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[www.horizonengineering.com](http://www.horizonengineering.com)

April 25, 2016

Project No. 5702

Mr. George Davis  
Oregon Department of Environmental Quality  
Northwestern Region – Portland Office  
700 NE Multnomah St., Suite 600  
Portland, OR 97232

Mr. Michael Eisele, P.E.  
Oregon Department of Environmental Quality  
Western Region – Salem Office  
4026 Fairview Industrial Drive  
Salem, OR 97302

Re: Source Test Plan Addendum: Bullseye Glass Co.  
3722 SE 21<sup>st</sup> Ave  
Portland, OR 97202

The purpose of this correspondence is to submit an addendum to the Bullseye Glass Co. Source Test Plan submitted to you on April 8, 2016.

As recently discussed, the normal operation of the glass furnace T7 and its control device (baghouse BH-1) will include periodic pulse jet cleaning of the filter bags to maintain optimum filtration efficiency. It has been observed that during pulse jet cleaning, filtered particulate matter potentially flows towards the baghouse inlet ducting where the test sample probes will be located. In order to eliminate the potential for filtered particulate matter being entrained into the sampling probe thereby producing biased test results we are proposing to pause inlet sampling during periods of pulse jet cleaning. We anticipate approximately 4 to 6 cleaning cycles lasting about 5 minutes each distributed throughout the 16 hour test period. As such, we propose to add item 17 of the source test plan as follows:

- Pulse jet cleaning – Pause inlet sampling during pulse jet cleaning cycles and record the time and duration of the pause

Bullseye Glass Co. has decided to include two additional test runs for total Cr & Cr<sup>+6</sup> at the baghouse outlet. These additional runs will be conducted during Run 2 and Run 3.

Any questions or comments relating to this test plan should be directed to me.

Sincerely,



Thomas Rhodes, QSTI  
District Manager  
Horizon Engineering, an affiliate of Montrose Environmental Group, Inc.

For information on Horizon Engineering and Montrose Environmental, go to [www.montrose-env.com](http://www.montrose-env.com)

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April 8, 2016

Project No. 5702

Mr. George Davis  
Oregon Department of Environmental Quality  
Northwestern Region – Portland Office  
700 NE Multnomah St., Suite 600  
Portland, OR 97232

Mr. Michael Eisele, P.E.  
Oregon Department of Environmental Quality  
Western Region – Salem Office  
4026 Fairview Industrial Drive  
Salem, OR 97302

Re: Source Testing: Bullseye Glass Co.  
3722 SE 21<sup>st</sup> Ave  
Portland, OR 97202

This correspondence is notice that Horizon Engineering is to do source testing for the above-referenced facility, tentatively scheduled for April 2016. This will serve as the Source Test Plan unless changes are requested prior to the start of testing.

1. **Source to be Tested:** Glass Furnace T7
2. **Test Locations:** Baghouse BH-1 Inlet and Outlet
3. **Purpose of the Testing:** Performance testing for new baghouse. Cr<sup>+6</sup> emissions will be estimated using the Cr<sup>+6</sup> inlet results and the PM removal efficiency.
4. **Source Description:** Source description will be included in the final report.
5. **Pollutants to be Tested:** particulate matter (PM), Total Cr, and Cr<sup>+6</sup>.
6. **Test Methods to be Used:** Testing will be conducted in accordance with EPA methods in Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Appendix A, from the Electronic Code of Federal Regulations ([www.ecfr.gov](http://www.ecfr.gov)), January, 2014; Oregon Department of Environmental Quality (ODEQ) methods in Source Sampling Manual Volume 1, April, 2015.

Baghouse Inlet

Flow Rate: EPA Methods 1 and 2 (S-type pitot w/ isokinetic traverses)  
 CO<sub>2</sub> and O<sub>2</sub>: Assume same molecular weight as the outlet  
 Moisture: EPA Method 4 (incorporated w/ ODEQ Method 5)  
 PM: ODEQ Method 5 (filterable and condensable PM; isokinetic impinger train technique)  
 Total Cr & Cr<sup>+6</sup>: SW-846 Method 0061 (isokinetic recirculatory impinger train technique with Cr<sup>+6</sup> analysis by IC with Post-Column Derivatization-Visible Absorption and Total Cr analysis by ICP-MS)

Baghouse Outlet

Flow Rate: EPA Methods 1 and 2 (S-type pitot w/ isokinetic traverses)  
 Fixed Gases: EPA Method 3C (Tedlar bags with analysis by GC/TCD for CH<sub>4</sub>, N<sub>2</sub>, O<sub>2</sub>, & CO<sub>2</sub>)<sup>1</sup>  
 Moisture: EPA Method 4 (incorporated w/ ODEQ Method 5)  
 PM: ODEQ Method 5 (filterable and condensable PM; isokinetic impinger train technique)

7. **Continuous Analyzer Data Recording:** Data acquisition system (DAS) will be used. Strip chart records may be used as backup. One-minute averages of one-second readings are logged. Run averages, tabulated data and the graphic outputs from the DAS are included in the test reports.
8. **Continuous Analyzer Gas Sampling:** EPA Method 3A will be sampled at one point near the exhaust centroid because it is not done for a correction. Particulate and gas sampling will be simultaneous.
9. **Criteria Location:** It is assumed today, but it will be confirmed on or before the test day, that each test port location meets criteria in EPA Methods 1 and 2.
10. **Quality Assurance/Quality Control (QA/QC):** Method-specific quality assurance/quality control procedures must be performed to ensure that the data is valid for determining source compliance. Documentation of the procedures and results will be presented in the source test report for review. Omission of this critical information may result in rejection of the data, requiring a retest. This documentation will include at least the following:

Manual equipment procedures: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- Operators will perform pre- and post-test leak checks on the sampling system and pitot lines.
- Thermocouples attached to the pitots and probes are calibrated in the field using EPA Alternate Method 11. A single-point calibration on each thermocouple system using a reference thermometer is performed. Thermocouples must agree within  $\pm 2^{\circ}\text{F}$  with the reference thermometer.

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<sup>1</sup> It is anticipated that several Tedlar bag samples will be taken during the run to encompass the entire length of the test run.

- Also, prior to use, thermocouple systems are checked for ambient temperature before heaters are started.
- Nozzles are inspected for nicks or dents and pitots are examined before and after each use to confirm that they are still aligned.
  - Pre- and post-test calibrations on the meter boxes will be included with the report, along with semi-annual calibrations of critical orifices, pitots, nozzles and thermocouples (sample box impinger outlet and oven, meter box inlet and outlet, and thermocouple indicators).
  - Blank reagents are submitted to the laboratory with the samples. Liquid levels are marked on sample jars in the field and are verified by the laboratory.
  - The Oregon Method 5, 7, and 17 minimum sample volume shall be the greater of 31.8 dscf or sufficient to ensure a minimum ISDL of one-half (1/2) the emission standard.

SW-846 Method 0061: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- 0.5 M KOH will be used to ensure that the pH of the solution is above 8.5 after sampling.
- pH of the impinger solution will be checked during sample recovery.
- pH of the impinger solution may be checked periodically during the test run. The sample train will be leak check before and after any disassembly that may be required. If additional KOH is added, the volume will be recorded.
- The sample train will be purged with N<sub>2</sub> at a rate of 10 L/min for 30 minutes.
- If the stack temperature is above 200 °F, the Teflon sample and recirculating lines may be placed in an ice bath to keep the recirculated reagent cool enough so it does not turn to steam.

Audit Sample Requirement: The EPA Stationary Source Audit Sample Program was restructured and promulgated on September 30, 2010 and was made effective 30 days after that date. The Standard requires that the Facility or their representative must order audit samples if they are available, with the exception of the methods listed in 40 CFR 60, 60.8(g)(1). The TNI website is referred to for a list of available accredited audit Providers and audits ([www.nelac-institute.org/ssas/](http://www.nelac-institute.org/ssas/)). If samples are not available from at least two accredited Providers they are not required. Currently, accredited Providers offer audit samples for EPA Methods 6, 7, 8, 12, 13A, 13B, 26, 26A, 29 and 101A. Based on the above, Bullseye Glass is not required to obtain audit samples for this test program.

- 11. Number of Sampling Replicates and their Duration:** Three (3) test runs of approximately sixteen hours at each location. Inlet and outlet testing will be simultaneous. In no case will sampling replicates be separated by twenty-four (24) or more hours, unless prior authorization is granted by the Department.
- 12. Reporting Units for Results:** Results will be expressed as concentrations (ppmv, µg/dscm. or gr/dscf), as rates (lb/hr), removal efficiency (%), and on a production basis if that information is provided.

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13. **Horizon Engrg. Contact:** Thomas Rhodes or  
(503) 255-5050  
Fax (503) 255-0505  
E-mail [trhodes@montrose-env.com](mailto:trhodes@montrose-env.com)
14. **Consultant:** John Browning  
(503) 212-2515  
Cell (503) 412-9842  
E-mail [jbrowning@bridgeh2o.com](mailto:jbrowning@bridgeh2o.com)
15. **Source Site Personnel:** Dan Schwoerer  
(503) 232-8887  
Fax (503) 238-9963  
E-mail [danschwoerer@bullseyeglass.com](mailto:danschwoerer@bullseyeglass.com)
16. **Regulatory Contacts:** George Davis  
(503) 229-5534  
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Email [davis.george@deq.state.or.us](mailto:davis.george@deq.state.or.us)
- Michael Eisele  
(503) 378-5070  
Fax (503) 378-4196  
E-mail [EISELE.Michael@deq.state.or.us](mailto:EISELE.Michael@deq.state.or.us)

17. **Applicable Process/Production/Control Information:** Operating data that characterize the source are considered to be:

- Type and quantity of material being processed – 1,200 to 1,350 pounds of batch materials to make dark green cathedral glass with a high chromium content. Cullet will not be used during the source test.
- Furnace temperature – Furnace to be regulated between the temperature of 2,100<sup>0</sup>F and 2,575<sup>0</sup>F as per usual production parameters.
- Redox settings – Combustion gasses to be mixed at a ratio of 1.00 parts natural gas for 1.90 to 1.80 parts oxygen as per usual production parameters, in a furnace plumbed with natural gas and liquid oxygen
- Baghouse pressure drop – Pressure readings will be tracked during the testing cycle
- All normally recorded process information

**Process/Production/Control information is to be gathered for each test run by the Source Site Personnel and provided to Horizon for inclusion in the report.**

The source must operate at the rate specified in the Permit during testing. Rates not in agreement with those stipulated in the Permit can result in test rejection for application to determine compliance or emission factor verification. Imposed process limitations could also result from atypical rates.

If the Permit does not specify a process rate for testing, we recommend a normal maximum rate.

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18. **Source Test Audit Report:** Source Test Audit Report forms will be submitted along with the source test report for this testing.
19. **Plant Entry & Safety Requirements:** The test team will follow internal safety policies and abide by any site specific safety and entry requirements.
20. **Responsibilities of Test Personnel:** The test team will consist of one Project Manager and up to eight Technicians.
21. **Tentative Test Schedule:**
  - April 25 (Mon): Mobilize and setup
  - April 26 (Tues): Begin test Run 1
  - April 27 (Wed): Begin test Run 2
  - April 28 (Thurs): Begin test Run 3
  - April 29 (Fri): Complete testing and demobilize
22. **Other Considerations:** None known
23. **Administrative Notes:** Unless notified prior to the start of testing, this test plan is considered to be approved for compliance testing of this source. A letter acknowledging receipt of this plan and agreement on the content (or changes as necessary) would be appreciated.

The Department will be notified of any changes in source test plans prior to testing. It is recognized that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in test report rejection.

Source test reports will be prepared by Horizon Engineering and will include all results and example calculations, field sampling and data reduction procedures, laboratory analysis reports, and QA/QC documentation. Source test reports will be submitted to you within 45 days of the completion of the field work, unless another deadline is agreed upon. Bullseye Glass should send one (1) hardcopy of the completed source test report to you at the address above.

Any questions or comments relating to this test plan should be directed to me.

Sincerely,



Thomas Rhodes, QSTI  
District Manager  
Horizon Engineering, an affiliate of Montrose Environmental Group, Inc.

For information on Horizon Engineering and Montrose Environmental, go to [www.montrose-env.com](http://www.montrose-env.com)

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HORIZON ENGINEERING



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March 24, 2016

Project No. 5702

Mr. George Davis  
Oregon Department of Environmental Quality  
Northwestern Region – Portland Office  
700 NE Multnomah St., Suite 600  
Portland, OR 97232

Mr. Michael Eisele, P.E.  
Oregon Department of Environmental Quality  
Western Region – Salem Office  
4026 Fairview Industrial Drive  
Salem, OR 97302

Re: Source Testing: Bullseye Glass Co.  
3722 SE 21<sup>st</sup> Ave  
Portland, OR 97202

This correspondence is notice that Horizon Engineering is to do source testing for the above-referenced facility, tentatively scheduled for April 2016. This will serve as the Source Test Plan unless changes are requested prior to the start of testing.

1. **Source to be Tested:** Glass Furnace T7
2. **Test Locations:** Baghouse BH-1 Inlet and Outlet
3. **Purpose of the Testing:** Performance testing for new baghouse
4. **Source Description:** Source description will be included in the final report.
5. **Pollutants to be Tested:** particulate matter (PM), Total Cr, and Cr<sup>+6</sup>.
6. **Test Methods to be Used:** Testing will be conducted in accordance with EPA methods in Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Appendix A, from the Electronic Code of Federal Regulations ([www.ecfr.gov](http://www.ecfr.gov)), January, 2014; Oregon Department of Environmental Quality (ODEQ) methods in Source Sampling Manual Volume 1, April, 2015.



Flow Rate: EPA Methods 1 and 2 (S-type pitot w/ isokinetic traverses)  
CO<sub>2</sub> and O<sub>2</sub>: EPA Method 3A (NDIR and paramagnetic analyzers)<sup>1</sup>  
Moisture: EPA Method 4 (incorporated w/ ODEQ Method 5)  
PM: ODEQ Method 5 (filterable and condensable PM; isokinetic impinger train technique)  
Total Cr & Cr<sup>+6</sup>: SW-846 Method 0061 (isokinetic recirculatory impinger train technique with Cr<sup>+6</sup> analysis by IC with Post-Column Derivatization-Visible Absorption and Total Cr analysis by ICP-MS)

7. **Continuous Analyzer Data Recording:** Data acquisition system (DAS) will be used. Strip chart records may be used as backup. One-minute averages of one-second readings are logged. Run averages, tabulated data and the graphic outputs from the DAS are included in the test reports.
8. **Continuous Analyzer Gas Sampling:** EPA Method 3A will be sampled at one point near the exhaust centroid because it is not done for a correction. Particulate and gas sampling will be simultaneous.
9. **Criteria Location:** It is assumed today, but it will be confirmed on or before the test day, that each test port location meets criteria in EPA Methods 1 and 2.
10. **Quality Assurance/Quality Control (QA/QC):** Method-specific quality assurance/quality control procedures must be performed to ensure that the data is valid for determining source compliance. Documentation of the procedures and results will be presented in the source test report for review. Omission of this critical information may result in rejection of the data, requiring a retest. This documentation will include at least the following:

Continuous analyzer procedures: Field crews will operate the analyzers according to the test method requirements with additional data backup. On-site procedures include:

EPA Method 3A:

- Analyzer calibration error before initial run and after a failed system bias or drift test (within  $\pm 2.0\%$  of the calibration span of the analyzer for the low, mid, and high-level gases or 0.5 ppmv absolute difference)
- System bias at low-scale (zero) and upscale calibration gases (within  $\pm 5.0\%$  of the calibration span or 0.5 ppmv absolute difference)
- Drift check (within  $\pm 3.0\%$  of calibration span for low, and mid or high-level gases, or 0.5 ppmv absolute difference)
- System response time (during initial sampling system bias test)
- Checks performed with EPA Protocol 1 or NIST traceable gases except zero gas
- Zero gas meets the definition for zero air material as defined by 40 CFR 72.2
- Leak free sampling system
- Data acquisition systems record 10-second data points or one-minute averages of one second readings

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<sup>1</sup> EPA Method 3A will only be measured at the baghouse outlet.

- Purge time ( $\geq 2$  times system response time and will be done before starting run 1, whenever the gas probe is removed and re-inserted into the stack, and after bias checks)
- Sample time (at least two times the system response time at each sample point)
- Sample flow rate (within approximately 10% of the flow rate established during system response time check)
- Interference checks for analyzers used will be included in the final test report
- Average concentration (run average  $\leq$  calibration span for each run)
- Stratification test (to be done during run 1 at three(3) or twelve(12) points according to EPA Method 7E; EPA Method 3A if done for molecular weight only will be sampled near the centroid of the exhaust; and stratification check not normally applicable for RATAs)

Manual equipment procedures: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- Operators will perform pre- and post-test leak checks on the sampling system and pitot lines.
- Thermocouples attached to the pitots and probes are calibrated in the field using EPA Alternate Method 11. A single-point calibration on each thermocouple system using a reference thermometer is performed. Thermocouples must agree within  $\pm 2^{\circ}\text{F}$  with the reference thermometer. Also, prior to use, thermocouple systems are checked for ambient temperature before heaters are started.
- Nozzles are inspected for nicks or dents and pitots are examined before and after each use to confirm that they are still aligned.
- Pre- and post-test calibrations on the meter boxes will be included with the report, along with semi-annual calibrations of critical orifices, pitots, nozzles and thermocouples (sample box impinger outlet and oven, meter box inlet and outlet, and thermocouple indicators).
- Blank reagents are submitted to the laboratory with the samples. Liquid levels are marked on sample jars in the field and are verified by the laboratory.
- The Oregon Method 5, 7, and 17 minimum sample volume shall be the greater of 31.8 dscf or sufficient to ensure a minimum ISDL of one-half (1/2) the emission standard.

SW-846 Method 0061: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- 0.5 M KOH will be used to ensure that the pH of the solution is above 8.5 after sampling.
- pH of the impinger solution will be checked during sample recovery.
- The sample train will be purged with  $\text{N}_2$  at a rate of 10 L/min for 30 minutes.
- If the stack temperature is above  $200^{\circ}\text{F}$ , the Teflon sample and recirculating lines may be placed in an ice bath to keep the recirculated reagent cool enough so it does not turn to steam.

**Audit Sample Requirement:** The EPA Stationary Source Audit Sample Program was restructured and promulgated on September 30, 2010 and was made effective 30 days after that date. The Standard requires that the Facility or their representative must order audit samples if they are available, with the exception of the methods listed in 40 CFR 60, 60.8(g)(1). The TNI website is referred to for a list of available accredited audit Providers and audits ([www.nelac-institute.org/ssas/](http://www.nelac-institute.org/ssas/)). If samples are not available from at least two accredited Providers they are not required. Currently, accredited Providers offer audit samples for EPA Methods 6, 7, 8, 12, 13A, 13B, 26, 26A, 29 and 101A. Based on the above, Bullseye Glass is not required to obtain audit samples for this test program.

11. **Number of Sampling Replicates and their Duration:** One (1) test run of approximately sixteen hours at each location. Inlet and outlet testing will be simultaneous. In no case will sampling replicates be separated by twenty-four (24) or more hours, unless prior authorization is granted by the Department.
12. **Reporting Units for Results:** Results will be expressed as concentrations (ppmv,  $\mu\text{g}/\text{dscm}$ , or  $\text{gr}/\text{dscf}$ ), as rates (lb/hr), and on a production basis if that information is provided.
13. **Horizon Engrg. Contact:**  
Thomas Rhodes or  
(503) 255-5050  
Fax (503) 255-0505  
E-mail [trhodes@montrose-env.com](mailto:trhodes@montrose-env.com)
14. **Consultant:**  
John Browning  
(503) 212-2515  
Cell (503) 412-9842  
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15. **Source Site Personnel:**  
Dan Schwoerer  
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Michael Eisele  
(503) 378-5070  
Fax (503) 378-4196  
E-mail [EISELE.Michael@deq.state.or.us](mailto:EISELE.Michael@deq.state.or.us)
17. **Applicable Process/Production/Control Information:** Operating data that characterize the source are considered to be:
  - Type and quantity of material being processed – 1,200 to 1,350 pounds of batch materials to make dark green cathedral glass with a chromium content greater than 1.00%

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- Furnace temperature – Furnace to be regulated between the temperature of 2,100<sup>0</sup>F and 2,575<sup>0</sup>F as per usual production parameters.
- Redox settings – Combustion gasses to be mixed at a ratio of 1.02 to 1.20 parts natural gas for 2.0 parts oxygen as per usual production parameters
- Baghouse pressure drop – Pressure readings will be tracked during the testing cycle
- All normally recorded process information

**Process/Production/Control information is to be gathered for each test run by the Source Site Personnel and provided to Horizon for inclusion in the report.**

The source must operate at the rate specified in the Permit during testing. Rates not in agreement with those stipulated in the Permit can result in test rejection for application to determine compliance or emission factor verification. Imposed process limitations could also result from atypical rates.

If the Permit does not specify a process rate for testing, we recommend a normal maximum rate.

18. **Source Test Audit Report:** Source Test Audit Report forms will be submitted along with the source test report for this testing.

19. **Plant Entry & Safety Requirements:** The test team will follow internal safety policies and abide by any site specific safety and entry requirements.

20. **Responsibilities of Test Personnel:** The test team will consist of one Project Manager and eight Technicians.

21. **Tentative Test Schedule:**

Day 1: Mobilize  
Day 2: Test  
Day 3: Demobilize

22. **Other Considerations:** The testing locations for the baghouse inlet are on a horizontal section of ducting. Depending on the port orientation, to prevent the recirculating impinger solution from draining out of the nozzle, the SW-846 Method 0061 sample train may only be sampled from the horizontal port.

23. **Administrative Notes:** Unless notified prior to the start of testing, this test plan is considered to be approved for compliance testing of this source. A letter acknowledging receipt of this plan and agreement on the content (or changes as necessary) would be appreciated.

The Department will be notified of any changes in source test plans prior to testing. It is recognized that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in test report rejection.

Source test reports will be prepared by Horizon Engineering and will include all results and example calculations, field sampling and data reduction procedures, laboratory analysis reports, and QA/QC documentation. Source

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test reports will be submitted to you within 45days of the completion of the field work, unless another deadline is agreed upon. Bullseye Glass should send one (1) hardcopy of the completed source test report to you at the address above.

Any questions or comments relating to this test plan should be directed to me.

Sincerely,



Thomas Rhodes, QSTI  
District Manager  
Horizon Engineering, an affiliate of Montrose Environmental Group, Inc.

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March 21, 2016

Project No. 5702

Mr. George Davis  
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Portland, OR 97232

Mr. Michael Eisele, P.E.  
Oregon Department of Environmental Quality  
Western Region – Salem Office  
4026 Fairview Industrial Drive  
Salem, OR 97302

Re: Source Testing: Bullseye Glass Co.  
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1. **Source to be Tested:** Glass Furnace T7
2. **Test Locations:** Baghouse BH-1 Inlet and Outlet
3. **Purpose of the Testing:** Performance testing for new baghouse
4. **Source Description:** Source description will be included in the final report.
5. **Pollutants to be Tested:** particulate matter (PM), Total Cr, and Cr<sup>+6</sup>.
6. **Test Methods to be Used:** Testing will be conducted in accordance with EPA methods in Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Appendix A, from the Electronic Code of Federal Regulations ([www.ecfr.gov](http://www.ecfr.gov)), January, 2014; Oregon Department of Environmental Quality (ODEQ) methods in Source Sampling Manual Volume 1, April, 2015.

Flow Rate: EPA Methods 1 and 2 (S-type pitot w/ isokinetic traverses)  
CO<sub>2</sub> and O<sub>2</sub>: EPA Method 3A (NDIR and paramagnetic analyzers)<sup>1</sup>  
Moisture: EPA Method 4 (incorporated w/ ODEQ Method 5)  
PM: ODEQ Method 5 (filterable and condensable PM; isokinetic impinger train technique)  
Total Cr & Cr<sup>+6</sup>: SW-846 Method 0061 (isokinetic recirculatory impinger train technique with Cr<sup>+6</sup> analysis by IC with Post-Column Derivatization-Visible Absorption and Total Cr analysis by ICP-MS)

7. **Continuous Analyzer Data Recording:** Data acquisition system (DAS) will be used. Strip chart records may be used as backup. One-minute averages of one-second readings are logged. Run averages, tabulated data and the graphic outputs from the DAS are included in the test reports.
8. **Continuous Analyzer Gas Sampling:** EPA Method 3A will be sampled at one point near the exhaust centroid because it is not done for a correction. Particulate and gas sampling will be simultaneous.
9. **Criteria Location:** It is assumed today, but it will be confirmed on or before the test day, that each test port location meets criteria in EPA Methods 1 and 2.
10. **Quality Assurance/Quality Control (QA/QC):** Method-specific quality assurance/quality control procedures must be performed to ensure that the data is valid for determining source compliance. Documentation of the procedures and results will be presented in the source test report for review. Omission of this critical information may result in rejection of the data, requiring a retest. This documentation will include at least the following:

Continuous analyzer procedures: Field crews will operate the analyzers according to the test method requirements with additional data backup. On-site procedures include:

EPA Method 3A:

- Analyzer calibration error before initial run and after a failed system bias or drift test (within  $\pm 2.0\%$  of the calibration span of the analyzer for the low, mid, and high-level gases or 0.5 ppmv absolute difference)
- System bias at low-scale (zero) and upscale calibration gases (within  $\pm 5.0\%$  of the calibration span or 0.5 ppmv absolute difference)
- Drift check (within  $\pm 3.0\%$  of calibration span for low, and mid or high-level gases, or 0.5 ppmv absolute difference)
- System response time (during initial sampling system bias test)
- Checks performed with EPA Protocol 1 or NIST traceable gases except zero gas
- Zero gas meets the definition for zero air material as defined by 40 CFR 72.2
- Leak free sampling system
- Data acquisition systems record 10-second data points or one-minute averages of one second readings

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<sup>1</sup> EPA Method 3A will only be measured at the baghouse outlet.

- Purge time ( $\geq 2$  times system response time and will be done before starting run 1, whenever the gas probe is removed and re-inserted into the stack, and after bias checks)
- Sample time (at least two times the system response time at each sample point)
- Sample flow rate (within approximately 10% of the flow rate established during system response time check)
- Interference checks for analyzers used will be included in the final test report
- Average concentration (run average  $\leq$  calibration span for each run)
- Stratification test (to be done during run 1 at three(3) or twelve(12) points according to EPA Method 7E; EPA Method 3A if done for molecular weight only will be sampled near the centroid of the exhaust; and stratification check not normally applicable for RATAs)

Manual equipment procedures: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- Operators will perform pre- and post-test leak checks on the sampling system and pitot lines.
- Thermocouples attached to the pitots and probes are calibrated in the field using EPA Alternate Method 11. A single-point calibration on each thermocouple system using a reference thermometer is performed. Thermocouples must agree within  $\pm 2^{\circ}\text{F}$  with the reference thermometer. Also, prior to use, thermocouple systems are checked for ambient temperature before heaters are started.
- Nozzles are inspected for nicks or dents and pitots are examined before and after each use to confirm that they are still aligned.
- Pre- and post-test calibrations on the meter boxes will be included with the report, along with semi-annual calibrations of critical orifices, pitots, nozzles and thermocouples (sample box impinger outlet and oven, meter box inlet and outlet, and thermocouple indicators).
- Blank reagents are submitted to the laboratory with the samples. Liquid levels are marked on sample jars in the field and are verified by the laboratory.
- The Oregon Method 5, 7, and 17 minimum sample volume shall be the greater of 31.8 dscf or sufficient to ensure a minimum ISDL of one-half (1/2) the emission standard.

SW-846 Method 0061: Field crews will operate the manual testing equipment according to the test method requirements. On-site procedures include:

- 0.5 M KOH will be used to ensure that the pH of the solution is above 8.5 after sampling.
- pH of the impinger solution will be checked during sample recovery.
- The sample train will be purged with  $\text{N}_2$  at a rate of 10 L/min for 30 minutes.
- If the stack temperature is above  $200^{\circ}\text{F}$ , the Teflon sample and recirculating lines may be placed in an ice bath to keep the recirculated reagent cool enough so it does not turn to steam.

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**Audit Sample Requirement:** The EPA Stationary Source Audit Sample Program was restructured and promulgated on September 30, 2010 and was made effective 30 days after that date. The Standard requires that the Facility or their representative must order audit samples if they are available, with the exception of the methods listed in 40 CFR 60, 60.8(g)(1). The TNI website is referred to for a list of available accredited audit Providers and audits ([www.nelac-institute.org/ssas/](http://www.nelac-institute.org/ssas/)). If samples are not available from at least two accredited Providers they are not required. Currently, accredited Providers offer audit samples for EPA Methods 6, 7, 8, 12, 13A, 13B, 26, 26A, 29 and 101A. Based on the above, Bullseye Glass is not required to obtain audit samples for this test program.

11. **Number of Sampling Replicates and their Duration:** One (1) test run of approximately sixteen hours at each location. Inlet and outlet testing will be simultaneous. In no case will sampling replicates be separated by twenty-four (24) or more hours, unless prior authorization is granted by the Department.
12. **Reporting Units for Results:** Results will be expressed as concentrations (ppmv,  $\mu\text{g}/\text{dscm}$ , or  $\text{gr}/\text{dscf}$ ), as rates (lb/hr), and on a production basis if that information is provided.
13. **Horizon Engrg. Contact:**  
Thomas Rhodes or  
(503) 255-5050  
Fax (503) 255-0505  
E-mail [trhodes@montrose-env.com](mailto:trhodes@montrose-env.com)
14. **Consultant:**  
John Browning  
(503) 212-2515  
Cell (503) 412-9842  
E-mail [jbrowning@bridgeh2o.com](mailto:jbrowning@bridgeh2o.com)
15. **Source Site Personnel:**  
Dan Schwoerer  
(503) 232-8887  
Fax (503) 238-9963  
E-mail [danschwoerer@bullseyeglass.com](mailto:danschwoerer@bullseyeglass.com)
16. **Regulatory Contacts:**  
George Davis  
(503) 229-5534  
Fax (503) 229-6945  
Email [davis.george@deq.state.or.us](mailto:davis.george@deq.state.or.us)  
  
Michael Eisele  
(503) 378-5070  
Fax (503) 378-4196  
E-mail [EISELE.Michael@deq.state.or.us](mailto:EISELE.Michael@deq.state.or.us)
17. **Applicable Process/Production/Control Information:** Operating data that characterize the source are considered to be:
  - Type and quantity of material being processed
  - Furnace temperature
  - Redox settings
  - Baghouse pressure drop

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- All normally recorded process information

**Process/Production/Control information is to be gathered for each test run by the Source Site Personnel and provided to Horizon for inclusion in the report.**

The source must operate at the rate specified in the Permit during testing. Rates not in agreement with those stipulated in the Permit can result in test rejection for application to determine compliance or emission factor verification. Imposed process limitations could also result from atypical rates.

If the Permit does not specify a process rate for testing, we recommend a normal maximum rate.

18. **Source Test Audit Report:** Source Test Audit Report forms will be submitted along with the source test report for this testing.

19. **Plant Entry & Safety Requirements:** The test team will follow internal safety policies and abide by any site specific safety and entry requirements.

20. **Responsibilities of Test Personnel:** The test team will consist of one Project Manager and eight Technicians.

21. **Tentative Test Schedule:**

Day 1: Mobilize  
Day 2: Test  
Day 3: Demobilize

22. **Other Considerations:** The testing locations for the baghouse inlet are on a horizontal section of ducting. To prevent the recirculating impinger solution from draining out of the nozzle, the SW-846 Method 0061 sample train will only be sampled from the horizontal port.

23. **Administrative Notes:** Unless notified prior to the start of testing, this test plan is considered to be approved for compliance testing of this source. A letter acknowledging receipt of this plan and agreement on the content (or changes as necessary) would be appreciated.

The Department will be notified of any changes in source test plans prior to testing. It is recognized that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in test report rejection.

Source test reports will be prepared by Horizon Engineering and will include all results and example calculations, field sampling and data reduction procedures, laboratory analysis reports, and QA/QC documentation. Source test reports will be submitted to you within 45 days of the completion of the field work, unless another deadline is agreed upon. Bullseye Glass should send one (1) hardcopy of the completed source test report to you at the address above.

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Any questions or comments relating to this test plan should be directed to me.

Sincerely,



Thomas Rhodes, QSTI  
District Manager  
Horizon Engineering, an affiliate of Montrose Environmental Group, Inc.

For information on Horizon Engineering and Montrose Environmental, go to  
[www.montrose-env.com](http://www.montrose-env.com)

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