichloropropane	5.2	pounds per year
1,2,4 Trichlorobenzene	16.6	pounds per year
1,2,4 Trimethylbenzene	5.5	pounds per year
1,2-Dichloroethane	9.1	pounds per year
1,3 Butadiene	2.5	pounds per year
1,3,5 Trimethylbenzene	5.5	pounds per year
1,3-Dichlorobenzene	6.7	pounds per year
1,4 Dioxane	8.1	pounds per year
1,4-Dichlorobenzene	6.7	pounds per year
2,2,4 Trimethylpentane	5.2	pounds per year
2-Hexanone	9.2	pounds per year
4-Methyl-2-pentanone	4.6	pounds per year
Acetone	16.1	pounds per year
Acrylonitrile	2.4	pounds per year
Allyl Chloride	35.7	pounds per year
Benzene	3.6	pounds per year

Pollutant	Emissions	
Benzyl Chloride	11.6	pounds per year
Bromoform	11.6	pounds per year
Bromomethane	4.4	pounds per year
Carbon Disulfide	58.8	pounds per year
Carbon Tetrachloride	7.1	pounds per year
Chlorobenzene	5.2	pounds per year
Chlorodifluoromethane	7.9	pounds per year
Chloroethane	3	pounds per year
Chloroform	5.5	pounds per year
Chloromethane	2.3	pounds per year
cis-1,2-Dichloroethene	4.4	pounds per year
cis-1,3 Dichloropropene	5.1	pounds per year
Cyclohexane	3.9	pounds per year
Dichlorodifluoromethane	5.5	pounds per year
Dichlorofluoromethane	4.7	pounds per year
Ethanol	10.6	pounds per year
Ethyl Acetate	4	pounds per year
Ethylbenzene	4.9	pounds per year
Heptane	4.6	pounds per year
Hexachlorobutadiene	19	pounds per year
Hexane	92.6	pounds per year
Isopropyl Alcohol	5.5	pounds per year
m- & p-Xylenes	4.9	pounds per year
MEK	6.6	pounds per year
Methanol	58.8	pounds per year
Methylene Chloride	7.8	pounds per year
Methyl tert-butyl ether (MTBE)	4	pounds per year
o-Xylene	4.9	pounds per year
Styrene	4.8	pounds per year
Tetrachloroethene	7.6	pounds per year
Tetrahydrofuran	3.3	pounds per year
Toluene	10	pounds per year
trans-1,2-Dichloroethene	4.4	pounds per year
Trans-1,3-Dichloropropene	5.1	pounds per year
Trichloroethene	12	pounds per year
Trichlorofluoromethane	6.3	pounds per year
Vinyl Acetate	3.9	pounds per year
Vinyl Bromide	4.9	pounds per year
Vinyl Chloride	2.9	pounds per year

2.3 BACT

As required by WAC 173-400-113(2), this project shall use Best Available Control Technology (BACT) to control emission of carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds, and particulate matter. The following is considered BACT for the specified pollutant:

- 2.3.1 Particulate Matter – Proper operation and maintenance of the flare as described in the Operations and Maintenance manual required under section 2.7 below. Landfill gas shall be treated by a knockout vessel prior to being combusted in the landfill gas flare.
  - 2.3.2 Carbon Monoxide – Flare design and proper operation and maintenance as described in the Operations and Maintenance manual required under section 2.7 below. Flare CO emissions shall not exceed 0.08 pounds per million British thermal units (lb/MMBtu).
  - 2.3.3 Nitrogen Oxides – Flare design and proper operation and maintenance as described in the Operations and Maintenance manual required under section 2.7 below. Flare NO<sub>x</sub> emissions shall not exceed 0.06 lb/MMBtu.
  - 2.3.4 Volatile Organic Compounds – The use of a standard enclosed flare to combust landfill gas. The flare shall be operated at a temperature not lower than 1500 degrees Fahrenheit with a retention time of at least 0.6 seconds. Control efficiency of non-methane organic compounds (NMOC) entering the flare shall be at least 98.0 weight percent or the outlet concentration of NMOC shall be reduced to less than 20 parts per million by volume, dry basis, as hexane at three (3) percent oxygen.
  - 2.3.5 Sulfur Dioxide – SO<sub>2</sub> emissions vary according to the sulfur content of the landfill gas and are essentially uncontrolled by this project. Flare SO<sub>2</sub> emissions shall not exceed 0.08 lb/MMBtu.
- 2.4 T-BACT
- This project is required by WAC 173-460-040(4)(b) to use Best Available Control Technology for Toxics (T-BACT) to control emission of toxic air pollutants. The following technologies and procedures shall be used to attain T-BACT for the specified pollutants:
- 2.4.1 Hydrogen Sulfide (H<sub>2</sub>S) and other sulfur compounds: The use of a standard enclosed flare to combust landfill gas. H<sub>2</sub>S and other unoxidized sulfur compounds shall undergo a minimum 99 percent destruction or removal.
  - 2.4.2 Organic compounds: The use of a standard enclosed flare to combust landfill gas. The flare shall be operated at a temperature not lower than 1500 degrees

Fahrenheit with a retention time of at least 0.6 seconds and a control efficiency of at least 99 percent.

## 2.5 PRODUCTION AND EQUIPMENT RESTRICTIONS

- 2.5.1 The project shall be limited to one standard enclosed (shrouded) flare operated at a maximum flow rate of 6,000 standard cubic feet per minute (scfm) of landfill gas, and a maximum heat input rate of 201.69 MMBtu/hr.
- 2.5.2 An interlock or some other failsafe device shall prevent landfill gas from entering the flare if the temperature in the combustion chamber is measured at less than 1500 degrees Fahrenheit, except during the first 15 minutes following startup of the flare.
- 2.5.3 The flare shall be equipped with a landfill gas supply shut-off safety system, which in the event of emergency, automatically isolates the flare from the landfill gas supply line, shuts off the blower, and triggers a failure alarm to notify a responsible party of the shutdown. The safety system shall be tested monthly to ensure it is working properly and the results recorded. Tests may be conducted electronically, without an actual flare shutdown.
- 2.5.4 As currently permitted, the flare shall be designed with a discharge point for combustion products that is at least 60 feet above ground level.

## 2.6 EMISSION LIMITS

2.6.1 The following emission rates shall not be exceeded at the flare outlet:

Pollutant or Parameter	Emission Limit	
Total PM <sub>10</sub>	6.1	lb/hr
CO	16.1	lb/hr, and
	0.08	lb/MMBtu
NO <sub>x</sub>	12.1	lb/hr
SO <sub>2</sub>	16.1	lb/hr, and
	100	ppm <sub>v</sub>
Non-methane Organic Compounds (NMOC)	4.0	lb/hr, and
	≥ 98.0%	destruction efficiency or 20 ppmvd, as hexane, at 3% O <sub>2</sub>
H <sub>2</sub> S	0.0081	lb/hr

Pollutant or Parameter	Emission Limit
HCl	<del>0.0081</del> 4.6 lb/hr
Organic TAPs	The individual pollutant estimate included in Condition 2.2, and ≥ 99% destruction efficiency, calculated per Condition 2.6.2.
Opacity	5% Method 9, 40 CFR part 60, Appendix A

2.6.2 The destruction efficiency of organic TAPs shall be calculated as:

$$\left( 1 - \left( \frac{\text{total mass of all detected TAPs in exhaust}}{\text{total mass of all detected TAPs in inlet}} \right) \right) \times 100$$

where, “detected TAP” equals any TAP found in the inlet in a quantity greater than or equal to its detection limit. All detected TAPs, in the exhaust, less than their detection limit shall be set equal to their detection limit for purposes of determining total mass.

## 2.7 OPERATION AND MAINTENANCE REQUIREMENTS

2.7.1 The flare shall be operated at a temperature not lower than 1500 degrees Fahrenheit, with a retention time of at least 0.6 seconds.

2.7.2 The flare will be operated and maintained in accordance with an Operations and Maintenance (O&M) manual, to be prepared by the permittee.

2.7.3 O&M manual development shall be completed within 30 days of installation of the new flare. Manufacturer’s instructions may be referenced. The O&M manual shall be updated to reflect any modifications to the source or operating procedures.

2.7.4 Failure to follow the requirements of the O&M manual and the adequacy of the O&M manual will be two of the factors considered by Ecology in determining whether the equipment was properly operated and maintained.

2.7.5 Regular maintenance records shall be kept at the source. These O&M records shall be available for inspection by Ecology, organized in a readily accessible manner, and retained for at least five (5) years.

2.7.6 A legible copy of the O&M manual shall be kept on-site in a location known by and available to employees in direct operation of the described equipment and shall be available for inspection by Ecology.

2.7.7 The O&M manual shall at a minimum include:

2.7.7.1 Normal operating parameters for the emissions unit;

2.7.7.2 A maintenance schedule for the emissions unit;

2.7.7.3 Monitoring and recordkeeping requirements;

2.7.7.4 A description of the monitoring procedures; and

2.7.7.5 Actions for abnormal emissions unit operation.

## 2.8 MONITORING REQUIREMENTS

The following monitoring shall be accomplished to enable the permittee and Ecology ensure that emissions control equipment is operating properly:

2.8.1 The landfill gas flow rate to the flare shall be monitored by a flow indicator and recorder, which must operate continuously.

2.8.2 The flare shall be equipped with a temperature indicator and recorder which measures and records the gas temperature in the flare stack. This temperature indicator and recorder must operate continuously. The temperature indicator shall be located above the flame zone, at least three (3) feet below the top of the flare shroud and at least 0.6 seconds downstream of the burner.

2.8.3 A pressure differential indicator must be continuously maintained across the flame arrester.

2.8.4 Monthly readings of the energy content (BTU content) of the gas at the inlet to the flare shall be taken using a test method proposed by the permittee, and approved in writing by Ecology in advance of the scheduled test. Once initially approved by Ecology, this test method may be used for subsequent BTU testing, provided that none of the testing procedures, as originally proposed, are modified.

2.8.5 All recording devices must be synchronized based on the time of the day.

2.8.6 Continuously, as used in conditions 2.8.1, 2.8.2, and 2.8.3, shall mean 95 percent of the monthly flare operation, except for periods of monitoring system down-time, provided that the permittee demonstrates that the down time was not a result of inadequate design, operation, or maintenance, or any other reasonably

preventable condition, and any necessary repairs to the monitoring system were conducted in a timely manner.

## 2.9 TESTING REQUIREMENTS

- 2.9.1 A source test shall be performed within 180 days of the first operation of the flare permitted herein. Source testing shall be conducted at intervals not greater than five (5) years for the life of the permitted flare.
- 2.9.2 During source testing, the landfill gas flow rate shall be the maximum flow achievable, through variables within the control of landfill operators, with all flow control adjustments at normal settings.
- 2.9.3 Source tests shall be the responsibility of the permittee and shall be performed by an independent testing firm.
- 2.9.4 Ecology shall be notified, and a test plan shall be submitted for approval by Ecology, at least 30 days prior to any testing. The test shall include all of the requirements of 40 CFR §60.18, General Control Device Requirements.
- 2.9.5 Sampling ports and platforms must be provided. The ports must meet the requirements of Method 1, 40 CFR part 60, Appendix A. Adequate permanent and safe access to the test ports must be provided.
- 2.9.6 Testing shall consist of three (3) separate runs.
- 2.9.7 Emission unit operation during the tests must be representative of actual operating conditions. A complete record of operation related parameters (e.g., temperature, flow, differential pressure) shall be kept during the tests to correlate operation with emissions.
- 2.9.8 The tests shall be conducted at the flare inlet and exhaust, and shall include, but may not be limited to, the following:

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Pollutant or Parameter to be tested	Suggested method or equivalent (Reference Method (RM) from 40 CFR part 60, Appendix A, unless otherwise specified)
Velocity and flow rate	RM 2C
Moisture	RM 4
BTU content (inlet only)	TO-15
O <sub>2</sub>	RM3A

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Pollutant or Parameter to be tested	Suggested method or equivalent (Reference Method (RM) from 40 CFR part 60, Appendix A, unless otherwise specified)
CO <sub>2</sub>	RM3A
NO <sub>x</sub> (exhaust only)	RM 7E
CO (exhaust only)	RM 10
SO <sub>2</sub> (exhaust only)	RM 6
Total PM (exhaust only)	RM 5 and RM 202 (40 CFR part 51)
NMOC	RM 25A (as hexane)
Methane	RM 25A (as methane)
Speciated Organic TAPs	TO-15
HCl	RM 26
H <sub>2</sub> S and other speciated sulfur compounds	RM 16
Opacity (exhaust only)	RM 9

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## 2.10 RECORDKEEPING AND REPORTING REQUIREMENTS

2.10.1 The permittee shall keep records of complaints received from the public, Ecology, or any other entity, in relation to this project. Any complaints shall be promptly addressed and assessed. A record shall be maintained of the permittee's action to investigate the validity of the complaint and what, if any, corrective action was taken in response to the complaint. Ecology shall be notified within three (3) days of receipt of any complaint.

2.10.2 Within 90 days of conducting any testing required under Section 2.9, the permittee shall submit a written report of the results to Ecology.

2.10.3 All records required by this Order shall be maintained in a readily retrievable manner for a period of five (5) years or more and shall be made available at the source to authorized representatives of Ecology during any site inspection.

## 2.11 GENERAL CONDITIONS

2.11.1 On-site open burning is prohibited.

2.11.2 This Order shall become invalid if construction is not commenced within 18 months after receipt of final approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a

reasonable time. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified.

- 2.11.3 It shall be grounds for rescission of this approval if physical operation of the emission unit is discontinued for a period of eighteen (18) months or more. Ecology may extend the 18-month period upon a satisfactory showing that an extension is justified.
- 2.11.4 Access to the source by the United States Environmental Protection Agency or the Department of Ecology shall be permitted upon request for the purposes of compliance assurance inspections. Failure to allow access is grounds for revocation of the Order approving the Notice of Construction application.
- 2.11.5 Operation of the equipment must be conducted in compliance with all data and specifications submitted as part of the Notice of Construction application unless otherwise approved by Ecology. Any activity which is undertaken by the permittee or others, in a manner which is inconsistent with the application and this determination, shall be subject to Ecology enforcement under applicable regulations.
- 2.11.6 It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order.
- 2.11.7 Nothing in this determination shall be construed so as to relieve the permittee of its obligations under any state, local, or federal laws or regulations.
- 2.11.8 A legible copy of this Order shall be displayed onsite at all times in a place known to source employees.

All plans, specifications and other information submitted to the Department of Ecology relative to this project and further documents and any further authorizations or approvals or denials in relation thereto shall be kept at the Central Regional Office of the Department of Ecology in the “Air Quality Controlled Sources” files and by such action shall be incorporated herein and made a part hereof.

Nothing in this approval shall be construed as obviating compliance with any requirement of law other than those imposed pursuant to the Washington Clean Air Act and rules and regulations thereunder. Any violation of such rules and regulations or of the terms of this approval shall be subject to the sanctions provided in Chapter 70.94 RCW.

Authorization may be modified, suspended or revoked in whole or part for cause, including, but not limited to, the following:

- I. Violation of any terms or conditions of this authorization;
- II. Obtaining this authorization by misrepresentation or failure to disclose fully all relevant facts.

The provisions of this authorization are severable and, if any provision of this authorization or application of any provision to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this authorization, shall not be affected thereby.

**APPEAL INFORMATION:**

You have a right to appeal this permit. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the “date of receipt” of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the “date of receipt” of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). “Date of receipt” is defined at Revised Code of Washington (RCW) 43.21B.001(2).

Be sure to do the following:

- Include a copy of (1) the permit you are appealing and (2) the application for the permit.
- Serve and file your appeal in paper form; electronic copies are not accepted.

**1. To file your appeal with the Pollution Control Hearings Board**

Mail appeal to:

The Pollution Control Hearings Board  
PO Box 40903  
Olympia, WA 98504-0903

OR

Deliver your appeal in person to:

The Pollution Control Hearings Board  
4224 – 6th Ave SE Rowe Six, Bldg 2  
Lacey, WA 98503

**2. To serve your appeal on the Department of Ecology**

Mail appeal to:

The Department of Ecology  
Appeals Coordinator  
P.O. Box 47608  
Olympia, WA 98504-7608

OR

Deliver your appeal in person to:

The Department of Ecology  
Appeals Coordinator  
300 Desmond Dr SE  
Lacey, WA 98503

**3. And send a copy of your appeal to:**

Susan Billings  
Department of Ecology  
Central Regional Office  
15 West Yakima Avenue, Suite 200  
Yakima, Washington 98902-3452

*For additional information, visit the Environmental Hearings Office Website:  
<http://www.eho.wa.gov>*

*To find laws and agency rules, visit the Washington State Legislature Website:  
<http://www1.leg.wa.gov/CodeReviser>*

**DATED at Yakima, Washington this [day] day of [month], 2010.**

**Reviewed By:**

PROPOSED DECISION  
Lynnette A. Haller, P.E.  
Air Quality Engineer  
Department of Ecology

**Approved By:**

PROPOSED DECISION  
Susan M. Billings  
Air Quality Section Manager  
Department of Ecology