

**Section I: AQMD BACT Determinations**  
**Application No.: TP-B-0482**  
**Equipment Category – Flare, Landfill Gas**

|                                |                      |                     |
|--------------------------------|----------------------|---------------------|
| <b>1. GENERAL INFORMATION</b>  |                      | DATE: 12/30/2005    |
| A. MANUFACTURER: John Zink Co. |                      |                     |
| B. TYPE: Enclosed Ground Flare | C. MODEL: ZULE       |                     |
| D. STYLE: Forced Air           |                      |                     |
| E. APPLICABLE AQMD RULES:      |                      |                     |
| F. COST: \$ (NA)               | SOURCE OF COST DATA: |                     |
| G. OPERATING SCHEDULE:         | 24 HRS/DAY           | 7 DAYS/WK 52 WKS/YR |

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| <b>2. EQUIPMENT INFORMATION</b>  |   | APP. NO.: TP-B-0482 |
| A. FUNCTION: Burns product gas from decomposing landfill waste.        |   |                     |
| B. MAXIMUM HEAT INPUT: 115.5 MMBtu/hr (design)                         | C. MAXIMUM THROUGHPUT: 3500 scfm (design) |                     |
| D. BURNER INFORMATION: NO.: Multiple TYPE: 24" dia. coiled tip, premix |   |                     |
| E. PRIMARY FUEL: Landfill Gas  | F. OTHER FUEL:                            |                     |
| G. OPERATING CONDITIONS: Steady at approx. 3000-3200 scfm input.       |   |                     |

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| <b>3. COMPANY INFORMATION</b>  |                            | APP. NO.: TP-B-0482 |
| A. NAME: Waste Management of New Hampshire   | B. SIC CODE: 4953          |                     |
| C. ADDRESS: Turnkey Recycling & Environmental Enterprise, 64 Turnkey Way<br>CITY: Rochester STATE: NH ZIP: |                            |                     |
| D. CONTACT PERSON: Bill Howard   | E. PHONE NO.: 603-330-2105 |                     |

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| <b>4. PERMIT INFORMATION</b>  |  | APP. NO.: TP-B-0482                                  |
| A. AGENCY: New Hampshire Dept. of Environmental Services                                | B. APPLICATION TYPE: new construction    |  |
| C. AGENCY CONTACT PERSON: Michelle Andy   | D. PHONE NO.: 603-271-6793               |  |
| E. PERMIT TO CONSTRUCT/OPERATE INFORMATION:<br><input type="checkbox"/> CHECK IF NO P/C | P/C NO.: TP-B-0482<br>P/O NO.: TP-B-0482 | ISSUANCE DATE: 11/26/2001<br>ISSUANCE DATE: 1/6/2003 |
| F. START-UP DATE: June 2002   |  |  |

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| <b>5. EMISSION INFORMATION</b>  |  | APP. NO.: TP-B-0482 |
| <b>A. PERMIT</b>  |  |                     |
| A1. PERMIT LIMIT: Maximum lb/hr emissions: NOx-2.9, CO-6.93, PM10-2.32, SO2-1.66. NMOC-98% destruction efficiency or 20 ppm@3%O2 as hexane. |  |                     |

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| <b>5. EMISSION INFORMATION</b>  |  | APP. NO.: TP-B-0482 |
| A2. BACT/LAER DETERMINATION: Lb/MMbtu limits: NO <sub>x</sub> -.025, CO-.06. Lb/hr limits in 5A1 were based on these maximum concentrations (design was for 550 Btu/scf landfill gas, 3500 scfm input).   |  |                     |
| A3. BASIS OF THE BACT/LAER DETERMINATION: Vendor guarantee  |  |                     |
| <b>B. CONTROL TECHNOLOGY</b>  |  |                     |
| B1. MANUFACTURER/SUPPLIER: John Zink Co.  |  |                     |
| B2. TYPE: Low-emission burner system  |  |                     |
| B3. DESCRIPTION: Landfill gas and air are premixed prior to entering the flare. This requires an air blower as opposed to natural draft used in conventional landfill gas flares. The burners are enlarged relative to conventional landfill gas flare burners to accommodate the larger volume throughput. Landfill gas and air are injected to the mixer at 15 In. W.C. versus 5 In. W.C. landfill gas pressure used in conventional flare. |  |                     |
| B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: ISSUANCE DATE:<br>P/O NO.: ISSUANCE DATE:   |  |                     |
| B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE:<br>ACTUAL CONTAMINANT LOADING: BLOWER HP:   |  |                     |
| B6. WARRANTY: .025 lb/MMbtu NO <sub>x</sub> , .06 lb/MMBtu CO   |  |                     |
| B7. PRIMARY POLLUTANTS: VOC   |  |                     |
| B8. SECONDARY POLLUTANTS: NO <sub>x</sub> , CO  |  |                     |
| B9. SPACE REQUIREMENT: Flare dimensions 12.5' D x 44' H. Additional plan area required for air blower and duct, venturi flow meter and static mixer.  |  |                     |
| B10. LIMITATIONS:   |  | B11. UNUSED         |
| B12. OPERATING HISTORY: The flare has been in use since startup in June 2002. Burners were replaced once due to differential thermal expansion problems. Problems were also experienced with burner pluggage in cold weather. A system was added to warm, dry and clean the inlet air. Facility personnel believe that initial design problems have now been solved and plan to purchase a second ZULE flare                                  |  |                     |
| B13. UNUSED   |  | B14. UNUSED         |
| <b>C. CONTROL EQUIPMENT COSTS</b>   |  |                     |
| C1. CAPITAL COST: <input type="checkbox"/> CHECK IF INSTALLATION COST IS INCLUDED IN EQUIPMENT COST<br>EQUIPMENT: \$      INSTALLATION: \$      (NA) SOURCE OF COST DATA:   |  |                     |
| C2. ANNUAL OPERATING COST: \$      (NA) SOURCE OF COST DATA:  |  |                     |
| <b>D. DEMONSTRATION OF COMPLIANCE</b>   |  |                     |
| D1. STAFF PERFORMING FIELD EVALUATION:<br>ENGINEER'S NAME:      INSPECTOR'S NAME: Pamela Monroe      DATE: 12/1/2005  |  |                     |
| D2. COMPLIANCE DEMONSTRATION: The facility is required to report all flare malfunctions. Based on data received to date, the flare is operating satisfactorilly.  |  |                     |
| D3. VARIANCE:      NO. OF VARIANCES: None      DATES:<br>CAUSES:  |  |                     |

**5. EMISSION INFORMATION**

APP. NO.: TP-B-0482

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| D4. VIOLATION:  | NO. OF VIOLATIONS: <b>None</b> | DATES:              |       |
| CAUSES:   |                                |                     |       |
| D5. MAINTENANCE REQUIREMENTS:   | D6. UNUSED                     |                     |       |
| D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:  |                                |                     |       |
| DATE OF SOURCE TEST: <b>7/11/2002, 6/29/2005</b>  |                                | CAPTURE EFFICIENCY: |       |
| DESTRUCTION EFFICIENCY:   |                                | OVERALL EFFICIENCY: |       |
| SOURCE TEST/PERFORMANCE DATA:   |                                |                     |       |
| Date  | 7/11/2002                      | 6/29/2005           |       |
| LFG Flow, scfm  | 3451                           | 3888                | 3646  |
| %CH4  | 51.5                           | 51.7                | ----- |
| Btu/scf (HHV)   | 513.9                          | 515.2               | ----- |
| CO2, % (dry)  | 7.3                            | 7.2                 | 8.0   |
| O2, % (dry)   | 12.4                           | 12.6                | 12.3  |
| H2O, %  | 8.8                            | 8.2                 | 7.6   |
| NOx, lb/MMBtu (ppmvd@15%O2)   | .014 (3.6)                     | .018 (4.6)          | (1.6) |
| CO, lb/MMBtu (ppmvd@15%O2)  | .013 (5.3)                     | .009 (3.9)          | ----- |
| NMOC, lb/MMBtu (ppmvd@15%O2)  | <.0014 (<0.5)                  | <.0014 (<0.5)       | ----- |
| OPERATING CONDITIONS:   |                                |                     |       |
| TEST METHODS: NOx-USEPA Method 7E, CO-USEPA Method 10, NMOC-USEPA Method 18 using GC/FID. Data at 3451 scfm are averages of three 1-hr tests. Data at 3888 scfm are averages of two 1-hr tests. |                                |                     |       |

**6. COMMENTS**

APP. NO.: TP-B-0482

The facility reports that the flare control system is somewhat complex, and special operator training was required.