Statement of Basis
University of Washington Power Plant and Hospital
Administrative Amendment, August 11, 2021

Purpose of this Statement of Basis

This document summarizes the legal and factual basis for the draft permit conditions in the air operating permit to be issued to University of Washington Power Plant and Hospital (University of Washington) under the authority of the Washington Clean Air Act, Chapter 70.94 Revised Code of Washington (RCW), Chapter 173-401 of the Washington Administrative Code (WAC), and the Puget Sound Clean Air Agency (previously known as Puget Sound Air Pollution Control Agency (PSAPCA)) Regulation I, Article 7. Unlike the permit, this document is not legally enforceable. It includes references to the applicable statutory or regulatory provisions that relate to University of Washington air emissions, and provides a description of University of Washington activities, including a short compliance history.

Source Description

Why University of Washington is an Air Operating Permit Source

The University of Washington is subject to the requirement to obtain an air operating permit because it is a "major source" as defined in the federal and state operating permit regulations [Title V of the federal Clean Air Act Amendments of 1990 and its implementing regulation 40 CFR Part 70, and RCW 70.94.161 and its implementing regulation, Chapter 173-401 WAC]. A major source has the potential to emit more than 100 tons per year of any criteria pollutant (such as CO, SO_2, NO_X, VOC, particulate matter, etc.) or 10 tons per year or more of any single hazardous air pollutant listed in Section 112(b) of the federal Clean Air Act (such as hydrochloric acid), or 25 tons per year or more of any combination of hazardous air pollutants.

General Description

Founded in 1861, the University of Washington is the oldest state-assisted institution of higher education on the Pacific Coast. The University of Washington campus, located in Seattle between the shores of Lake Washington and Lake Union, encompasses approximately 695 acres of trees, landscape, and buildings. Approximately 34,000 students attend the University of Washington annually.

The University of Washington campus contains approximately 250 buildings, approximately half of which were specifically designed and constructed as permanent campus facilities. The remainder consists of many small, temporary buildings acquired by the University campus and totals approximately 13,140,000 square feet. Excluding parking garages, approximately 58 percent of total building space is utilized for

instruction and research, 19 percent for student services and housing, 11 percent for medical facilities, 6 percent for recreational facilities, 5 percent for administration and plant support, and 1 percent for academic support and other facilities.

Overview of the Process Equipment Used at University of Washington

The University Facilities Services organization operates and maintains a power plant to produce steam, emergency electrical power, chilled water, and compressed air for the campus. The Power Plant currently houses 5 permanent steam boilers with firing capacities ranging from 126 to 350 million Btu per hour. The boilers combust natural gas or No. 2 distillate oil. Air emissions from all boilers discharge to the atmosphere from the Power Plant stack. A continuous emissions monitor system (CEMS) is installed on the stack at the Power Plant to continuously monitor stack emissions.

The University Facilities Services Department also operates and maintains the campus facilities and grounds, and provides necessary physical alterations in support of the University of Washington teaching, research and public service programs. Air emission sources, in addition to the Power Plant boilers, include: paint spray booths, gasoline storage tanks, printing processes, and bench-scale lead melting pots. Permitted air pollution control devices include a wet scrubber, sawdust collection systems consisting of cyclones/baghouses, a sandblaster equipped with a cyclone, and an air stripper associated with a soil remediation project. The University of Washington Medical Center also operates a Puget Sound Clean Air Agency-permitted crematory and an ethylene oxide sterilizer equipped with a natural gas-fired afterburner.

Emission Units That Have Specific Requirements in the Air Operating Permit

Emission Unit #1 (EU-1): Boiler No. 6

This emission unit consists of activities and equipment associated with an Erie City #97849 Power Plant bent tube boiler, equipped to fire distillate oil and natural gas to a rated capacity of 250,000 pounds of steam per hour. This boiler was installed in 1968 under NOC Order of Approval No. 48 issued on December 10, 1968 and contained no approval conditions. No federal New Source Performance Standards apply to this unit.

Emission Unit #2 (EU-2): Boiler No. 4

This emission unit consists of activities and equipment associated with a Foster Wheeler Ag-5165 boiler, equipped to fire distillate oil and natural gas to a rated capacity of 236 MMBtu/hr, generating up to 200,000 pounds of steam per hour. This boiler was most recently modified under NOC Order of Approval No. 6206, issued on September 26, 1995. Subparts A and Db of the federal New Source Performance Standards apply to this

unit.

Emission Unit #3 (EU-3): Boiler No. 7

This emission unit consists of activities and equipment associated with a Foster Wheeler Model 5200 Fw 'D' boiler with a Todd Low-NO_X burner and flue gas recirculation, equipped to fire distillate oil and natural gas to a rated capacity of 266 MMBtu/hr, exhausting out the existing main stack at 56,000 scfm and 275 °F. Construction was commenced on this boiler in 1998 under Puget Sound Clean Air Agency NOC Order of Approval No. 7061, issued on November 19, 1998 and amended on August 9, 2001. Subparts A and Db of the federal New Source Performance Standards apply to this unit.

Emission Unit #4 (EU-4): Crematory

This emission unit consists of activities and equipment associated with an IE Eng. Co. Model IE43-ET 200 pound-per-hour crematory exhausting vertically from a stack 98 feet above the ground. This emission unit was installed in 1996 under Puget Sound Clean Air Agency NOC Order of Approval No. 5602, issued on September 2, 1994.

A crematory is **not** defined as an incinerator under federal, state, or Puget Sound Clean Air Agency regulations so incinerator regulations, such as WAC 173-400-050(2), that limit carbonyl emissions to 100 parts per million, do not apply.

Emission Unit #5 (EU-5): Ethylene Oxide Sterilizer

This emission unit consists of activities and equipment associated with an ethylene oxide (EtO) sterilizer located in the hospital. The control device is an AMSCO/Donaldson EtO catalytic afterburner, venting to the atmosphere through a stack at 110 cubic feet per minute and 500 °F. This emission unit was approved under NOC Order of Approval No. 4578, issued on August 13, 1992.

Emission Unit #6 (EU-6): Dust Collector and Baghouse for Woodworking Equipment, Gould Hall

This emission unit consists of activities and equipment associated with woodworking equipment located at Gould Hall, Room 132. The control device is a Torit Model 30 FB cyclone dust collector and baghouse rated at 3,750 cfm. This emission unit was approved under NOC Order of Approval No. 6081, issued on August 23, 1995.

Emission Unit #7 (EU-7): Dust Collector and Baghouse for Woodworking Equipment, Plant Services Carpentry Shop

This emission unit consists of activities and equipment associated with woodworking equipment located at the Plant Services Carpentry Shop. The control device is a Mikro-Puls baghouse rated at 13,500 cubic feet per minute (cfm). This emission unit was approved under NOC Order of Approval No. 6083, issued on August 23, 1995.

Emission Unit #8 (EU-8): Gasoline Fueling Operations at Stage I and Stage 2 Vapor Recovery System

This emission activity is located at 4549 25th Ave NE in Seattle, Washington and consists of several subsystems, including:

A two-point, Stage 1 vapor recovery system on one 15,000 gallon, one 10,000 gallon, and one 5,000 gallon underground gasoline storage tanks.

Four OPW11VAI-(63, 68, 83, or 88) Stage 2 dispensing nozzles with vapor valve and efficiency compliance device (ECD) on a Gasboy vacuum assist style dispenser using OPW VaporEZ Stage 2 system with side mount; equipment and installation as per CARB Executive Orders G-70-97-A (Stage 1) and G-170-163-AA (Stage 2).

This emission unit was approved under NOC Order of Approval No. 7431, issued on September 16, 1998. The fueling facility was installed in November 1998 and is currently in use.

Emission Unit #9 (EU-9): Dry Filter Spray Coating Booth at the Oceanography Building

This emission unit consists of activities and equipment associated with one paint spray booth in the Oceanography Building, with 18,000 cfm air circulation capacity, with a dry air filter system. The modification to this emission unit was approved under NOC Order of Approval No. 7588, issued on November 24, 1998.

Emission Unit #10 (EU-10): Fume Scrubber and Mist Eliminator at Fluke Hall

This emission unit consists of activities and equipment associated with one Harrington Model ECH horizontal fume scrubber at 19,000 cfm with a mist eliminator with 100 to 250 gallon-per-minute recirculation and 2 to 6 gallon-per-minute inlet water flow for Microelectronics research located in Fluke Hall. The modification to this emission unit was approved under NOC Order of Approval No. 5924, issued on November 8, 1995.

Emission Units That Have No Specific Requirements

The following emission units may or may not have been issued NOC Orders of Approval that are in effect as of the date of issue of this air operating permit, but they do not have any emission-unit-specific emission limits or monitoring requirements. However, the general requirements of Section I.A apply to these units.

Power Boilers No. 3 and No. 5

These emission units predate the Puget Sound Clean Air Agency. The Puget Sound Clean Air Agency has never issued Orders of Approval for construction of these emission units, but they do have to comply with all the "general" Puget Sound Clean Air Agency regulations.

Two Cyclones on Shop Exhaust System at University's Plant Services

This emission unit consists of sandblasting activities and equipment associated with cyclonic flow separation control devices. This emission unit was approved under NOC Order of Approval No. 1430, issued on April 22, 1975.

Air Stripper at Timmerman Boat Marina

This emission unit consists of activities and equipment associated with one NE Envir. Model 1331 air stripper with a PB-14A Cincinnati fan at 150 cfm for removal of petroleum hydrocarbons from soil and groundwater. This emission unit was approved under NOC Order of Approval No. 4794, issued on January 29, 1993. This unit was decommissioned in the year 2000, is not currently operable, and will be removed when the area is renovated.

Paint Spray Booth in the Plant Services Building

This emission unit consists of activities and equipment associated with one paint spray booth in the Plant Services Building, with 22,600 cfm air circulation capacity, modified by replacing an existing water curtain with an air filter system. The modification to this emission unit was approved under NOC Order of Approval No. 4916, issued on May 26, 1993.

Paint Spray Booth in the Ceramic/Metal Art Building

This emission unit consists of activities and equipment associated with one paint spray booth in the Ceramic/Metal Art Building, with 7,355 cfm air circulation capacity, with a dry air filter system. This emission unit was approved under NOC Order of Approval No. 5419, issued on May 20, 1994.

Paint Spray Booth in the Health Sciences Center

This emission unit consists of activities and equipment associated with one paint spray booth in the Health Sciences Center, Room F-106, with 8,800 cfm air circulation capacity, modified by replacing an existing water curtain with a dry air filter system. The modification to this emission unit was approved under NOC Order of Approval No. 5437, issued on May 20, 1994.

Paint Spray Booth in the Art Building, Room 115B

This emission unit consists of activities and equipment associated with one DeVilbiss XHE508 paint spray booth rated at 7,000 cfm. This emission unit was approved under NOC Order of Approval No. 6082, issued on August 23, 1995.

Review of Permit Application

An air operating permit application was received by the Puget Sound Clean Air Agency from University of Washington on June 7, 1995. On August 3, 1995, the Puget Sound Clean Air Agency issued written notification to University of Washington that the application was incomplete because it did not adequately describe monitoring, recordkeeping, and reference test methods as required under WAC 173-401-510(2)(d)(ii), and did not identify any applicable Department of Ecology requirements.

The Puget Sound Clean Air Agency received this supplementary information on November 1, 1995, and acknowledged that the application was complete in a letter to University of Washington dated November 2, 1995.

Notice of Construction Permitting History

Notice of Construction (NOC) Order of Approval No. 48, issued October 31, 1968. The Puget Sound Clean Air Agency issued this NOC approval with no emission unit-specific approval conditions.

NOC Order of Approval No. 248, issued May 25, 1970. This approval was issued with no approval conditions, to allow installation of a chamber on an existing incinerator. This incinerator is no longer in operation.

NOC Order of Approval No. 355, issued November 6, 1970. This approval was issued with no approval conditions, to allow installation of a small fluidized bed, research pilot-plant, sludge incinerator. This incinerator is no longer in operation.

NOC Order of Approval No. 1430, issued April 22, 1975. Installation of cyclones on the shop exhaust system at University's Plant Services. No approval conditions. A baghouse particulate control device has since augmented this device (installed under NOC Order of Approval 6083).

NOC Order of Approval No. 1444, issued June 15, 1975. Approval of installation of a ventilation system for the cyclotron lead pot. No approval conditions.

NOC Order of Approval No. 1589, issued April 15, 1976. Approval of two boilers using

PS200 oil, with no approval conditions, at 224 Pontius Ave. North in Seattle, Washington. This location is not contiguous to the University of Washington Seattle Campus and is not an applicable emission unit under this air operating permit.

NOC Order of Approval No. 1729, issued July 6, 1977. Approval of installation of a baghouse particulate control device for the ash disposal system at the Power Plant. This NOC approval did not have approval conditions. This unit is no longer in operation and has been removed.

NOC Order of Approval No. 3104, issued August 12, 1988. Approval of reduced stack height for power plant stack. This NOC approval required fueling of the boilers only on natural gas while exhausting through a temporary stack, and then allowed the boilers to operate only on natural gas or oil (use of coal was discontinued). The interim stack has been replaced with the "Combined Stack."

NOC Order of Approval No. 3784, issued May 1, 1991. Approval of installation of a replacement for existing Boiler No. 4. The new boiler, also designated as Boiler No. 4, has a maximum capacity of 200,000 pounds of steam per hour using 241 MMBtu/hr fuel. This unit has approval conditions that are contained in the air operating permit. *Note: this Order has been superseded by NOC Order of Approval No. 6206, issued on September 26, 1995*.

NOC Order of Approval No. 3975, issued July 26, 1991. Approval of one Nebraska #2-52 trailer mounted boiler rated at 77,800 MMBtu/hr, to serve as a temporary backup boiler while replacing Boiler No. 4. No approval conditions. This unit has been removed.

NOC Order of Approval No. 4578, issued August 13, 1992. Approval of one AMSCO/Donaldson ethylene oxide catalytic afterburner. This unit has approval conditions that are contained in the air operating permit.

NOC Order of Approval No. 4604, issued August 20, 1992. Approval of one Nebraska #2-52 trailer mounted boiler at 60,000 pounds of steam per hour, to be operated on a standby basis. No approval conditions. This unit has been removed.

NOC Order of Approval No. 4794, issued January 29, 1993. Approval of one NE Envir. Model 1331 air stripper with a PB-14A Cincinnati fan for removal of petroleum hydrocarbons from soil and groundwater. No approval conditions.

NOC Order of Approval No. 4916, issued May 26, 1993. Approval of replacement of one existing water curtain with a dry air filter system on a 22,600 cfm paint booth. No approval conditions.

NOC Order of Approval No. 5419, issued May 20, 1994. Approval of one Binks FA-8-8T dry filter spray booth at 7,355 cfm. No approval conditions.

NOC Order of Approval No. 5437, issued May 20, 1994. Approval of replacement of one existing water curtain with a dry air filter system on an 8,800 cfm paint booth. No approval conditions.

NOC Order of Approval No. 5602, issued September 2, 1994. Approval of one IE Eng. Model IE43-ET 200 pound-per-hour crematory exhausting vertically from a stack 98 feet above the ground. This unit has approval conditions that are contained in the air operating permit.

NOC Order of Approval No. 5924, issued November 8, 1995. Approval of one Harrington Model ECH horizontal fume scrubber at 19,000 cfm with a mist eliminator with 100-250 gallon-per-minute recirculation and 2-6 gallon-per-minute inlet water flow. This Order supersedes Order of Approval No. 5924 that was issued on September 27, 1995. This unit has approval conditions that are contained in the air operating permit. Under the original approval order, University of Washington was required to maintain the scrubber pressure drop, liquor pH, and system inlet temperature within specified ranges. The new Order of Approval removes the inlet temperature limit.

NOC Order of Approval No. 6081, issued August 23, 1995. Approval of one Torit Model 30FB cyclone dust collector and baghouse rated at 3,750 cfm for woodworking equipment at Gould Hall. This unit has approval conditions that are contained in the air operating permit.

NOC Order of Approval No. 6082, issued August 23, 1995. Approval of one DeVillbiss dry filter spray booth at 7,000 cfm. No approval conditions.

NOC Order of Approval No. 6083, issued August 23, 1995. Approval of one Micro-Pulsair 100D-10 baghouse rated at 13,500 cfm for woodworking equipment in the Plant Services Carpentry Shop. This unit has approval conditions that are contained in the air operating permit.

NOC Order of Approval No. 6206, issued September 26, 1995. Modification of the approval of installation of a replacement for existing Boiler No. 4. This unit has approval conditions that are contained in the air operating permit. *Note: this Order supersedes NOC Order of Approval No. 3784 issued on May 1, 1991*.

NOC Order of Approval No. 7061, issued August 9, 2001. Approval of installation of a new Boiler, designated No. 7. The new boiler is rated at 266 MMBtu/hr. This unit has approval conditions that are contained in the air operating permit. *Note: this Order supersedes NOC Order of Approval No. 7061 issued on November 19, 1998*. The new Order of Approval was issued to require University of Washington to develop written plans for quality assurance of CEMS, corrective actions, and compliance demonstration.

NOC Order of Approval No. 7431, issued September 16, 1998. Approval of installation of Stage 1 and 2 vapor recovery on one 15,000 gallon, one 10,000 gallon and one 5,000 gallon underground storage tanks, and 4 dispensing nozzles on an OPW dispensing system. This unit has approval conditions that are contained in the air operating permit. *Note: this Order supersedes NOC Order of Approval No. 7431 issued on May 6, 1998*. The new Order of Approval was issued to allow installation of OPW brand dispensing equipment in place of the originally permitted Healy brand equipment.

NOC Order of Approval No. 7588, issued November 24, 1998. Approval of one JBI #IDB1212 dry filter spray booth at 18,000 cfm in the Oceanography Building. No approval conditions.

Compliance History

During the past five years, the Puget Sound Clean Air Agency conducted seven compliance inspections of the University of Washington.

The Puget Sound Clean Air Agency has taken the following enforcement actions against the University of Washington during the last five years:

Notice of Violation (NOV) No. 3-000359: Unlawful operation of ethylene oxide (EO) sterilizers and aerators discovered during routine inspection on March 30, 2001. A Compliance Status Report (CSR) was mailed to the University of Washington on April 12, 2001 requesting pertinent information to help verify the violation. The University of Washington responded to the CSR via an April 20, 2001 letter, which stated that:

- About 350 kilograms of EtO gas were processed during 2000;
- The EtO sterilizer and aerator system failed a November 20, 2000 EtO control efficiency test (NIOSH Method 3702 results: 69.2% actual, versus the required 99.9% EtO control efficiency);
- The EtO sterilizer and aerator system was operated (vented to atmosphere) each day during the period November 1, 2000 through February 28, 2001; and
- The failed EtO sterilizer (and aerator) system catalytic bed was replaced on January 12, 2001.

The Puget Sound Clean Air Agency determined that the University of Washington operated the EtO sterilizer and aerator system in violation of Regulation III, Section 3.07(b) EtO control efficiencies for the sterilizers and aerators. The violation occurred at the University of Washington Hospital from November 20, 2000 through January 11, 2001.

NOV No. 3-000359 was mailed to the University of Washington on May 4, 2001, and it was received, according to a returned receipt, on May 5, 2001. The Agency received a written response to NOV No. 3-000359 on May 17, 2001 (via a letter dated May 15, 2001). The Puget Sound Clean Air Agency inspector has recommended issuance of a civil penalty for NOV No. 3-000359. A meeting between University of Washington and Agency staff is scheduled for August 9, 2001, to discuss the EO sterilizer and aerator violation, and other compliance matters. Final enforcement decisions regarding this matter will be made after the meeting.

NOV No. 5-00151: Violations were observed during a routine Puget Sound Clean Air Agency inspection on March 30, 2001. NOV No. 5-00151 was sent by certified mail to the University of Washington on April 12, 2001, for the following violations by

University of Washington's Motor Pool:

- Regulation I, Section 5.05(e) for failure to implement Stage 1 and 2 gasoline vapor recovery self-inspection O&M plan (O&M logs ~ 5 months out-of-date, last entry October 26, 2000);
- Regulation I, Section 9.20, for failure to operate and maintain equipment in good working order (center and eastern gasoline storage tanks in operation with loose fill tube adapters); and
- Regulation II, 2.07(c)(4) for failure to test the Stage 2 vapor recovery system for compliance with its certification requirements (annual compliance test required for OPW Vapor EZ Stage 2 system not conducted during July 1, 1999 - July 1, 2000).

University of Washington received NOV No. 5-00151 on April 13, 2001, according to a returned receipt. The University of Washington's April 20, 2001 response letter addressed all the problems, including committing to conduct required compliance tests at the gas station by May 7, 2001 (to help comply with the corrective action order of NOV No. 5-00151). Civil Penalty No. 9222 was issued to the University of Washington on July 12, 2001 for the gas station violation. The total penalty was $3,300, and an AOD was offered suspending $2,250, if: the remaining $1,050 owed was paid promptly, no repeat unexcused violations occurred during the next 2 years, and the O&M plan was regularly maintained and made available to an Agency inspector upon request. University of Washington and Puget Sound Clean Air Agency staff will meet on August 9, 2001 to discuss NOV No. 5-00151 and Civil Penalty No. 9222 and other compliance issues.

Notice of Violation (NOV) No. 3-000352: Issued March 29, 2001 for failure to operate Boiler No. 4 with a continuous opacity monitor system that meets the quality assurance requirements of Regulation I, Section 12.03(c) and NOC Order of Approval No. 6206, Condition No. 4. University of Washington Director of Environmental Health and Safety stated in a March 8, 2001 letter that the opacity monitoring system for Boiler No. 4 (mounted on the common breeching from all the boilers) is not in compliance with Regulation I, Section 12.03(c); NOC Order of Approval No. 6206, Condition No. 4; and 40 CFR 60.48b(a). University of Washington submitted a written report describing actions that will be taken to correct the violations. University of Washington has installed a continuous opacity monitoring system, but it still needs to be certified. University of Washington has stated that the COMS will be fully operational and certified before the boiler is started up for the autumn 2001 heating season. Civil Penalty No. 9243 was issued to the University of Washington on July 17, 2001, for $1,000. An AOD was offered, suspending $500 of the penalty. A University of Washington letter dated August 2, 2001 (received August 6, 2001) requested mitigation of Civil Penalty No. 9243. A meeting with University of Washington and Agency staff is scheduled for August 9, 2001 to discuss Civil Penalty No. 9243 and other compliance issues. This NOV has not been resolved as of August 9, 2001.

NOV No. 37231: Issued April 25, 2000 during the course of a routine Puget Sound Clean Air Agency inspection for failure to operate and maintain equipment in good working order in violation of Puget Sound Clean Air Agency Regulation I, Section 9.20 and NOC Order of Approval No. 5924, Condition No. 5. The Fluke Hall scrubber system was being operated with scrubber liquor at a pH of approximately 5, which was not within the required pH range (6.5 to 11.0). On May 30, 2000, the Puget Sound Clean Air Agency received a letter stating that employees believed the requirement was being adequately fulfilled by the pH neutralization done on scrubber waste to meet King County Metro Discharge requirements. University of Washington did not realize pH control of scrubber liquor was necessary to minimize corrosion of the scrubber. University of Washington stated that scrubber pH was monitored closely for two weeks, and that staff will be trained and will continue to monitor scrubber operation. The Puget Sound Clean Air Agency issued Civil Penalty No. 9076 based on NOV No. 37231, along with a Consent Order/Assurance of Discontinuance on August 25, 2000. The penalty of $1,000 was suspended if University of Washington takes appropriate corrective action and no similar unexcused violations occur for two years. University of Washington signed the Consent Order/Assurance of Discontinuance on September 25, 2000. On September 26, 2000, the Puget Sound Clean Air Agency received a letter from University of Washington that described an automatic system that had been installed to feed NaOH into the scrubber liquid to maintain pH between 6.5 and 11.0. The Consent Order/Assurance of Discontinuance remains active until September 25, 2002.

NOV No. 37171: Issued March 26, 1998 because the University of Washington motor pool was dispensing gasoline without an O&M Plan for underground storage tanks and associated vapor recovery equipment and dispensers. The inspector also found missing coaxial gaskets, and some drop tubes too short. University of Washington responded via a letter on April 7, 1998. Puget Sound Clean Air Agency inspected the gasoline dispensing facility on October 14, 1998, at which time the inspector verified that the tanks had been removed. The case was closed in 1999 via a letter from Puget Sound Clean Air Agency to University of Washington.

CEM Violations - NOV Nos. 35276 to 35280 and 37203:

NOV No. 37203: Issued February 26, 1998 because the January 1998 continuous emission monitor (CEM) report (combined boilers stack) indicated that on June 27, 1998 there was a CEM calibration failure that resulted in data loss in excess of the 10% allowed under Puget Sound Clean Air Agency Regulation I, Section 12.03(h)(4). The boilers ran for 24 hours that day, so 21.6 hours of valid CEMS data were required. The calibration error caused the invalidation of 7 hours of CEMS data, leaving only 17 hours of valid CEMS data for that day.

NOV No. 35282 (formerly No. 35279): Issued June 18, 1997 because the April 1977 CEM report (combined stack) indicated CEM calibration failure that resulted in data loss in excess of the 10 percent allowed under Puget Sound Clean Air Agency Regulation I, Section 12.03(h)(4) (also a violation of Order of Approval No. 6206(8)) because only 16 hours of valid CEMS data were acquired out of 24 hours of boiler operation on April 4,

1997. The regulation required 22 hours of valid data for 24 hours of operation. On July 29, 1979, the Puget Sound Clean Air Agency sent a notice to University of Washington that NOV No. 35279 was being assigned a new number, NOV No. 35282, because NOV No. 35279 had the violation occurring in 1996 rather than 1997.

NOV No. 35280: Issued June 18, 1997 because the April 1997 CEM report (combined stack) indicated NO_X emissions in excess of the 0.10 lb/MMBtu allowed under Order of Approval No. 6206(6), from 1100 to 1500 hours on April 5, 1997.

NOV No. 35278: Issued June 18, 1997 because the April 1997 CEM report (combined stack) indicated CEM calibration failure that resulted in data loss in excess of 10% allowed under Puget Sound Clean Air Agency Regulation I, Section 12.03(h)(4) (also a violation of Order of Approval No. 6206(8)), 19 hours of valid data out of 24 hours of operation on April 3, 1997.

NOV No. 35277: Issued June 18, 1997 because the April 1997 CEM report (combined stack) indicated NO_X emissions in excess of 0.10 lb/MMBtu allowed under Order of Approval No. 6206(6), from 1230 to 1340 hours on April 3, 1997.

NOV No. 35276: Issued June 18, 1997 because the April 1997 CEM report (combined stack) indicated NO_X emissions in excess of 0.10 lb/MMBtu allowed under Order of Approval No. 6206(6) (also a violation of Order of Approval No. 6206(8)), from 1200 to 2000 hours on April 2, 1997.

University of Washington explained the circumstances causing the NO_X exceedances and CEMS faults, described corrective actions being implemented, and gave reasons why the exceedances should be excused as unavoidable excess emissions in two letters, dated May 28 and July 17, 1997. On January 20, 1998, the Puget Sound Clean Air Agency assessed a $7,000 penalty due to the violations of Conditions No. 6 and No. 8 of Order of Approval No. 6206 with $4,500 suspended, based on University of Washington taking corrective actions, under a Consent Order/Assurance of Discontinuance (Civil Penalty No. 8783). The Consent Order/Assurance of Discontinuance had a December 31, 1999 deadline, and was signed by the University of Washington on June 10, 1998. The University of Washington subsequently corrected the monitoring and emissions problems, as reported to the Puget Sound Clean Air Agency in a February 1, 2000 letter. The Puget Sound Clean Air Agency inspected the facility on February 2, 2000 and verified that the monitoring and emissions problems had indeed been corrected. On March 15, 2000, the Puget Sound Clean Air Agency sent a letter to the University of Washington stating that the University was considered to be in compliance with the terms of the Consent Order and Assurance of Discontinuance for Civil Penalty No. 8783.

Compliance Status Report (CSR): Issued April 3, 2000. A Puget Sound Clean Air Agency inspector requested that University of Washington send copies of O&M Plan maintenance logs for Fluke Hall scrubber and for the crematory. The inspector also requested maintenance logs for the baghouse at the Maintenance Building. University of Washington responded in a letter received on April 19, 2000. This action was determined to be sufficient, and the Puget Sound Clean Air Agency has closed this matter.

CSR: Issued October 21, 1998. A Puget Sound Clean Air Agency inspector noted that the Bagley Hall Mechanical Room had four local areas with dry suspect asbestos. The inspector verbally recommended that the area be wetted down and that all suspect asbestos be abated as soon as possible.

CSR: Issued February 25, 1998. A Puget Sound Clean Air Agency inspector noted that O&M Plans were not available for inspection at spray coating booths located at University of Washington Plant Services. On March 17, 1998, the Puget Sound Clean Air Agency received a letter from University of Washington that described revisions to the O&M Plan and posting of a maintenance log near the paint booth.

CSR: Issued March 5, 1997. A Puget Sound Clean Air Agency inspector noted that four hours of No. 4 Boiler emission data were not recorded on December 16 and 22, 1996 during repairs to a CEMS sampling pump, and eight hours of combined stack emissions data were not recorded due to CEM software failure. On March 17, 1997, the Puget Sound Clean Air Agency received a letter from University of Washington that described steps taken by University of Washington to prevent a similar recurrence.

CSR: Issued August 29, 1996. The Puget Sound Clean Air Agency inspector noted that the crematory operator was not familiar with operation of the equipment installed under Order of Approval No. 5602. University of Washington was required by the Puget Sound Clean Air Agency to develop an O&M Plan for crematory operation, and to update the plan as necessary at least once per year. On September 17, 1996, the Puget Sound Clean Air Agency received a letter from University of Washington that described steps taken by University of Washington to prevent a similar recurrence.

CSR: Issued October 30, 1995. The Puget Sound Clean Air Agency inspector noted that the ethylene oxide sterilizer operator was not familiar with operation of the equipment installed under Order of Approval No. 4578. The Puget Sound Clean Air Agency inspector also noted that the Motor Pool Paint Shop personnel did not know how to use the manometer to tell when to service the dry fabric filter. On November 20, 1995, the Puget Sound Clean Air Agency received a letter from University of Washington that described steps taken by University of Washington to prevent a similar recurrence.

There is not a record of complaints concerning University of Washington being received by Puget Sound Clean Air Agency during the last five years.

Emission Inventory

See Attachment A.

Explanation of Applicable Requirements

Applicable requirements are listed in several sections of this operating permit as outlined below. The permit only lists the requirements that the Puget Sound Clean Air Agency has determined to be within the scope of the definition of "applicable requirements" under the operating permit program. University of Washington is legally responsible for complying with all applicable requirements of the operating permit as well as other requirements that do not fit the definition of "applicable requirements" found in Chapter 173-401 Washington Administrative Code (WAC). Some of the applicable requirements contain terms or monitoring, maintenance and recordkeeping that require detailed explanation in this statement of basis. The specific conditions are listed below, along with any necessary explanations in monitoring, maintenance and recordkeeping requirements.

Applicable Requirements

University of Washington is subject to all the requirements listed in Section I of the permit. Section I.A contains the requirements that are applicable campus-wide, and Section I.B contains requirements applicable only to specific emission units. The requirements in Section I.B apply only to the specific emission units cited; however, the requirements in Section I.A also apply to the specific emission units or activities described in Section I.B. If the monitoring, maintenance and recordkeeping method for any requirement in Section I.A is more extensive for specific emission units, that requirement is repeated in Section I.B with the additional monitoring, maintenance and recordkeeping requirements.

Section I.A. (Campus-wide)

The table in Section I.A lists the citation for the "applicable requirement" in the second column. The third column (Date) contains the adoption or effective date of the requirement. In some cases, the effective dates of the Federally Enforceable or "SIP[1]" Requirement and the Non-Federally Enforceable or "*STATE ONLY*" Requirement are different. This is because only rules approved by EPA through Sections 110, 111, and 112 of the federal Clean Air Act are federally enforceable, and either the state has not submitted the regulation to the EPA or the EPA has not yet approved it. State only

1 "SIP" means "state implementation plan" which is a plan for improving or maintaining air quality and complying with the Federal Clean Air Act. The Federal Clean Air Act requires states to submit these plans to the US EPA for its review and approval. This plan must contain the rules and regulations of the state agency or local air authority necessary to implement the programs mandated by federal law. Once the EPA adopts the plan or elements of it, the plan and its requirements become "federally enforceable" by EPA. New or modified state or local rules are not federally enforceable until they are "adopted into the SIP" by the EPA.

requirements are identified by a brief explanatory phrase, always including the *"STATE ONLY"* descriptor in the second column and by italicized adoption date in the third column.

The first column is used as an identifier for the requirement, and the fourth (Requirement Paraphrase) column paraphrases the requirement. The first and fourth columns are for information only and are not enforceable conditions of this permit. The actual enforceable requirement is embodied in the requirement cited in the second and third columns.

The fifth column (Monitoring, Maintenance & Recordkeeping Method) identifies the methods described in Section II of the permit. Following these methods is an enforceable requirement of this permit. The sixth column identifies the averaging time for the reference test method. The last column (Reference Test Method) identifies the reference method associated with an applicable emission limit that is to be used if and when a source test is required. In some cases where the applicable requirement does not cite a test method, one has been added.

In the event of conflict or omission between the information contained in the fourth and sixth columns and the actual statute or regulation cited in the second column, the requirements and language of the actual statute or regulation cited shall govern. For more information regarding any of the requirements cited in the second and third columns, refer to the actual requirements cited.

Requirement IA.1 – General Regulation

Requirement IA.1 contains the preamble to WAC 173-400-040, which itself contains all the basic emission limitations in Chapter 173-400 WAC. The brief sentence "Emissions from a common stack must meet the most restrictive standard of any of the connected emissions units" paraphrases several sentences in the actual regulation. The intent of this part of the rule is that when a facility has two or more processes venting through a common stack, and there is no practical way to distinguish how much each process contributes to the emissions from the stack, the most stringent emission standard in Chapter 173-400 WAC applies. It should be noted, however, that the "most stringent standard" provision does not apply to emission limits not contained in Chapter 173-400 WAC, such as the limits in notices of construction.

All of the University of Washington Power Plant boilers vent through a common stack. Boiler No. 7 is the most recently permitted, and it has the tightest limits. However, Boiler No. 7 has continuous emission monitors, so the relative contribution of that unit to the main stack can be determined. Therefore, the tight emission limits of Boiler No. 7 do not have to be applied to the entire stack.

Requirement IA.2 - General Opacity

Requirement IA.2 regulates visible emissions from opacity emission points that do not have continuous opacity monitoring systems (COMS). Both WAC 173-400-040(1) and Puget Sound Clean Air Agency Regulation I, Section 9.03 standards are 20% opacity and apply to all stationary sources. Regulation I, Section 9.03 applies to all stationary sources that do not have continuous opacity monitoring systems, but WAC 173-400-040(1) applies to all sources, with or without a COMS. Two of the boiler exhaust flues have continuous opacity monitoring systems (COMS) regulated under Puget Sound Clean Air Agency Regulation I, Section 9.09(b) *[federally enforceable]* or Section 9.04(c) *[state/local requirements]*, and the main exhaust stack has an opacity meter, so Requirement IA.2 would primarily regulate activities that are ancillary to the operation of the boilers.

The monitoring method is based on monthly visual inspections of all emission points at University of Washington, with the source taking corrective action or using the reference test method, WDOE Method 9A, to determine opacity if any visible emissions are noted. The Puget Sound Clean Air Agency has determined that the monitoring should be monthly for the reasons listed below. **(Note that the rationale contained in the reasons listed below applies to all monitoring performed under Section II.A.1(a) of the air operating permit, but the detailed reasoning is only listed once)**:

1) Initial compliance. The Puget Sound Clean Air Agency has not issued a Notice of Violation (NOV) to the University of Washington for a violation of visible emission requirements in the past five years.
2) Margin of compliance. The University of Washington does not have any units that normally emit opacity, other than specifically listed emission units such as the boilers. No Puget Sound Clean Air Agency inspector has observed opacity emissions from any source other then the boiler stacks
3) Variability of process and emissions. The ancillary processes are variable, depending upon fuel type and overall rate of operation of the particular emission unit. All potential sources of particulate emissions and/or opacity are maintained in accordance with the O&M Plan. The most significant variable affecting emissions would be the degree to which University of Washington follows the O&M Plan.
4) Environmental impacts of problems. Observed opacity is generally related to emissions of particulate matter or finely divided liquid droplets. All the emission points at University of Washington combined, other than the boiler stacks, normally emit less than a ton of particulate per year, which is not significant in most cases. A temporary maintenance problem is unlikely to result in emissions that would have a significant environmental impact.
5) Technical considerations. University of Washington is required to inspect all areas of the facility that have a reasonable chance of having opacity emissions at least once per quarter, and is required to follow O&M Manual procedures for minimizing

entrainment of dust from storage piles or during boiler ash handling operations.

Requirements IA.3, EU-1.7, EU-2.13, EU-3.19 and EU-4.9– Standards, SO_2

Puget Sound Clean Air Agency Regulation I, Section 9.07 and WAC 173-400-040(6) have been grouped together under Requirements IA.3, EU-1.7, EU-2.13, EU-3.19, and EU-4.9 since they are equivalent requirements (SO_2 emissions not to exceed 1,000 parts per million on a dry, volumetric basis[2] (ppm)) and have the same monitoring requirements.

The second paragraph of WAC 173-400-040(6), which is not in the Puget Sound Clean Air Agency regulations and is not adopted into the SIP, allows for exceptions to this requirement if the source can demonstrate that there is no feasible method of reducing the SO_2 concentrations to 1,000 ppm. This requirement is not federally enforceable and is not an applicable requirement for sources regulated by the Puget Sound Clean Air Agency.

The boilers burn only natural gas and distillate or very low sulfur oil. The University of Washington combusts only natural gas in combustion units throughout the rest of the facility, and is incapable of violating the SO_2 limit while complying with the other requirements in the permit. The following calculations show that it is mathematically impossible for a unit to emit 1,000 ppm sulfur dioxide while burning natural gas or very low sulfur oil. Therefore, no additional monitoring, other than fuel sulfur-content monitoring requirements specified in NSPS Subpart Db, is required.

Natural gas:

Natural gas means a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the Washington Utilities and Transportation Commission. Natural gas may also be referred to as "pipeline quality natural gas." University of Washington receives the same natural gas as all of the other natural gas consumers, private and industrial, in the Northwest. According to Section 1.4-3 of AP-42, natural gas contains approximately 2000 grains of sulfur per million cubic feet, which is equivalent to approximately 3.4 parts of sulfur per million cubic feet of natural gas, as shown in the following calculation:

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[2] "ppm" means "parts per million on a dry, volumetric basis." Sometimes this is written as "ppmdv." Stack gas is usually sampled through a probe placed somewhere in the middle of the stack cross-section. The moisture is removed from the gas stream as part of the sampling process. The stack gas sample is analyzed for the pollutant in question, with the lab results being calculated as cubic feet (or meters) of pollutant per million cubic feet (or meters) of dry stack gas. If you had a stack with 50% moisture that was running right at the 1,000 ppm SO_2 standard, you would have 1,000 cubic feet of SO_2 for every million cubic feet of dry stack gas. You would also have 1,000 cubic foot of SO_2 for every *two* million cubic feet of "wet" (as is) stack gas, which is 500 ppm. This is why it's important to know how stack sampling is done and why stack sampling and continuous emission monitoring methods are so specific.

$$\frac{2{,}000\,gr\,S}{1{,}000{,}000\,ft^3\,nat.gas}\times\frac{1lb}{7000\,gr}\times\frac{385\frac{ft^3}{mole\,S}}{32\frac{lb}{mole\,S}}=3.44\times10^{-6}\,\frac{ft^3\,S}{ft^3\,nat.gas}\equiv3.44\ \ ppmdv\,S$$

According to *Perry's Chemical Engineer's Handbook*, each cubic foot of natural gas requires approximately 10 cubic feet of air for combustion, yielding approximately 11 cubic feet of combustion exhaust gases, consisting mostly of nitrogen, water vapor, and carbon dioxide. The sulfur in the natural gas will almost all be converted to sulfur dioxide, with each cubic foot of sulfur producing the same volume of sulfur dioxide. Since each cubic foot of natural gas contains 3.44×10^{-6} cubic foot of sulfur, each cubic foot of stack exhaust will contain approximately:

$$3.44\times10^{-6}\,\frac{ft^3\,S}{ft^3\,nat.gas}\times\frac{1\,ft^3\,SO_2}{1\,ft^3\,S}\times\frac{1\,ft^3\,nat.gas}{11\,ft^3\,stack\,exhaust}=3.13\times10^{-7}\,\frac{ft^3\,SO_2}{ft^3\,stack\,exhaust}$$

This is equivalent to 0.31 ppmdv SO_2. Note that this estimated value is less than one-tenth of one percent of the 1,000 ppm SO_2 standard. Therefore, it is reasonable to assume that combustion units that are fired on natural gas cannot exceed the 1,000 ppm SO_2 limits in Puget Sound Clean Air Agency Regulation I, Section 9.07 and WAC 173-400-040(6).

Oil, "very low sulfur" and "distillate":

All the boilers vent through a single stack. NSPS Subpart Db limits boilers No. 4 and No. 7 to "very low sulfur" oil in order to avoid the requirement to install a CEMS for SO_2. The tanking arrangement is such that any oil storage tank at the University of Washington Power Plant could possibly supply fuel oil to either Boiler No. 4 or Boiler No. 7, so no tank can be fueled with oil with a sulfur content in excess of 0.5% sulfur.

"Very low sulfur oil" is defined in NSPS Subpart Db as "an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 215 ng/J (0.5 lb/million Btu) heat input."

"Distillate oil" is defined in NSPS Subpart Db as "fuel oils that contain 0.05% weight percent nitrogen or less and comply with the specifications for fuel oil numbers 1 and 2[3], as defined by the American Society of Testing and Materials in ASTM D396-78, Standard Specifications for Fuel Oils, which has been incorporated by reference into 40 CFR 60.17."

We can use the conversion factors given in 40 CFR 60 Appendix A, Reference Method 19 to estimate the SO_2 concentration in the main stack in ppm if all the

[3] ASTM D396-78 requires that No. 2 fuel oil containing greater than 0.05% sulfur be dyed with Solvent Red 164 at the concentration spectrally equivalent to at least 3.9 pounds of the solid dye Standard Red 26 per 1,000 barrels in accordance with the mandates of the US EPA and IRS.

boilers were burning 0.5% sulfur oil and emitting 0.5 lb/MMBtu SO_2.

According to Table 19.1, burning a million Btu of oil produces 9,190 dry standard cubic feet of stack gas. One part per million SO_2 is equivalent to 1.66×10^{-7} ppmdv.

$$0.5\,lb\,SO_2 / MMBtu \times \frac{1\,MMBtu}{9{,}190\,dscf} \times \frac{1\,ppdv}{1.660 \times 10^{-7}} = 327.7\,ppm\,SO_2$$

Therefore, it is reasonable to assume that the boiler main stack, which is the only significant source of SO_2 on the University of Washington Seattle Campus, will not emit SO_2 in excess of 1,000 ppmdv if the boilers burn only natural gas or very low sulfur oil.

Requirements IA.4, EU-1.5, EU-2.10, EU-3.16, and EU-4.7 - General PM Concentration

Puget Sound Clean Air Agency Regulation I, Section 9.09(a) *[federally enforceable]* and Section 9.09 *[STATE ONLY]* set particulate matter emission concentration limits, depending upon whether the regulated equipment is used in a manufacturing process, or if it burns fuel of specified types. Requirements IA.4, EU-1.5, EU-2.10, EU-3.16, and EU-4.7 incorporate these requirements, and apply mainly to emission units with exhaust stacks (other than the boilers that are regulated under emission unit-specific requirements). The University of Washington controls emissions of particulate matter by use of proper hooding, collection, and venting in accordance with "good engineering practice for minimizing emissions" operation and maintenance procedures that are documented in the O&M Manual.

Observable opacity and particulate matter concentration tend to increase and decrease in direct proportion. To some extent, the monthly opacity readings used to reasonably assure compliance with Requirement IA.2 (opacity limit) and will also reasonably assure compliance with Requirements IA.4, EU-1.5, EU-2.10, EU-3.16, and EU-4.7 (particulate matter limit). Generally, the same problems that cause opacity from these units will also cause an increase in particulate matter concentration, and any corrective action taken to reduce observed opacity will also reduce particulate matter concentration.

The monitoring method is based on quarterly campus-wide and roof-top inspections of the entire University of Washington, with the source taking corrective action if any problems, such as excessive corrosion or damage to air pollution-related process or control equipment, are observed. In addition to the quarterly campus-wide inspections, the University of Washington is required to inspect the inside of all baghouses once each month, thereby minimizing the chance of a catastrophic baghouse failure. The Puget Sound Clean Air Agency has determined that the monitoring should be done at the specified frequencies for the reasons listed below.

1) Initial compliance. Puget Sound Clean Air Agency Regulation I, Section 9.09(a) *[federally enforceable]* and Section 9.09 *[STATE ONLY]* are similar requirements that address particulate matter emissions. The facility has never been found to be in

violation of these requirements.

2) Margin of compliance. The emission units are unlikely to generate air contaminant emissions in sufficient quantities to violate particulate emission standards if they are properly maintained.

3) Variability of process and emissions. All potential sources of air contaminant emissions and/or opacity are required to be maintained in accordance with the O&M Plan. The most significant variable affecting emissions would be the degree to which University of Washington follows its O&M Plan.

4) Environmental impacts of problems. All the emission points at University of Washington combined, other than the boiler stacks, normally emit only negligible amounts of air contaminants, including particulate matter, per year. A temporary maintenance problem, if addressed in accordance with the requirements contained in the air operating permit, is unlikely to result in emissions that would have a significant environmental impact.

5) Technical considerations. University of Washington is required to inspect all areas of the facility at least once per quarter, and is required to follow O&M Manual procedures for minimizing entrainment of dust from storage piles or during boiler ash handling operations.

In addition to the periodic inspections described above, University of Washington is also required to actively respond to citizen complaints. The complaint response monitoring, maintenance and recordkeeping method is fully explained in Section II.A.1(b) of the air operating permit.

Requirement IA.5 – "Nuisance"

Puget Sound Clean Air Agency Regulation I, Section 9.11(a) and Department of Ecology WAC 173-400-040(5) state that a source shall not emit air contaminants in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.

The monitoring method is based on responding to complaints and general, campus-wide inspections of the facility to identify any emissions that are likely to be injurious to human health, plant or animal life, or property, or that unreasonably interfere with enjoyment of life and property. Receiving complaints does not necessarily mean University of Washington is in violation of this requirement; however, University of Washington has a responsibility to investigate complaints and take corrective action if necessary. University of Washington does not handle or process material that is likely to cause fugitive dust emissions. Nearly all the roadways and parking lots are paved. Therefore, the Puget Sound Clean Air Agency has determined that complaint response and the quarterly campus-wide inspections required in Section II.A.1(c) of the permit are sufficient to monitor for changes that would cause a fugitive emission or unexpected

buildup of dust on the roadways and parking lots. The Puget Sound Clean Air Agency has determined that the monitoring should be done at the specified frequencies for the reasons listed below.

1) Initial compliance. The facility has never been found to be in violation of the requirements of Puget Sound Clean Air Agency Regulation I, Section 9.11(a).

2) Margin of compliance. The most likely source of air contaminants that could violate Section 9.11(a) would be fugitive particulate emissions resulting from on-site construction projects, or from vehicle operations. For construction projects, materials likely to generate dust are kept under cover even when being conveyed. Where possible, these covers and enclosures are vented to fabric-filtration (baghouse) controls that are subject to monitoring, maintenance and recordkeeping requirements. All the roadways and nearly all parking lots are paved within the University of Washington boundaries. The only unpaved parking lot is in a remote area of the campus near Lake Washington. The non-power plant emission units are unlikely to generate air contaminant emissions in sufficient quantities to be injurious or unreasonably interfere with enjoyment of life and property except under the most unusual circumstances, if they are properly maintained. The boilers have continuous emissions monitoring systems and automatic controls to help maintain proper combustion conditions while minimizing emissions of air pollutants. Plant personnel will be able to take corrective action before problems with the boilers could become bad enough to cause a violation of Section 9.11(a).

3) Variability of process and emissions. All potential sources of air contaminant emissions and/or opacity are maintained in accordance with the O&M Plan. The most significant variable affecting emissions would be the degree to which University of Washington follows the O&M Plan (same rationale as Requirement IA.2, above).

4) Environmental impacts of problems. A temporary maintenance problem is unlikely to result in emissions that would have a significant environmental impact (same rationale as Requirement IA.2, above).

5) Technical considerations. University of Washington is required to inspect all areas of the facility at least once per quarter, and is required to follow O&M Manual procedures for minimizing entrainment of dust from storage piles or during boiler ash handling operations.

In addition to the periodic inspections described above, University of Washington is also required to actively respond to citizen complaints. The complaint response monitoring, maintenance and recordkeeping method is fully explained in Section II.A.1(b) of the air operating permit.

Requirements IA.6, IA.7 and IA.8 – Fugitive Dust

The federally enforceable version of Puget Sound Clean Air Agency Regulation I, Section 9.15 (IA.6) requires that "best available control technology" be employed by the University of Washington to minimize fugitive dust emissions. The non-federally

enforceable version of Puget Sound Clean Air Agency Regulation I, Section 9.15 (IA.7) requires that "reasonable precautions" be employed by University of Washington to minimize fugitive dust emissions. WAC 173-400-040(3) addresses fugitive dust emissions for some activities, and WAC 173-400-040(8) requires reasonable precautions or reasonably available control technology (RACT) to control fugitive emissions (IA.8). All of these requirements are generally interpreted to mean that equipment has to be operated and maintained so that fugitive emissions are minimized, and when that doesn't happen, corrective action must be taken.

The Puget Sound Clean Air Agency Board of Directors revised Section 9.15 on March 11, 1999 and it became effective April 17, 1999. The amended version has been forwarded to EPA as a SIP amendment. Upon approval of the SIP changes, the revised version of Regulation I, Section 9.15 will be federally enforceable and the old version will no longer apply. The revised rule requires the use of reasonable precautions for fugitive dust and lists some examples of reasonable precautions.

Recording of fugitive dust emissions is not necessarily a violation of the requirement, since the requirement does not prohibit fugitive dust emissions, but prohibits fugitive dust emissions when the required level of precautions is not employed.

The monitoring method is based on rapid complaint response and on quarterly campus-wide and roof-top inspections of the entire University of Washington, with the source taking corrective action if any problems, such as excessive corrosion or damage to air pollution-related process or control equipment, are observed. The monitoring method is consistent with Puget Sound Clean Air Agency's *"Agency Policy on Fugitive Dust Controls, March 1995,"* which specifies reasonable precautions that must be taken to prevent fugitive dust emissions, but does not necessarily define BACT for all processes. The Puget Sound Clean Air Agency has determined that the monitoring should be done at the specified frequencies for the reasons listed below.

1) Initial compliance. No complaints have been received and no Notices of Violation (NOVs) issued by the Puget Sound Clean Air Agency as a result of fugitive emissions. Therefore, the Puget Sound Clean Air Agency concludes that the University of Washington is generally in compliance with the fugitive emission requirements.

2) Margin of compliance. The monitoring method is designed so that the source will take corrective action before a violation occurs.

3) Variability of process and emissions. All potential sources of air contaminant emissions and/or opacity are maintained in accordance with the O&M Plan. The most significant variable affecting emissions would be the degree to which University of Washington follows the O&M Plan.

4) Environmental impacts of problems. A temporary maintenance problem at the emission points of the University of Washington, other than the boiler stacks, is

unlikely to result in emissions that would have a significant environmental impact.

5) Technical considerations. University of Washington is required to inspect all areas of the facility at least once per quarter, and is required to follow O&M Manual procedures for minimizing entrainment of dust from storage piles or during boiler ash handling operations.

In addition to the periodic inspections described above, University of Washington is also required to actively respond to citizen complaints. The complaint response monitoring, maintenance and recordkeeping method is fully explained in Section II.A.1(b) of the air operating permit.

Requirements IA.9, EU-1.1, EU-2.2, EU-3.3, EU-4.1, EU-5.1, EU-6.1, EU-7.1, EU-8.1, EU-9.1 and EU-10.1 – Maintain Sources In good Working Order

Puget Sound Clean Air Agency Regulation I, Section 9.20 requires University of Washington to maintain equipment in good working order. Section 9.20(a) applies to sources that received a NOC Order of Approval under Puget Sound Clean Air Agency Regulation I, Article 6. Section 9.20(b) applies to equipment not subject to Section 9.20(a). Section II.A, Monitoring, Maintenance and Recordkeeping Procedures of the permit, identifies the minimum monitoring criteria for maintaining equipment in good working order. The section identifies both campus-wide criteria and specific criteria for the emission units and activities. In addition, the campus-wide inspections provide monitoring of the general effectiveness of University of Washington O&M Plan. The Puget Sound Clean Air Agency chose to list all of Section II.A as the monitoring method because many parts of Section II.A apply to several emission units and activities. Where there are specific monitoring requirements for specific emission units, the Puget Sound Clean Air Agency has listed them in Section II.A.2. The Puget Sound Clean Air Agency has determined that following the requirements of Section II of the permit provides sufficient monitoring criteria to certify that the equipment has been maintained in good working order. However, the Puget Sound Clean Air Agency reserves the right to evaluate the maintenance of each piece of equipment to determine if it has been maintained in good working order. Note that EU-1.1, EU-2.2, EU-3.3, EU-4.1, EU-5.1, EU-6.1, EU-7.1, EU-8.1, EU-9.1 and EU-10.1 are emission unit-specific requirements, but they have been included here because this explanation is exactly the same as it would be if it were repeated in the "Emission Unit Specific" section below.

Requirement IA.10 – O&M Plan

In accordance with Puget Sound Clean Air Agency Regulation I, Section 7.09(b), University of Washington is required to develop and implement an O&M Plan to assure continuous compliance with Puget Sound Clean Air Agency Regulations I, II, and III. The requirement specifies that the plan shall reflect good industrial practice, but does not define how to determine good industrial practice. To clarify the requirement, the Puget Sound Clean Air Agency has added that, in most instances, following the manufacturer's

operations manual or equipment operational schedule, minimizing emissions until the repairs can be completed and taking measures to prevent recurrence of the problem may be considered good industrial practice. This language is consistent with a Washington Department of Ecology requirement in WAC 173-400-101(4). The Puget Sound Clean Air Agency has also added language establishing criteria for determining if good industrial practice is being used. These criteria include: monitoring results, opacity observations, review of operations and maintenance procedures, and inspections of the emission unit or equipment. The Puget Sound Clean Air Agency added this wording in response to Washington State court decision, Longview Fibre Co. v. DOE, 89 Wn. App. 627 (1998), which held that similar wording was not vague and gave sufficient notice of the prohibited conduct.

Puget Sound Clean Air Agency Regulation I, Section 7.09(b) also requires University of Washington to promptly correct any defective equipment. However, the underlying requirement in most instances does not define "promptly"; so the Puget Sound Clean Air Agency added clarification that "promptly" usually means "as soon as possible, but not later than within 24 working hours" from when the problem is first observed. For many insignificant emission units and for equipment not listed in the permit, "promptly" cannot be defined, because the emission sources and suitable pollution control techniques vary widely, depending on the contaminant sources and the pollution control technology employed. However, the permit identifies a means by which to identify if University of Washington is following good industrial practice.

As described in Section V.P, University of Washington must report to the Puget Sound Clean Air Agency any instances where it failed to promptly repair any defective equipment. In addition, University of Washington has the right to claim certain problems were unavoidable (Section V.R) or the result of an emergency (Section V.Q).

Following these requirements demonstrates that University of Washington has properly implemented the O&M Plan, but it does not prohibit the Puget Sound Clean Air Agency or EPA from taking any necessary enforcement action to address violations of the underlying applicable requirements after proper investigation.

Requirement IA.11 - Odors

WAC 173-400-040(4) addresses odors. The monitoring method is based on responding to complaints and general inspections of the facility to identify emissions of odor-bearing contaminants and correcting any problems identified as a result of the inspection or investigation. Receiving complaints does not necessarily mean University of Washington is in violation of this requirement, since the regulation does not prohibit the emission of odors, but prohibits the emissions of odors if BACT is not employed to control emissions. Complaints will trigger action by University of Washington to investigate and prevent a violation.

Requirement IA.12 – Particulate Matter Deposition

WAC 173-400-040(2) prohibits the emission of particulate matter from the facility to be deposited beyond the property line in sufficient quantity as to unreasonably interfere with the use and enjoyment of the property upon which the material is deposited. The monitoring method is based on responding to complaints and general inspections of the facility to identify any particulate emissions or deposition of particulate that may unreasonably interfere with the use and enjoyment of property and correcting any problems identified as a result of the inspection or investigation. Receiving complaints does not necessarily mean University of Washington is in violation of this requirement, but triggers action by the source to prevent a violation. The Puget Sound Clean Air Agency has determined that the monitoring should be done at the specified frequencies for the reasons listed below.

1) Initial compliance. The facility has never been found to be in violation of the requirements of WAC 173-400-040(2). Therefore, the Puget Sound Clean Air Agency concludes that the University of Washington is generally in compliance with the fugitive emission requirements.

2) Margin of compliance. (Rationale here is equivalent to that used for Requirements IA.6, IA.7, IA.8).

3) Variability of process and emissions. (Rationale here is equivalent to that used for Requirements IA.6, IA.7, IA.8).

4) Environmental impacts of problems. (Rationale here is equivalent to that used for Requirements IA.6, IA.7, IA.8).

5) Technical considerations. (Rationale here is equivalent to that used for Requirements IA.6, IA.7, IA.8).

In addition to the periodic inspections described above, University of Washington is also required to actively respond to citizen complaints. The complaint response monitoring, maintenance and recordkeeping method is fully explained in Section II.A.1(b) of the air operating permit.

Requirement IA.13 – Fugitive Dust

RCW 70.94.040 is similar to Puget Sound Clean Air Agency Regulation I, Section 9.11 and is listed separately here because it is not a federally enforceable requirement.

Requirement IA.14 – Fuels, Trace Compound & Flashpoint

University of Washington commented that the monitoring method for this requirement should be II.A.2(a) which prohibits the burning of any used oil at the boilers, rather than II.A.1(d), which requires measuring for these compounds when used oil is received for

the purpose of combustion. II.A.1(d) is for all activities on the Seattle campus *other than the boilers*. University of Washington may need to receive some small quantities of used oil for a study or a project. II.A.1(d) says that if they do receive used oil, they have to make sure it is OK before they burn it. The boilers, on the other hand, are not allowed to burn used oil, so there is no need to test for the trace compounds that only approach the limit values in used oil.

Section I. B. (Emission Unit Applicable Requirements)

Section I.B. of the permit lists applicable requirements that are specific to an emission unit or activity. The Generally Applicable Requirements of Section I.A. apply to all the emission units listed in Section I.B. and are not repeated in this section. Monitoring Methods and Reference Methods are also identified if they are different from, or in addition to, those listed in Section I.A.

The EPA incorporates what the EPA has determined to be "all necessary monitoring" into all recently adopted federal air pollution regulations. Where a recently adopted federal regulation does not identify a monitoring method, the permit does not identify one either, except in some cases where the Puget Sound Clean Air Agency has determined additional monitoring to be necessary. Finally, any requirements that are inapplicable to the specific emission unit are also listed in this section.

Requirements EU-1.3, EU-2.4 and EU-3.7 – Standards, Fuel

These permit requirements all contain Puget Sound Clean Air Agency Regulation I, Section 9.08(a), which sets limits for ash, sulfur, trace metals, and flash temperature in fuel oil. These regulatory limits have been incorporated into the Revised Code of Washington, Section 70.94.610, "Burning used fuel oil in land-based facilities." "Used" oil is typically oil that has been drained from a gasoline or diesel fueled internal combustion engine at the end of the oil service interval. Regulation I, Section 9.08(a) attempts to limit emissions of trace compounds from an oil-fired boiler by setting limits on the trace compounds that might be present in fuel oil. Generally, any "new" or non-used distillate or very low sulfur oil does not contain any of the listed trace elements at concentrations even approaching the standards.

The U.S. Oil & Refining Company is another source within the jurisdiction of the Puget Sound Clean Air Agency that is applying for an air operating permit. The U.S. Oil & Refining Company also has to comply with Puget Sound Clean Air Agency Regulation I, Section 9.08(a). The U.S Oil & Refining Company tested and certified each batch of fuel oil prior to combustion in refinery fuel oil burning equipment in order to verify compliance with Regulation I, Section 9.08(a), and recently applied to the Puget Sound Clean Air Agency for permission to reduce the testing requirements because the test results are consistently far below the standards. The testing was done on all batches of fuel oil received from January 1994 through October 1997. The reported values were examined and the values that are closest to the allowable levels are shown in the table below:

Compound or parameter	Regulatory Limit	U.S. Oil & Refining Measurement	Percent of Standard
Ash	0.1%	0.026%	26%
Sulfur, used oil	1.0%	n/a	n/a
Sulfur, fuel oil	2.00%*	1.92%	96%
Lead	100 ppm	<1ppm	1%
Arsenic	5 ppm	<1ppm	20%
Cadmium	2 ppm	<1ppm	50%
Chromium	10 ppm	<1ppm	10%
Total halogens	1,000 ppm	Non-detectable	n/a**
PCBs	2 ppm	Non-detectable	n/a**
Flashpoint (minimum allowable)	100 °F	184 °F	184%***

* Only "very low sulfur oil" at 0.5% sulfur, or "distillate oil" at 0.05% sulfur is used at the University of Washington, and the sulfur content values would be 50% and 5% of the standard, respectively.

** Halogens and PCBs are only found in used oil.

*** The regulatory limit of 100 °F is a minimum. Therefore, a higher percentage indicates a higher compliance "safety margin."

Similar results are found in AP-42, Section 1.3, *Fuel Oil Combustion*. Table 1.3-10 lists emission factors for trace elements from distillate combustion fuel oil sources. Emission factors are listed in terms of lb/10^{12} Btu. These values were converted into parts per million as shown below:

Compound or parameter	AP-42 values for distillate oil	
	lb/MMBtu	ppm
Lead	9.00E-06	0.17
Arsenic	4.00E-06	0.07
Cadmium	3.00E-06	0.06
Chromium	3.00E-06	0.06

Note: Heating value of distillate and No. 2 oil is 140 MMBtu/1000 gal
One gallon of oil weighs approximately 7.5 pounds.

Therefore: multiply lb/MMBtu by (140)/(7,500) to get lb pollutant per lb oil
multiply lb/lb by 10E+06 to get ppm by weight.

The University of Washington can adequately demonstrate compliance with these requirements by filling the Power Plant oil tanks with and burning only oil that is "new" and is either "very low sulfur" or "distillate" fuel oil.

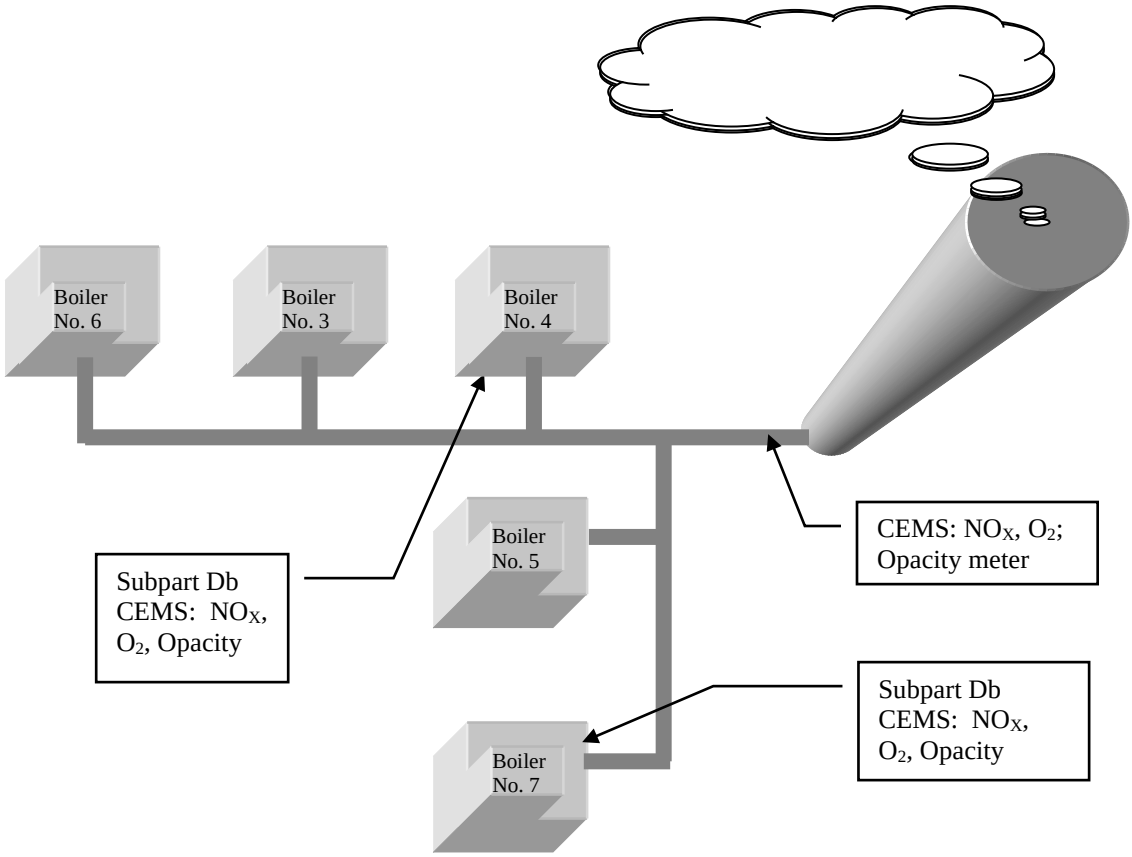
Boilers No. 4 and 7, NSPS Applicability

Title 40, Code of Federal Regulations, Part 60 has several New Source Performance Standards that apply to boilers in general, and might apply to the University of Washington boilers in particular. The New Source Performance Standards are referred to as NSPS, and the EPA issues them in "subparts."

The first thing to do when looking at any environmental regulation is to check the "applicability" section near the front in order to find out the type, age, and size of the emission unit that is regulated by that regulation.

Subpart A contains the General Provisions for all the subsequent, specific NSPS. These general provisions describe the general monitoring, recordkeeping and reporting requirements (note that any conflicting requirement in a specific subpart will supercede the general, overall requirements) and have general definitions. Subpart A applies to any facility for which any other subpart is applicable.

Figure 1 Boiler and Ductwork Layout



Subpart D applies to fossil-fuel-fired steam generators with a heat input rate of more than 250 million British thermal units per hour (MMBtu/hr) for which construction is commenced after August 17, 1971. Boiler No. 7 is the only boiler at University of Washington that was constructed after August 17, 1971 and is bigger than 250 MMBtu/hr.

Subpart Da applies to electric utility steam generating units with a heat input rate of more than 250 MMBtu/hr for which construction is commenced after September 18, 1978. According to the definitions in Subpart Da, an "*electric utility steam generating unit* means any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale." Boiler No. 7 meets the heat input rate and date applicability criteria, but University of Washington does not sell power to "the grid," so subpart Da does not apply to any of the boilers on the Seattle campus.

Subpart Db applies to industrial-commercial-institutional steam generating units with a heat input rate of more than 100 MMBtu/hr for which construction is commenced after June 19, 1984. Boiler No. 4 was modified after the specified date and has a heat input rate greater than 100 MMBtu/hr.

In reading the most recent copy of the New Source Performance Standards:

Subpart D applies to Boiler No. 7 because it is larger than 250 MMBtu/hr, and

Subpart Db applies to Boiler No. 4 because it is larger than 100 MMBtu/hr but smaller than 250 MMBtu/hr.

In an effort to precisely determine applicability of the larger Boiler No. 7, some questions arise:

Does Subpart Db continue to apply to boilers larger than 250 MMBtu/hr, or does it "drop off" as Subpart D applies?

If Subpart Db applies to all boilers over 100 MMBtu/hr, including the boilers larger than 250 MMBtu/hr, does the air operating permit have to contain all the emission limits and monitoring, recordkeeping and reporting requirements for both subparts in the Section for Boiler No. 7?

What happens if there is a conflict?

We found the answer. On October 17, 2000, the EPA published a new enhancement to Subpart Db in Federal Register 65 FR 61743. This enhancement takes the form of a new paragraph, 40 CFR 60.40b(j), which states, "Any affected facility meeting the applicability requirements under paragraph (a) of this section *(Subpart Db)* and commencing construction, modification, or reconstruction after June 19, 1986 is not subject to Subpart D…". **This means that Subparts A and Db apply to Boilers No. 4 and No. 7.**

Boilers No. 6, No. 4, No. 7, Standards, Opacity

All the University of Washington boilers vent to a common stack. Boilers No. 3 and No. 5 were constructed before Puget Sound Clean Air Agency had pre-construction permitting requirements, and they have no emission unit-specific opacity monitoring requirements.

Boiler No. 6 is situated on the end of a breeching that also connects Boilers No. 3 and No. 4 to the stack. Boilers No. 7 and No. 5 are on another breeching that connects to the main breeching between the stack base and the breeching from Boiler No. 4. Only Boiler No. 7 has a dedicated COMS; all the other units are measured by a COMS located on the common breeching just before the main stack. University of Washington installed this common COMS without any requirement from the Puget Sound Clean Air Agency, so this COMS did not have to meet the rigid operation and maintenance requirements of Puget Sound Clean Air Agency Regulation I, Article 12 and 40 CFR 60.13. University of Washington may elect, however, to upgrade the COMS on the common breeching to Puget Sound Clean Air Agency Regulation I, Article 12 and 40 CFR 60.13 standards in order to fulfil the requirement to monitor opacity from Boiler No. 4.

Boiler No. 6 has two opacity requirements. Federally enforceable EU-1.4 (Puget Sound Clean Air Agency Regulation I, Section 9.03 and WAC 173-400-040(1)) contains a 20% opacity limit for periods aggregating more than three minutes in any hour. Non-federally enforceable EU-1.5 (Puget Sound Clean Air Agency Regulation I, Section 9.04(c)) contains a 20% opacity limit for any consecutive 6-minute average or greater than 5% opacity limit for a 1-hour average. This boiler is not required to have a continuous opacity monitoring system (COMS), but University of Washington is required to use some means to reasonably demonstrate compliance with the standard 20% opacity limit. The easiest way to do this would be with the COMS installed on the main breeching just before the combined stack, but that COMS is not required to be certified, but it must be maintained in accordance with manufacturer's requirements and good engineering practice for minimizing emissions. The air operating permit requires University of Washington to investigate operating conditions on Boiler No. 6 and take any necessary corrective action whenever the (non-certified) COMS measured opacity in excess of 10%. This action level may be raised to 20% if University of Washington certifies the common COMS to Puget Sound Clean Air Agency Regulation I, Article 12 and 40 CFR 60.13 standards, which they are very likely to do in order to comply with NSPS requirements for Boiler No. 4.

NSPS Subpart Db requires the operator of any boiler that can burn any fuel other than natural gas to install and operate a COMS on that boiler. The EPA does allow the operator of a Subpart Db boiler to apply for permission to use an "alternative means of determining compliance." The EPA may waive the requirement for opacity monitoring at a Subpart Db boiler in some limited circumstances when very low sulfur oil is used in strictly limited amounts for emergency backup to natural gas.

Boilers No. 4 and No. 7 are each required by NSPS Subpart Db to have a continuous opacity monitoring system (COMS) because they are capable of burning fuels other than natural gas. Subpart A, which also applies, sets specific requirements for operation and maintenance of the COMS that is to be used on the boilers.

When the draft air operating permit was written, only Boiler No. 7 was technically in compliance with NSPS Subpart Db requirement to monitor opacity. University of Washington had several possible ways to get Boiler No. 4 in compliance with the requirement to monitor opacity:

- Remove the oil line from, and fire only natural gas in Boiler No. 4.
- Apply to the EPA for a waiver from the opacity monitoring requirements, and comply with EPA restrictions on backup oil use.
- Install a new COMS on the breeching from No. 4. This would be the most expensive option.
- Upgrade the existing COMS on the common breeching to the operation and maintenance requirements of Puget Sound Clean Air Agency Regulation I, Article 12 and 40 CFR 60.13. They would then have to count any opacity exceedances measured by the common COMS as exceedances from Boiler No. 4 whenever Boiler No. 4 was running.

The Puget Sound Clean Air Agency issued a Notice of Violation to University of Washington for failure to operate Boiler No. 4 with a continuous opacity monitor system. When the proposed air operating permit was written, University of Washington was installing and certifying a COMS on the breeching from Boiler No. 4. The COMS will be fully operational and certified before the boiler is started up for the autumn 2001 heating season.

Requirements EU-4.3 and EU-4.4 – Crematory, operation during daylight hours

Puget Sound Clean Air Agency Regulation I, Section 9.05 “Refuse Burning,” applies to all refuse burning devices, including crematoria. This regulation makes it illegal to burn combustible refuse except in a multiple chamber incinerator with emission control equipment, and requires that refuse burning equipment not be operated at night.

The University of Washington crematory has automatic controls that enable it to operate well within applicable emission limits. An opacity meter with an alarm system alerts the operator whenever stack opacity exceeds one-half of the 10% opacity level allowed under NOC Order of Approval No. 5602(5). The Puget Sound Clean Air Agency has determined that these systems are at least as effective as the required methods and satisfy the intent of Regulation I, Section 9.05 and that they constitute an “alternative means of compliance” as provided for in Regulation I, Section 3.23. Therefore, the University of Washington may operate the combustors as currently configured, and may operate at any time; day or night [NOC Order of Approval No. 5602(4)].

Requirements EU-4.5 and EU-4.6 – Crematory, standards, opacity

Requirement EU-4.4 (WAC 173-400-040(1), August 20, 1993) limits the crematory to a maximum of 20% opacity for a period or periods aggregating more than 3 minutes in any hour. Requirement EU-4.5 (NOC Order of Approval No. 5602(5), September 2, 1994) limits the crematory to a maximum of 10% opacity for a period or periods aggregating more than 3 minutes in any hour. The reference method for both of these requirements is Ecology Reference Method 9A. Method 9A involves a trained and certified observer reading and recording the crematory stack opacity at 15-second intervals.

According to the application supplied by University of Washington, the crematory has installed an "opacity meter" on the exhaust stack. Installation of a continuous opacity monitoring system (COMS) on the crematory stack is not required by any Puget Sound Clean Air Agency NOC Order of Approval condition or regulation, or any state or federal requirement. The opacity meter on the crematory stack is not as accurate as a COMS that meets the requirements of 40 CFR Appendix B, Performance Specification 1, but it can adequately indicate poor performance. Therefore, the Puget Sound Clean Air Agency is requiring University of Washington to set up the opacity meter so that it alerts the crematory operator with visible and audible alarms whenever the opacity exceeds 5%, which is one-half of the permitted level. The operator is then required to take corrective action to reduce the opacity to below 5%, or to begin monitoring the stack with Method 9A.

Requirements EU-4.7 and EU-4.8 – Crematory, standards, particulate matter

These requirements limit the stack emissions from the crematory to a maximum of 0.10 grain of particulate matter per cubic foot of stack gas, corrected to 7% oxygen. The reference method for this requirement is Federal Reference Method 5. Method 5 involves manually collecting particulate samples from the exhaust stack, using a heated probe, heated filter, dry gas meter, pump, and other ancillary apparatus, when the unit is operating.

Observable opacity and particulate matter concentration tend to increase and decrease in direct proportion. Generally the same problems that cause opacity from the crematory will also cause an increase in particulate matter concentration, and any corrective action taken to reduce observed opacity will also reduce particulate matter concentration. The crematory is designed to operate at a particulate emission rate less than 0.10 grain per dry standard cubic foot, at an opacity level not to exceed the allowable 10%. To some extent, the opacity readings used to reasonably assure compliance with Requirements EU-4.5 and EU-4.6 (opacity limit) will also reasonably assure compliance with Requirements EU-4.7 and EU-4.8 (particulate matter limit). Because the corrective action level for the opacity monitoring method is set at 50% of the allowable level, the opacity monitoring method will reasonably assure compliance with the particulate limits at the University of Washington crematory.

Cyclones, Baghouses and Other Particulate Control Operations

This emission activity consists of cyclones and baghouses, which exhaust to the outside and control particulate emissions from the following activities: carpentry, machining of metal or nonmetal parts, plastic parts sanding, and housecleaning.

Two of the four pieces of control equipment were installed before the Puget Sound Clean Air Agency required NOCs for such equipment. The other emission units are listed in the air operating permit as EU-6 and EU-7, and they were approved under NOC Orders of Approval No. 6081 and No. 6083 respectively, issued on August 23, 1995. These units are also subject to the state-only enforceable requirement in RCW 70.94.152(7), which requires maintenance of the equipment. The control equipment also is subject to monthly monitoring for visible emissions and fugitive emissions, as required by Monitoring Methods A.1(a) and A.1(c) in Section II of the permit. None of the units emit significant quantities of pollutants. The Puget Sound Clean Air Agency determined that monthly monitoring is sufficient after considering the nature of the sources (carpentry shops and machining); the potential for emission problems (very low); and the compliance history for this activity (no violations since at least 1986). These units are also subject to the quarterly campus-wide inspections that examine the general effectiveness of the Operation and Maintenance Plan.

The monitoring method is specific for dust collectors at University of Washington. The Puget Sound Clean Air Agency has determined that the monitoring should be monthly for the reasons listed below.

1) Initial compliance. The Puget Sound Clean Air Agency has not observed visible emissions from these activities during any inspection, nor has University of Washington; therefore, we conclude that they are generally in compliance with the particulate and opacity requirements.

2) Margin of compliance. Because of the type of process (woodworking, grinding and machining) and the control equipment (baghouses and cyclones), the Puget Sound Clean Air Agency expects the concentration of particulate to be much less than the standard when there is no visible emission, fallout or fugitive emissions.

3) Variability of process and emissions. Although the equipment runs periodically, the actual emissions do not vary significantly.

4) Environmental impacts of problems. These are small dust collectors that normally emit less than a ton of particulate per year. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.

5) Technical considerations**.** Although there is a relationship between pressure drop and collection efficiency on baghouses and cyclones, it is a weak relationship and not likely to determine compliance or non-compliance with the emissions standards.

Spray Coating Booths

These emission units consist of activities and equipment associated with several paint spray booths on the University of Washington Seattle Campus, with fan-driven air circulation and dry air filter systems.

Three of the six spray coating booths do not have NOC Orders of Approval, but they are required to comply with all the Puget Sound Clean Air Agency requirements for spray coating booths. Three of the units have NOC Orders of Approval, but there are no specific requirements in the Orders. One of the spray coating booths is listed in the air operating permit as EU-9, approved under NOC Order of Approval No. 7588, issued on November 24, 1998. All of the units are subject to the state-only enforceable requirement in RCW 70.94.152(7), which requires maintenance of the equipment. The control equipment also is subject to monitoring for visible emissions and fugitive emissions, as required by Monitoring Method A.2(e)(9) in Section II of the permit. None of the units emit significant quantities of pollutants. The Puget Sound Clean Air Agency determined that monitoring once each work shift that painting is taking place is sufficient after considering the nature of the sources; the potential for emission problems (very low); and the compliance history for this activity (no violations since at least 1986). These units are also subject to the quarterly campus-wide inspections that examine the general effectiveness of the Operation and Maintenance Plan.

The monitoring method is specific for spray coating booths at University of Washington. The Puget Sound Clean Air Agency has determined that the monitoring should be once each work shift that painting is taking place for the reasons listed below.

1) Initial compliance. The Puget Sound Clean Air Agency has not observed visible emissions from these activities during any inspection, nor has University of Washington; therefore, we conclude that they are generally in compliance with the particulate, opacity and VOC requirements.

2) Margin of compliance. Because of the type of process (spray coating operations) and the control equipment (filters and air circulation systems for particulate matter and operational practices for VOC), the Puget Sound Clean Air Agency expects the concentration of particulate to be much less than the standard when there is no visible emission, fallout, or fugitive emissions.

3) Variability of process and emissions. Although the equipment runs periodically, the actual emissions do not vary significantly.

4) Environmental impacts of problems. These are small paint booths that normally emit less than a ton of VOC per year. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.

5) Technical considerations. The two main pollutants emitted by spray coating operations are particulate matter in the form of oversprayed paint, and volatile

organic compounds as the solvents in the paint evaporates. Particulate matter emissions can be minimized by circulating a column of air past the spray coating operation and through a filtration system. However, the filtration system must be maintained in order to be effective. A visual inspection of the filtration and air circulation system, combined with periodic maintenance as required, is necessary to ensure good operation and adequate particulate matter collection efficiency. The best way to minimize VOC emissions in small-scale surface coating operations is to ensure that VOC-containing rags and other wiping materials are stored in closed containers. Inspection of the filtration and circulation systems, and VOC storage containers once per shift that a spray paint booth is in operation will adequately ensure that the spray coating operation is not exceeding applicable requirements.

ECH Horizontal Fume Scrubber

This emissions unit consists of activities and equipment associated with one Harrington Model ECH horizontal fume scrubber located in Fluke Hall.

This emission unit is listed in the air operating permit as EU-10 and was approved under NOC Order of Approval No. 5924, issued on November 8, 1995. This unit is also subject to the state-only enforceable requirement in RCW 70.94.152(7), which requires maintenance of the equipment. The control equipment also is subject to monthly monitoring for visible emissions and fugitive emissions, as required by Monitoring Method A.2(e)(10) in Section II of the permit. This unit does not emit significant quantities of pollutants. The Puget Sound Clean Air Agency determined that monitoring once each shift that the unit is in operation is sufficient after considering the nature of the sources (lead melting); the potential for emission problems (very low); and the compliance history for this activity (no violations since at least 1986). This unit is also subject to the quarterly campus-wide inspections that examine the general effectiveness of the Operation and Maintenance Plan.

The monitoring method is specific to the ECH fume scrubber at University of Washington. The Puget Sound Clean Air Agency has determined that the monitoring should be once per shift that the lead melting operation is used for the reasons listed below.

1) Initial compliance. The Puget Sound Clean Air Agency has not observed visible emissions from these activities during any inspection, nor has University of Washington; therefore, we conclude that they are generally in compliance with the particulate and opacity requirements.

2) Margin of compliance. There is no emission standard for lead. The Order of Approval places limits on the scrubber pressure drop and scrubber liquor pH in order to assure adequate control efficiency. Other monitoring requirements (checking system ductwork, fan operation, etc.) will assure adequate collection efficiency. Inspection of the collection and control system once per shift that the lead melting

operation is used will adequately prevent escape of emissions due to normal equipment wear, and will adequately prevent lead melting if the controls are malfunctioning.

3) Variability of process and emissions. Although the equipment runs periodically, the actual emissions per unit of time that the equipment is running do not vary significantly.

4) Environmental impacts of problems. This is a small fume collector that normally emits less than 10 pounds of lead per year. Lead, however, is a relatively toxic material and should not be allowed to escape into the environment.

5) Technical considerations**.** The horizontal fume scrubber is composed of ductwork, a fan, a scrubber, and ancillary equipment. Maintaining the equipment in accordance with the O&M Plan (following manufacturer's instructions) and checking the fume scrubber as required in the air operating permit once per shift that the lead smelter is in operation will prevent all foreseeable malfunctions of the control equipment.

Monitoring, Maintenance and Recordkeeping Procedures

University of Washington must follow the procedures contained in Section II of the permit, Monitoring, Maintenance and Recordkeeping Procedures. Failure to follow a requirement in Section II may not necessarily be a violation of the underlying applicable emission standard in Section I. However, not following a requirement of Section II is a violation of Section II and University of Washington must report such violations, as well as violations or deviations from any other permit condition, as a deviation under Section V.P.1 of the permit. In addition, all information collected as a result of implementing Section II can be used as credible evidence under Section V.N.3 of the permit. Reporting a permit deviation and taking corrective action does not relieve University of Washington from its obligation to comply with the underlying applicable requirement.

A standard Puget Sound Clean Air Agency NOC approval condition, NOC Condition No. 1, requires that the equipment, device or process be installed according to plans and specifications submitted to the Puget Sound Clean Air Agency. Once the equipment is installed, the Puget Sound Clean Air Agency requires certification by the applicant that the installation was as approved; this is usually done with a Notice of Completion. Normally within six months to a year after receiving a Notice of Completion, a Puget Sound Clean Air Agency inspector verifies by inspection that the equipment was installed as specified and in accordance with the Order of Approval. While the Notice of Completion is a one-time requirement that University of Washington has complied with, University of Washington cannot change the approved equipment in such a manner that requires an NOC without first obtaining an NOC approval which is addressed in Section IV.A of the permit. In most cases, once University of Washington has filed the Notice of Completion and a Puget Sound Clean Air Agency inspector has verified that the equipment was installed according to the Order of Approval, the Puget Sound Clean

Air Agency considers NOC Condition No. 1 an obsolete condition. However, in some cases in the permit the Puget Sound Clean Air Agency has identified a need to specify that the equipment cannot be altered in such a manner that requires an NOC approval.

In determining the appropriate monitoring frequencies for monitoring identified in Section II.A of the permit, the Puget Sound Clean Air Agency considered several factors, including the following:

1) University of Washington compliance history and the likelihood of violating the applicable requirement;

2) The complexity of the emission unit including the variability of emissions over time;

3) The likelihood that the monitoring would detect a compliance problem;

4) The likely environmental impacts of a deviation;

5) Whether add-on controls are necessary for the unit to meet the emission limit;

6) Other measures that University of Washington may have in place to identify problems;

7) The type of monitoring, process, maintenance, or control equipment data already available for the emissions unit;

8) The technical and economic considerations associated with the range of possible monitoring methods; and

9) The type of monitoring found on similar emissions units.

The permit requires University of Washington to conduct quarterly campus-wide inspections. These inspections are to include checking for prohibited activities under Section III of the permit and activities that require additional approval under Section IV of the permit, as well as checking for any “nuisance” odor bearing contaminants. The Puget Sound Clean Air Agency determined the frequency of these inspections after considering the potential for emissions, the lack of federally required monitoring, University of Washington in-house training practices, and similar factors. If problems are identified, University of Washington has the responsibility to not only correct the specific problem, but also to adjust the work practices and training to prevent future problems.

Prohibited Activities

Some of the requirements University of Washington identified in the operating permit application are included in Section III as prohibited activities. The Puget Sound Clean Air Agency has listed these activities in this section to highlight that they cannot occur at

the facility. Since these activities are prohibited, routine monitoring of parameters is not appropriate; however, the permit does require University of Washington to look for such activities during a routine campus-wide inspection.

Puget Sound Clean Air Agency Regulation I, Section 9.13 and WAC 173-400-040(7) contain similar requirements addressing concealment and masking of emissions. Although both requirements apply, the permit language has been simplified by grouping these requirements together.

Activities Requiring Additional Approval

Some of the requirements University of Washington identified in the operating permit application are included in Section IV as activities that require additional approval. For new source review, the permit language has been simplified. Chapter 173-460 WAC and Puget Sound Clean Air Agency Regulation I, Article 6 New Source Review Programs require approval to construct, install, establish, or modify an air contaminant source. All these requirements apply, but the language in these requirements has been incorporated into one section to simplify the permit language. WAC 173-400-110 does not apply within Puget Sound Clean Air Agency's jurisdiction because the rule exempts areas that have a local program that is incorporated into the state implementation plan.

Standard Terms and Conditions

This section contains the standard terms and conditions specifically listed in WAC 173-401-620, as well as other conditions that apply to University of Washington.

Some of the requirements University of Washington identified in the operating permit application are included in Section V, Standard Terms and Conditions. This provided an easier mechanism for describing requirements that are more general in nature. This section also contains the standard terms and conditions specifically listed in WAC 173-401-620.

Subparts A and Db of the federal New Source Performance Standards state that reports shall be submitted to "the Administrator." University of Washington is required to submit several reports under the NSPS. The Puget Sound Clean Air Agency has received delegation of the NSPS program from the EPA, which means that these reports also need to go to the Puget Sound Clean Air Agency. Several reporting requirements in Section V.P of the permit were copied right out the applicable section of the NSPS, but the words "Puget Sound Clean Air Agency and the EPA Administrator" were substituted for "administrator."

Section V.P.1 of the permit requires University of Washington to report deviations of the permit to the Puget Sound Clean Air Agency, normally within 30 days after the end of the month. Section V.P.1(e) of the permit requires that a responsible official certify all required reports at least once every six months. University of Washington may submit the certification with the report or certify all the reports submitted in the previous six

months. For example, if University of Washington detected a deviation in January, it must report the deviation to the Puget Sound Clean Air Agency in February. A responsible official must certify the report according to WAC 173-401-520 at the time the report is submitted or any other time within six months of submitting the report.

If University of Washington does not detect any deviations to report for a six-month period, then University of Washington shall report that there were no deviations during the six-month period.

Section V.V of the permit requires University of Washington to comply with Section 112(r) Risk Management program of the EPA, as required in 40 CFR Part 68. University of Washington has certified that it does not use any 112(r) regulated substances in excess of the threshold quantities.

Insignificant Emission Units

As of the date of permit issuance, the emission units listed below are defined as insignificant for the reasons indicated. University of Washington does not have to certify these emission units are in compliance with the generally applicable requirements listed in Section I.A of this permit. [WAC 173-401-530(2)(d)]

Exempt due to emissions of emission unit below threshold value [WAC 173-401-530(4)]

ID	Unit or Activity	Citation	Pollutant	Emission Rate Threshold
1.	Lead Melting Pot, Plant Services Building (Glazing Shop)	WAC 173-401-530 (4)(f)	Lead	0.005 TPY
2.	Lead Melting Pot, Magnusen Health Sciences Building, Room D124 (Plumbing Shop)	WAC 173-401-530 (4)(f)	Lead	0.005 TPY
3.	Lead Melting Pot, Plant Services Building (Plumbing Shop)	WAC 173-401-530 (4)(f)	Lead	0.005 TPY

Exempt due to size or capacity of emission unit [WAC 173-401-533]

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
1.	3937 15th Ave E **Furnace**, Alcohol and Drug Abuse Center Basement	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	125,000 Btu/hr
2.	3945 15th Ave E **Furnace**, Drama Scene Shop Basement	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	150,000 Btu/hr
3.	1209 NE 41st St **Furnace**, Graduate Architectural Research Facilities Department Complex	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	< 500,000 Btu/hr
4.	1303 NE Boat St **Boiler**, Fisheries Storage Building	WAC 173-401-533(2)(e)	Combustion, natural gas	5,000,000 Btu/hr	< 500,000 Btu/hr

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
		WAC 173-401-533(2)(g)	Combustion, No. 1 or No. 2 oil	1,000,000 Btu/hr	
5.	3710 Brooklyn Ave NE **Boiler**, Room 14	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	850,000 Btu/hr
6.	3722 University Way NE **Boiler**, Boiler Room, Unit 6	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	150,000 Btu/hr
7.	3935 University Way NE **Water Heater**, Grant and Contract Services Building Room 11A-D	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	40,000 Btu/hr
8.	3935 University Way NE **Boiler**, Grant and Contract Services Building Room 11A-D	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	375,000 Btu/hr
9.	3941 University Way NE **Boilers**, Drama Scene Shop	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	(1) 400,000 Btu/hr (1) 840,000 Btu/hr
10.	Academic Computer Center **Boiler**, Room 43	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	670,000 Btu/hr
11.	Bryant Building **Boiler**, Room 27	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	2,937,000 Btu/hr
12.	Bryant Building **Furnace**, Room 102	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	95,000 Btu/hr
13.	Bryant Building **Furnace**, Room 202A	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	120,000 Btu/hr
14.	Bryant Building **Furnace**, Room 206	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	35,000 Btu/hr
15.	Bryant Building **Furnace**, Room 214	WAC 173-401-533(2)(r)	Space and water heaters using	5,000,000 Btu/hr	80,000 Btu/hr

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
			natural gas		
16.	Bryant Building **Furnace**, Room 239	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	200,000 Btu/hr
17.	Bryant Building **Furnace**, 2nd Floor (west side of building)	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	150,000 Btu/hr
18.	Chemical/Physical **Analytical Laboratory Operations or Equipment** (including fume hoods), Various	WAC 173-401-533(3)(c)	Chemical or physical analytical laboratory operations or equipment including fume hoods and vacuum pumps	By Puget Sound Clean Air Agency on a case-by-case basis	N/A
19.	Diesel Fuel **UST**, Motor Pool	WAC 173-401-533(2)(b)	VOC storage tank	10,000 gallons, vapor pressure not to exceed 550 mm Hg	6,000 gal.
20.	Diesel and Gasoline **Fuel Trucks**, Corp Yard I	WAC 173-401-533(2)(b)	VOC storage tank	10,000 gallons, vapor pressure not to exceed 550 mm Hg	< 10,000 gal. each
21.	**Emergency Standby Power Generator**, Environmental Safety Storage Building	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	≤ 1,000,000 Btu/hr
22.	**Emergency Standby Power Generator**, Fluke Hall	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	≤ 1,000,000 Btu/hr
23.	**Emergency Standby Power Generator**, Triangle Parking Garage	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	≤ 1,000,000 Btu/hr
24.	**Emergency Standby Power Generator**, Bryants Building	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	≤ 1,000,000 Btu/hr

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
25.	Douglas Research and Conservatory **Water Heater**, Room 112H	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	80,000 Btu/hr
26.	Douglas Research and Conservatory **Furnaces**, Room 112H	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(2) 800,000 Btu/hr units
27.	Ethnic Cultural Center **Furnaces**, Room 111	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(2) 137,000 Btu/hr units
28.	Ethnic Cultural Center **Furnace**, Room 108s	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(2) 137,000 Btu/hr units
29.	Fisheries Teaching and Research Center **Water Heaters**, Room 14	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(3) 120,000 Btu/hr units (1) 75,100 Btu/hr units (1) 500,000 Btu/hr units
30.	Fisheries Teaching and Research Center **Boilers**, Room 14	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	(2) 1,200,000 Btu/hr units
31.	Isaacson Hall **Furnace**, Basement	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	90,000 Btu/hr
32.	Marine Studies Building **Boiler,** Room 199	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	2,511,000 Btu/hr
33.	Merril Hall **Furnaces**, Room 56C	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(2) 100,000 Btu/hr units; (1) 390,000 Btu/hr units
34.	Northlake Building **Furnace**, SE Corner of Building	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	400,000 Btu/hr
35.	Northwest Horticultural Society Hall **Furnaces**, Room 102G	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(3) 48,000 Btu/hr units
36.	Oil **UST**, Motor Pool	WAC 173-401-533(2)(b)	VOC storage tank	10,000 gallons,	1000 gal.

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
				vapor pressure not to exceed 550 mm Hg	
37.	Plant Services Building **Boiler**, Room 108	WAC 173-401-533(2)(e)	Combustion, natural gas	5,000,000 Btu/hr	3,340,500 Btu/hr
38.	Playhouse Theater **Space Heater**, "Green" Room Basement	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	125,000 Btu/hr
39.	Publications **Water Heater**, Room 315A	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	(2) 260,000 Btu/hr units
40.	Publications **Boiler**, Room 315A	WAC 173-401-533(2)(e)	Combustion, natural gas	5,000,000 Btu/hr	1,560,000 Btu/hr
41.	Purchasing and Accounting Building **Water Heater**, Room 143	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	32,500 Btu/hr
42.	Purchasing and Accounting Building **Boiler**, Room 143	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	627,000 Btu/hr
43.	Russian House **Water Heaters**, Basement Boiler Room	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	(1) 35,500 Btu/hr (1) 34,000 Btu/hr
44.	Russian House **Boiler**, Basement Boiler Room	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	225,000 Btu/hr
45.	Staff Employment Office **Boiler**, Room 124	WAC 173-401-533(2)(e) WAC 173-401-533(2)(g)	Combustion, natural gas Combustion, No. 1 or No. 2 oil	5,000,000 Btu/hr 1,000,000 Btu/hr	325,000 Btu/hr
46.	**Surface Coating**, Art Building	WAC 173-401-533(2)(q)	Surface Coating	2-gal/day	< 2 gal./day
47.	Visitor's Information Center **Water Heater**, East side of building (outside access)	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	36,000 Btu/hr
48.	Visitor's Information Center **Boiler**, East	WAC 173-401-533(2)(e)	Combustion, natural gas	5,000,000 Btu/hr	250,000 Btu/hr

ID	Unit or Activity	Citation	Parameter	Criterion	Actual
	side of building (outside access)	WAC 173-401-533(2)(g)	Combustion, No. 1 or No. 2 oil	1,000,000 Btu/hr	
49.	Waste Oil **UST**, Motor Pool	WAC 173-401-533(2)(b)	VOC storage tank	10,000 gallons, vapor pressure not to exceed 550 mm Hg	2,000 gal.
50.	Waterfront Activities Center **Furnace**, Room 62	WAC 173-401-533(2)(r)	Space and water heaters using natural gas	5,000,000 Btu/hr	158,000 Btu/hr
51.	**Welding Operations**, Plant Services Building, Magnusen Health Sciences Building Rooms T150, E107, and B117, Power Plant, and other on-campus locations as needed.	WAC 173-401-533(2)(i)	Welding	1 ton per day welding rod	< One ton/day welding rod

Obsolete Requirements

University of Washington has notified Puget Sound Clean Air Agency as required under 40 CFR 60.13 for Boilers No. 4 and No. 7. The Puget Sound Clean Air Agency has issued NOC Orders of Approval Nos. 48, 248, 355, 1430, 1444, 1729, 3104, 3784, 3975, 4578, 4604, 4794, 4916, 5419, 5437, 5602, 5924, 6081, 6082, 6083, 6206, 7061, 7431, 7588, and 9984 to the University of Washington. Each of these NOC approvals contains at least one condition that requires University of Washington to do something one-time, and one-time only. The Puget Sound Clean Air Agency has determined that some of the approval conditions are now informational statements because they have already been complied with and, therefore, do not meet the criteria of being applicable requirements. Those approval conditions are described here and are not listed in the air operating permit.

The Federal New Source Performance Standards for Industrial-Commercial-Institutional Steam Generating Units apply to Boilers No. 4 and No. 7. These standards require that compliance with sulfur dioxide limits [40 CFR 60.45b(f), 12/18/1989] and NO_X [40 CFR 60.46b(c), 5/7/1990] be determined by performance tests performed through the first 30 successive boiler operating days. For NO_X, the 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period [40 CFR 60.46b(e)(1), 5/7/1990]. At least 30 days prior notice is required. An initial performance test must be completed within 60 days after achieving maximum production rate, but not more than 180 days after startup. The initial performance test is the only test required under the New Source Performance Standards in which 30 days prior notice is required unless otherwise specified by the Administrator. There is an ongoing requirement that all emission testing be reported to the Puget Sound Clean Air Agency, and that requirement, Section 3.07 of Regulation I, is listed in the air operating permit.

The Federal New Source Performance Standards for Industrial-Commercial-Institutional Steam Generating Units require that the owner of a source notify the Puget Sound Clean Air Agency of the date of initial boiler startup, as provided by 40 CFR 60.7. Notification shall include: 1) the design heat input capacity of the boiler and identification of the fuels to be combusted; 2) a copy of any federally enforceable requirement that limits the annual capacity factor for any fuel or mixture of fuels; and 3) the annual capacity factor based on all fuels fired and based on each individual fuel fired [40 CFR 60.49b(a), 2/12/1999]. University of Washington has complied with this requirement.

The Federal New Source Performance Standards for Industrial-Commercial-Institutional Steam Generating Units require University of Washington to submit the following to the Puget Sound Clean Air Agency: boiler and CEMS performance test data; maximum heat input capacity data from the demonstration of the maximum heat input capacity of the boiler; and the performance data from the initial performance test. University of Washington was also required to perform an evaluation of the CEMS using the applicable performance specs in Appendix B [40 CFR 60.49b(b), 2/12/1999]. University of

Washington has complied with this requirement.

Condition No. 1 in Orders of Approval Nos. 3104, 3784, 3975, 4578, 4604, 4794, 4916, 5419, 5437, 5602, 5924, 6081, 6082, 6083, 6206 7061, 7431 and 7588 requires the applicant to install the approved equipment according to the specifications submitted to the Puget Sound Clean Air Agency. This requirement has been complied with in all cases and verified by an inspection by the Puget Sound Clean Air Agency.

Condition No. 2 in Orders of Approval Nos. 3104, 3784, 3975, 4578, 4604, 4794, 4916, 5419, 5437, 5602, 5924, 6081, 6082, 6083, and 6206 informs the applicant that the approval does not relieve it of the requirement to comply with Puget Sound Clean Air Agency Regulations, RCW 70.94, or any other emission control requirements. Condition No. 2 in every NOC Order of Approval listed in this paragraph except that of Order of Approval No. 3104 also informs the applicant that an operation and maintenance plan must be developed and implemented for the permitted emission unit. This requirement is informational only.

Condition No. 3 in Orders of Approval Nos. 3104, 3784, 3975, 4578, 4604, 4794, 4916, 5419, 5437, 5602, 5924, 6081, 6082, 6083 and 6206, and Condition No. 2 in Orders of Approval Nos. 7061, 7431 and 7588 inform the applicant that the approval does not relieve it of any requirement of any other agency. This requirement is informational only.

The General Provisions of the Federal New Source Performance Standards [40 CFR 60.13(f), 2/12/1999] state CEMS shall be installed such that representative readings of emissions or process parameters are obtained. Additional procedures for location of CEMS in the applicable Performance Specifications of 40 CFR 60 Appendix B shall be used. This requirement has been complied with in all cases and verified by an inspection by the Puget Sound Clean Air Agency.

NOC Order of Approval No. 3104, issued on August 12, 1998, allowed University of Washington to reduce the height of the Power Plant stack from 180 feet to 120 feet. University of Washington was required to operate on natural gas only while exhausting through the temporary stack, and then only on natural gas or oil once the final main stack was finished. University of Washington has complied with these requirements and has natural gas and oil burning written into all Puget Sound Clean Air Agency Orders of Approval for the various power boilers.

Condition No. 10 of NOC Order of Approval No. 6206, issued on September 26, 1995, requires University of Washington to submit the make and model of the No. 4 Boiler at least 30 days before start of construction. University of Washington has complied with this requirement and has installed a Wheeler AG-5165-6 boiler with a low-NO_X gas/No. 2 oil burner.

Condition No. 11 of NOC Order of Approval No. 6206, issued on September 26, 1995, authorizes University of Washington to use a rental boiler during construction of Boiler No. 4. The boiler has now been constructed, so this requirement no longer applies.

Condition No. 12 of NOC Order of Approval No. 6206, issued on September 26, 1995, supersedes and cancels Order of Approval No. 3784 issued on May 1, 1991.

Condition No. 6 of NOC Order of Approval No. 5924, issued on November 8, 1995, supersedes and cancels Order of Approval No. 5924 issued on September 27, 1995.

Condition No. 3 of NOC Order of Approval No. 7061, issued on November 19, 1998 and amended August 9, 2001, required University of Washington to submit various pre-construction, and post-startup notifications to the Puget Sound Clean Air Agency relating to Boiler No. 7 startup. University of Washington has fulfilled these requirements.

Condition No. 4 of NOC Order of Approval No. 7061, issued on November 19, 1998 and amended on August 9, 2001, required University of Washington to submit various pre-startup operation and contingency plans to the Puget Sound Clean Air Agency prior to initial Boiler No. 7 startup. University of Washington fulfilled this requirement on July 7, 2000.

Condition No. 15 of NOC Order of Approval No. 7061, issued on August 9, 2001 , supersedes and cancels Order of Approval No. 7061, issued on November 19, 1998.

Condition No. 4 of NOC Order of Approval No. 7431, issued on September 16, 1998, supersedes and cancels Order of Approval No. 7431 issued on May 6, 1998. Condition No. 3 required University of Washington to submit results of equipment certification tests to the Puget Sound Clean Air Agency within 30 days of initial operation. University of Washington has complied with this condition.

Requirements Listed as "Inapplicable" by the Applicant but Not Accepted by Puget Sound Clean Air Agency

- University of Washington had listed WAC 173-400-115 as an inapplicable requirement, but the Puget Sound Clean Air Agency did not agree with that determination.
- University of Washington had listed the crematory as an insignificant emission unit under WAC 173-401-530(4)(e) because it emitted less than the threshold value of 0.75 ton per year of fine particulate matter (PM_{10}). The Puget Sound Clean Air Agency did not agree with that determination because the crematory is subject to federally enforceable requirements other than generally applicable requirements (Puget Sound Clean Air Agency NOC Order of Approval No. 5602), and, therefore, cannot be listed as insignificant (WAC 173-401-531(2)(a)).
- University of Washington had listed Puget Sound Clean Air Agency Regulation I, Section 9.09(a) as an inapplicable requirement, because part of that section applies to refuse combustion equipment, and the University of Washington concluded that this requirement should not apply because the burning of refuse is prohibited on the campus. Only the first part of Section 9.09(a) applies to refuse burning, and that part applies to burning refuse in an incinerator. Several regulations, contained in Section III.B of the Air Operating Permit, prohibit the open burning of garbage and other

refuse on the campus, but none of these regulations apply to burning of refuse in "refuse burning equipment" covered under Section 9.09(a). The University of Washington could, through the new source review process, install and then operate "refuse burning equipment." The first half of Regulation I, Section 9.09(a) would apply at that time. The second half of Regulation I, Section 9.09(a) applies to fuel burning, which is an ongoing activity at the University of Washington Seattle campus. Therefore, the regulation still applies to the University of Washington.

- University of Washington had listed Puget Sound Clean Air Agency Regulation II, Sections 2.07(c) and 2.07 (d) as inapplicable requirements, but the Puget Sound Clean Air Agency did not agree with that determination. Puget Sound Clean Air Agency Regulation II, Section 2.07(c) (2/2/1994) states that Stage 2 vapor recovery system requirements apply to all "new" stationary gasoline storage tanks greater than 1,000 gallons capacity. In the current version of Section 2.07, Stage 2 vapor recovery requirements apply to all gasoline storage tanks installed after January 1, 1991. Puget Sound Clean Air Agency NOC Order of Approval No. 7431, issued on September 16, 1998, lists several gasoline tanks, all greater than 1,000 gallons capacity, along with Stage 2 vapor recovery equipment. The Puget Sound Clean Air Agency has determined that Regulation II, Sections 2.07(c) and (d) apply to the tanks listed in Order of Approval No. 7431.
- University of Washington had listed Puget Sound Clean Air Agency Regulation II, Section 3.04, which applies to vehicle and mobile equipment coating operations, as an inapplicable requirement. Section 3.04 applies to all vehicle painting, even when done with a hand-held aerosol can. If this requirement was left in the Inapplicable Requirement section of the air operating permit, University of Washington would be in violation of the air operating permit anytime it touches up a fender on a campus vehicle.
- University of Washington had listed Boilers No. 3 and No. 5 as inapplicable units because they were constructed before Puget Sound Clean Air Agency had any regulations. Puget Sound Clean Air Agency has regulations that apply to all existing sources; therefore, these boilers are not inapplicable.
- University of Washington had listed three emergency standby generators as being exempt from the requirement to submit a Notice of Construction Application under Puget Sound Clean Air Agency Regulation I, Section 6.03, because they are "insignificant per Regulation I, Section 5.03 Exhibit A (2)(iii) (in effect 8/90)." The 1990 version of Regulation I, Section 5.03 does not apply any more. There is no specific exemption for emergency standby generators in Regulation I, Sections 5.03 (Registration) or 6.03 (New Source Review). There are exemptions for fuel burning equipment, based on heat input rate and internal combustion engines below certain size thresholds in Regulation I, Section 6.03, so it is very likely that these emergency standby generators would be exempt from the Puget Sound Clean Air Agency to obtain a Notice of Construction Approval Order prior to construction or modification. There is no similar exemption in Chapter 173-401 WAC, the air operating permit

regulation. Therefore, these generators are not insignificant.

- University of Washington had listed seven mobile power generators as inapplicable, stating that they are below the applicability size threshold for that type of emissions unit. These units are located in the Corp Yard I, the Carpenter Shop, the Tool Room of the Plant Services Building, and the Power Plant. There is no specific size threshold for emergency mobile power generators, but according to WAC 173-401.533(2)(e) and (f), a combustion unit that has a heat input of no greater than 5 MMBtu/hr while burning natural gas and no greater than 1 MMBtu/hr while burning No. 1 or No. 2 oil is an insignificant emission unit. University of Washington supplied only the rated power outputs of the units, but they did not say if these units burn oil or natural gas, and did not supply rated heat input capacities for these units.
- University of Washington had listed the "Art Building Paint Spray Booth" as not subject to the Regulation I, Section 9.16(a) requirement to exhaust through a vertical stack, because the paint booth was installed prior to the date of the requirement. Regulation I, Section 9.16 applies to existing as well as new paint spray booths, so this requirement is an applicable requirement.

Radionuclide Permit Issued by Department of Health

Any radioactive air emissions license issued to University of Washington by the State of Washington Department of Health must be incorporated as an applicable portion of the air operating permit as required under RCW 70.94.161(10)(d) and WAC 246-247-040. The Department of Health has issued a Radioactive Air Emissions License, and that license has been included in the air operating permit. The Radioactive Air Emissions License is written in the Department of Health format, following Department of Health interpretations of Department of Health requirements, and may not follow the format or conventions used by the Puget Sound Clean Air Agency in the main body of the air operating permit.

The License issued by the Department of Health to the University of Washington covers radionuclide air emissions from the Research and Training Facility at the Harborview Medical Center and the Cochran Building because, according to Department of Health, the radioactive air emissions sources at these facilities are under the control of the University of Washington. The Harborview Medical Center is located at 300 Ninth Avenue in Seattle, approximately two miles to the south of the University of Washington Seattle Campus. The Cochran Building is located at 2121 NE 35th Street in Seattle, about a mile to the southwest of the University of Washington Seattle Campus. This air operating permit does not apply to those buildings because they are both physically removed from the Seattle Campus. The Harborview Medical Center and the Cochran Building are, therefore, not shown in the copy of the Department of Health Radioactive Air Emissions License included in this permit.

Public Comments and Responses

Draft Operating Permit and Statement of Basis were published on June 27, 2001. The 30-day comment period expired July 27, 2001.

Comments were received from EPA Region 10 (Scott Voorhees) and the University of Washington.

EPA Region 10 Comments: (Puget Sound Clean Air Agency response is highlighted).

Page 26
FIGURE 1 IN STATEMENT OF BASIS – BOILER AND DUCTWORK LAYOUT

COMMENT: This figure is quite helpful in understanding how the power plant is configured. It appears that some of the requirements applicable to individual boilers were excluded from the figure. Boiler No. 4 is shown to be subject to subpart Db, CEMS for NOx, and O2. According to the text, opacity also applies to Boiler No. 4. Boiler No. 7 is shown to be subject to subpart Db, CEMS for NOX, O2 and opacity. According to the text, CO and subpart A also apply to Boiler No. 7, and this boiler has a dedicated COMS.

Puget Sound Clean Air Agency Response:
At the time the draft air operating permit was prepared, the University of Washington No. 4 Boiler did not have a continuous opacity monitoring system (COMS). As of July 30, 2001, a COMS had been installed, but it was not quite fully operating. The boiler has been shut down and will not be used again until sometime in September. University of Washington will have the COMS fully operational and certified before it starts using the boiler. Right around the time the air operating permit went out for public comment, we found that Puget Sound Clean Air Agency Order of Approval No. 7061, Conditions No. 9 and No. 10 called for use of a CEMS to determine compliance with the CO limits. The engineer who had drafted the original NOC Approval Order stated that the intention at the time of drafting the final Order was not to require the University of Washington to install a CO CEMS, and that some language from a previous version of the Order had been inadvertently left in the Order. NOC Order of Approval No. 7061 was modified as of August 9, 2001 to remove the CO monitoring requirement.

Page 27
LANGUAGE IN STATEMENT OF BASIS: *Subpart Da applies to electric utility steam generating units with a heat input rate of more than 250 MMBtu/hr for which construction is commenced after September 18, 1978. University of Washington does not*

sell power to "the grid" so this subpart does not apply to any of the boilers on the Seattle campus.

COMMENT: Add some more explanation of the applicability provisions of subpart Da and the characteristics of the University's boilers. That will make this read better. It should explain more fully why the University's boilers do not meet the applicability criteria of subpart Da. There is no connection between heat input rate/construction date on the one hand, and selling power to the grid on the other.

Puget Sound Clean Air Agency Response:
*New wording has been added to make the paragraph read better. Now it reads: "**Subpart Da** applies to electric utility steam generating units with a heat input rate of more than 250 MMBtu/hr for which construction is commenced after September 18, 1978. According to the definitions in Subpart Da, an "electric utility steam generating unit means any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale." Boiler No. 7 meets the heat input rate and date applicability criteria, but University of Washington does not sell power to 'the grid,' so subpart Da does not apply to any of the boilers on the Seattle campus."*

Pages 28 and 29
LANGUAGE IN STATEMENT OF BASIS: *When the draft air operating permit was written, only Boiler No. 7 was technically in compliance with NSPS Subpart Db requirement to monitor opacity. University of Washington has several possible ways to get Boiler No. 4 in compliance with the requirement to monitor opacity:*

- *Remove the oil line from, and fire only natural gas in Boiler No. 4.*

- *Apply to the EPA for a waiver from the opacity monitoring requirements, and comply with EPA restrictions on backup oil use.*

- *Install a new COMS on the breeching from No. 4. This would be the most expensive option.*

- *Upgrade the existing COMS on the common breeching to the operation and maintenance requirements of Puget Sound Clean Air Agency Regulation I, Article 12 and 40 CFR 60.13. They would then have to count any opacity exceedances measured by the common COMS as exceedances from Boiler No. 4 whenever Boiler No. 4 was running.*

COMMENT: This is confusing because page 71 of the draft permit requires the University to install, calibrate and maintain a continuous opacity monitoring system for Boiler No. 4. It would appear that PSCAA determined what type of monitoring for

opacity would be used for boiler No. 4 after this portion of the Statement of Basis was written. This language should be updated to reflect the fact that one specific monitoring technique now applies.

Puget Sound Clean Air Agency Response:
The wording in this section has been revised to reflect developments as of August 2, 2001, the time of drafting of the proposed air operating permit. The University of Washington has installed a continuous opacity monitoring system on the breeching from Boiler No. 4 and will have it certified before the unit is restarted for the autumn 2001 heating system.

University of Washington Comments: (Puget Sound Clean Air Agency response is highlighted).

University of Washington, Item 1 of 2, received 7/27/2001

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195-4400

Environmental Health and Safety
201 Hall Health Center
Box 354400

July 26, 2001

Mr. Alan Butler
Air Operating Permit Program
Puget Sound Clean Air Agency
110 Union Street, Suite 500
Seattle WA 98101-2038

SUBJECT: PSCAA DRAFT AIR OPERATING PERMIT
PSAPCA Registration No. 21320

Dear Mr. Butler:

The University of Washington (UW) has the following comments on the draft Air Operating Permit (AOP) and Statement of Basis (SOB) for the UW Plant Operations, located on the Seattle Campus in Seattle, Washington, as published by notice dated June 27, 2001:

Air Operating Permit:

Comment 1:

Page 1 of 128: The UW requests that Weldon Ihrig, Executive Vice-president, be substituted as the UW AOP Responsible Official. Weldon Ihrig is "a principal executive officer" as defined by WAC 173-401-200(27)(c) pursuant to the Standing Orders of the Board of Regents, Chapter 1, Sections 3 and 6 (Revised) effective January 21, 2000 and Administrative Order No. 1 (Revision effective March 9, 2001). He is the chief business and financial executive officer for the UW, and is one of the primary policymakers representing the University in political, business, and civic affairs. In addition, Weldon Ihrig has the authority to provide the financial and personnel resources necessary to ensure continued compliance with AOP requirements.

Puget Sound Clean Air Agency Response: *Weldon Ihrig is now the "Responsible Official" in the air operating permit.*

Comment 2:

Requirement No. EU-2.18, page 25 of 128: Verify "12-month rolling average".

Puget Sound Clean Air Agency Response: *Requirement EU-2.18 is for Order of Approval No. 6206, Condition No. 6. This condition sets emission limits on an hourly basis. Therefore, the averaging time of EU-2.18 has been changed to "1-hour average."*

Comment 3:

Requirement No. EU-2.20, page 25 of 128: Verify "30-day rolling average".

Puget Sound Clean Air Agency Response:
Checking the New Source Performance Standards: "Except as provided under paragraph (j) of this section, compliance with the emission limits under this section is determined on a 30-day rolling average basis. [40 CFR 60.44b(i), 9/16/1998]." Compliance with the emission limits under paragraph (j) is determined on a 24-hour average basis for the initial performance test and on a 3-hour average basis for subsequent performance tests for any affected facilities that have federally enforceable requirements to burn only natural gas, distillate oil, or residual oil with nitrogen content not greater than 0.3% nitrogen by weight, and a combined annual capacity factor of 10% or less. University of Washington boilers do not have any such federally enforceable limitation; therefore, the averaging period for these units in determining compliance with 40 CFR 60.44b is a rolling 30-day average.

Comment 4:

Requirement EU-3.24, page 35 of 128: Verify that NO_x emission standards apply during periods of startup, shutdown, or malfunction.

Puget Sound Clean Air Agency Response:
This quote is directly from the EPA New Source Performance Standards: "For purposes of paragraph (i) of this section, the nitrogen oxide standards under this section apply at all times including periods of startup, shutdown, or malfunction [40 CFR 60.44b(h), 9/16/1998]." This makes sense if you consider that the standard is on a 30-day rolling average. The unit should not be operating in a startup, shutdown, or malfunction mode for a long enough time to put the unit out of compliance on a 30-day rolling average.

Comment 5:

Requirement EU-3.25, page 36 of 128: Verify "30-day rolling average".

Puget Sound Clean Air Agency Response:
See the response for Comment 3, above.

Comment 6:

Requirement EU-5.3, page 43 of 128: Verify that the sterilizer control efficiency may be reduced per PSCAA Regulation III, Section 3.07(b) should ethylene oxide consumption be reduced in the future.

Puget Sound Clean Air Agency Response:
*Requirement EU-5.3 has been revised to show that Puget Sound Clean Air Agency Regulation III, Section 3.07(b) allows lower ethylene oxide control efficiency depending upon the quantity of ethylene oxide consumed. Monitoring Method "*V.N.1(c) Annual Testing of Ethylene Oxide Sterilizer*" has been revised to require University of Washington to record the quantity of ethylene oxide consumed each year in order to verify compliance with Section 3.07(b).*

Comment 7:

Requirement EU-6.4, page 45 of 128: Verify "More than 3 min. in any 1 hr".

Comment 8:

Requirement EU-7.4, page 47 of 128: Verify "More than 3 min. in any 1 hr".

Puget Sound Clean Air Agency Response:
The averaging time for Requirement EU-7.4 (Notice of Construction Order of Approval No. 6083, Condition No. 4) has been changed to say "N/A" (not applicable) because the averaging time is stated in the Requirement Paraphrase cell. This change was also made on comparable requirements in the requirements table for EU-6, so now both of these tables are consistent with the other emission units with opacity standards.

Comment 9:

Requirement EU-9.5, page 55 of 128: Verify that the activities listed in PSCAA Regulation I, Section 9.16(b), may also be conducted.

Puget Sound Clean Air Agency Response:
Puget Sound Clean Air Agency Regulation I, Section 9.16 establishes general requirements for indoor and outdoor spray painting operations. Subsection (a) states that the section applies to all registered, new source review, and air operating permits in the Puget Sound Clean Air Agency jurisdiction. Subsection (b) is a list of exemptions from the requirements of Section 9.16. Subsections (c) and (d) set minimum requirements for indoor and outdoor spray coating operations, calling for painting to be done in an enclosed area with overspray controls, or outside using methods to control overspray and high-transfer-efficiency equipment. The subsection (b) exclusion that could apply in the University of Washington spray coating booth is that it doesn't have to use a spray coating booth to paint with an aerosol spray can or low-flow, air brush-type spray equipment. NOC Order of Approval No. 7588, Condition No. 7 requires University of Washington to use only high volume, low pressure (HVLP) spray equipment at its Oceanography Building spray coating operation (0.1 to 10 psig for atomization). The exclusions in Subsection (b) do ***not*** *apply to NOC Order of Approval No. 7588, Condition No. 7.*

Comment 10:

Section I.C.2, page 57 of 128: A Power Plant ash disposal system equipped with a baghouse no longer exists.

Puget Sound Clean Air Agency Response:
References to the Power Plant ash disposal system equipped with a baghouse have been removed from the air operating permit. References to this unit in the statement of basis have been revised to show the system as having been removed.

Comment 11:

Page 57 of 128, Section I.C, first paragraph states that emission units that have no specific requirements "must comply with the general requirements of Section I.A." General Requirement IA.1 states "emissions from a common stack must meet the most restrictive standard of any of the connected emissions units." Please note that although all Power Plant boilers discharge to a common stack, Boilers No. 3, No. 5, and No. 6 are not subject to the more restrictive Boil No. 4 and Boiler No. 7 emission standards since these two units are both equipped with a NO_x continuous emissions monitoring system (CEMS) and continuous opacity monitoring system (COMS).

Puget Sound Clean Air Agency Response:
The fourth column header for the requirements table states that the requirement as written in that column is only a paraphrasing of the actual requirement. In view of the comments from University of Washington regarding the common stack requirement, however, the pertinent wording from the first paragraph of WAC 173-400-040 has been placed, in its entirety, in Requirement IA.1. It used to say: "Emissions from a common stack must meet the most restrictive standard of any of the connected emissions units. All emission units are required to use RACT." It now says, "When two or more emissions units are connected to a common stack and the operator elects not to provide the means or facilities to sample emissions from the individual units, and the relative contributions of the individual emission units to the common discharge are not readily distinguishable, then the emissions of the common stack must meet the most restrictive standard of any of the connected emissions units. All emission units are required to use RACT.

Comment 12:

Section I.C.3, page 58 of 128: The first and last bullets are redundant.

Puget Sound Clean Air Agency Response:
First bullet has been eliminated.

Comment 13**:**

Relative to Section I D, Radioactive Air Emissions License Part 4, page 62 of 128, Note buildings constructed prior to Notice of Construction regulations (WAC 246-247-060) are not listed in Table 4.1.

Puget Sound Clean Air Agency Response:
According to Craig Lawrence of Washington State Health Dept. Div of Radiation Protection, buildings constructed prior to the adoption date of NOC regulation Chapter 246-247 WAC actually do not need to be listed in the Radioactive Air Emissions License. The Radioactive Air Emissions License is designed to regulate new or modified sources. If any of these pre-existing sources have changed, a Notice of Construction Application should be submitted by University

of Washington to the Washington State Health Dept. Div of Radiation Protection. Inclusion of the permit as it is currently written by DOH fulfills the requirements as to inclusion of Radioactive Air Emissions Licenses in Chapter 173-401 WAC.

Comment 14:

Table 4.1 on page 63 of 128 includes the Seattle Life Sciences Center Annex. This is no longer a University of Washington facility using radioactive materials.

This should be removed from the table 4.1.

Puget Sound Clean Air Agency Response:
A Notice of Construction Application should be submitted by University of Washington to the Washington State Health Dept. Div of Radiation Protection in order to make this correction. Inclusion of the permit as it is currently written by DOH fulfills the requirements as to inclusion of Radioactive Air Emissions Licenses in Chapter 173-401 WAC.

Comment 15:

On page 64 of 128, the explanatory box item 2, first bullet should be changed to read, "Secondary Enclosure: Radionuclide box exhausting through charcoal filter to a standard laboratory fume hood."

Puget Sound Clean Air Agency Response:
A Notice of Construction Application should be submitted by University of Washington to the Washington State Health Dept. Div of Radiation Protection in order to make this correction. Inclusion of the permit as it is currently written by DOH fulfills the requirements as to inclusion of Radioactive Air Emissions Licenses in Chapter 173-401 WAC.

Comment 16:

Sections II.A.1(b) and (c), pages 65-66 of 128: Taking essential equipment (Power Plant boilers, ethylene oxide sterilizer, crematory) out of service within 24 hours, in response to a complaint or damage to air pollution equipment, has the potential to threaten public health and safety. A prolonged shutdown of essential equipment may constitute an emergency per WAC 173-401645(1).

Puget Sound Clean Air Agency Response:
Section II.A.1(b) refers to "complaint response." The first sentence of this requirement calls for University of Washington to record and investigate air pollution complaints as soon as possible. University of Washington is required to

investigate the complaint and determine if there was noncompliance with an applicable requirement of the air operating permit. University of Washington is required to correct any such noncompliance problems as soon as possible, and a further requirement to shut down the unit or activity if that unit or activity is not returned to a compliant status within 24 hours of identification. Section II.A.1(c) refers to quarterly "campus-wide inspections," the purpose of which is to check for prohibited activities or activities that require a Notice of Construction, or for noncompliant units or activities. If a problem is found, University of Washington has 24 hours to correct the problem, or the cause of the problem is to be shut down.

If University of Washington follows the procedures in Section II for monitoring and correcting problems that are found, then University of Washington is in compliance with its air operating permit. If a problem does occur, and University of Washington does not correct the problem and does not shut down the unit within 24 hours, the Puget Sound Clean Air Agency is not going to go out there and shut the unit down. Failure to follow any condition in an air operating permit however, including the requirements in Sections II.A.1(b) and (c), is a "deviation" from permit conditions.

University of Washington is required to report any "deviation" from permit conditions, along with the probable cause and any corrective actions or preventive measures taken [WAC 173-401-615(3)(a), 11/4/1993]. University of Washington is required to maintain a record of all such deviations. Deviations that represent a potential threat to human health or safety are to be reported to the Agency as soon as possible but no later than 12 hours after such a deviation is discovered. Other deviations are to be reported in writing within 30 days of occurrence. The Puget Sound Clean Air Agency will evaluate and take any necessary enforcement action on deviations, reported and otherwise.

An examination of the Puget Sound Clean Air Agency General Civil Penalty Worksheet and Recommendation form will show that continued operation of an out-of-compliance unit is not an economically valid option. In almost all instances, proper operation and maintenance of equipment, along with following the monitoring procedures in Section II of the air operating permit, will help a source to avoid the enforcement scenario.

Comment 17:

Sections II.A.1(b), (c), and (f), pages 66-68 of 128: Verify that the requirements of these sections do not apply to indoor air quality complaints.

Puget Sound Clean Air Agency Response:
*The Title V Air Operating Permit Program applies **only** to "applicable*

requirements" as defined in WAC 173-401-200(4). Indoor air quality is not directly regulated in the Title V Program, so none of the Section II monitoring methods apply directly to indoor air quality. It is possible that an indoor air quality problem could be caused by air contaminants that were originally emitted to the atmosphere and found their way indoors. In such a scenario, an indoor air quality complaint generated as a result of these emissions should be addressed as necessary per Sections II.A.1(b), (c), or (f).

Comment 18:

Section I.A.2(d), page 69 of 128, states that the UW shall submit reports to PSCAA and the EPA certifying that only distillate oil (maximum sulfur content 0.05%) was combusted at the Power Plant during the reporting period. This is not consistent with Requirement No. EU-3.6 (page 27 of 128) which states that Boiler No. 7 shall only burn fuel oil with a sulfur content of 0.05% or less after December 31, 2005. The statement on page 69 of 128 should be changed to match. Requirement No. EU-3.6.

Puget Sound Clean Air Agency Response:
Requirement EU-3.6 refers to Condition No. 12 in NOC Order of Approval No. 7061. The monitoring method for that requirement is supposed to be in Section II.A.2(d), but the Section II.A.(c) monitoring method was erroneously listed in the requirement. This has been corrected.

Comment 19:

Section II.A.2(e)(8), page 75 of 128, states that the Boiler No. 7 stack shall be equipped with a carbon monoxide (CO) and oxygen (O_2) CEMS. However, at the time that the original boiler permitting process was being conducted in 1997/1998, the UW understood that a carbon monoxide CO CEMS would not be required to monitor Boiler No. 7 CO emissions. Therefore, the UW requests that Section II.A.2(e)(8) be removed from the AOP. In addition, the UW also requests that PSCAA Notice of Construction (NOC) No. 7061, Conditions 9(b), 9(d), 10(b) and 10(d) be deleted to avoid any ambiguity associated with this issue. Please note that this proposed NOC modification will result in no emission increase. A letter stating that the proposed NOC modification is exempt from the SEPA review is attached for your use (see Attachment 1).

Puget Sound Clean Air Agency Response:
NOC Order of Approval No. 7061 originally called for use of a CO monitor on Boiler No. 7, but then the Puget Sound Clean Air Agency ultimately agreed with University of Washington that a CO monitor should not be required. The draft of the original NOC Order was modified, but not all of the CEMS language was excised. The most recent modification to NOC Order of Approval No. 7061 attempts to correct that error. The Puget Sound Clean Air Agency believes,

however, that some form of periodic monitoring for CO is necessary to assure continued use of "good combustion practices." Therefore Conditions No. 9 and No. 10 of NOC Order of Approval No. 7061 have been altered to require University of Washington to calculate CO emissions in pounds per million Btu and pounds per hour based on the CO concentration data from the most recent source test, rather than CEMS data. University of Washington could be required to run another source test if calculated CO emissions exceed 90% of the ton per year limit in Condition No. 7 of NOC Order of Approval No. 7061. The appropriate changes have also been made in the air operating permit and statement of basis.

Comment 20:

Section II.A.2(f), page 77 of 128, first paragraph, states that the UW shall maintain records of occurrence and duration of any startup, shutdown, or malfunction at the facility, and any malfunction of control equipment. Since these events are recorded to determine if an emission violation has occurred, the UW requests that it be required to record these events only when the Boiler No. 4 and/or Boiler No. 7 COMS and CEMS detect that an applicable opacity and nitrogen oxides emission standard has been exceeded.

Puget Sound Clean Air Agency Response:
The requirement referred to in this comment is a federal New Source Performance Standard, 40 CFR 60.7(b). The Puget Sound Clean Air Agency cannot eliminate or otherwise change this requirement.

Comment 21:

Section II.A.2(f), page 77 of 128, second paragraph, states that the UW shall maintain Boiler No. 4 and Boiler No. 7 records for at least two years in permanent form. The UW requests that electronically stored records, including CEMS and COMS data, be considered "permanent" provided that it can be reliably accessed in the future. Also note that the two-year data retention requirement is not consistent with PSCAA Regulation I, Section 12.03(e) five-year data retention requirement. Please clarify this.

Puget Sound Clean Air Agency Response:
This was checked with EPA Region 10, and we both agree that "permanent" records can be paper records in a file cabinet or digital data on a compact disk. If a Puget Sound Clean Air Agency or EPA inspector asked to see monitoring information for a particular day, and that information was available, it wouldn't matter if that information was a photocopy of a paper strip chart or a printout of

data off a CD. Data stored in volatile random access memory (RAM) of a computer is not considered to be "permanent," however.

Comment 22:

Section II.A.2(f), page 77 of 128: This section states that Boiler No. 4 and No. 7 records should be maintained for two years. Section II.A.1(f) indicates five years. Please clarify this.

Puget Sound Clean Air Agency Response:
The two-year data retention requirement comes from the New Source Performance Standards Program. The five-year data retention requirement comes from the Air Operating Permit Program. Inability to produce data less than two years old would constitute violations of NSPS 40 CFR 60.7(f), 40 CFR 60.49b(f), and 40 CFR 60.49b(o), AND air operating permit requirement WAC 173-401-615(2). Inability to produce data two or more years old but less than five years old would be a violation of WAC 173-401-615(2).

Comment 23:

Section V.P.1(b), page 93 of 128: The UW requests PSCAA's guidance as to which deviations to permit requirements constitutes a "potential threat to human health and safety".

Puget Sound Clean Air Agency Response:
Even though it shows up in federal, state and local environmental requirements, there is not a specific definition given for the phrase "potential threat to human health and safety" in the 40 CFR 70, Chapter 173-401 WAC, or related regulations. In general, the determination of exactly what constitutes a potential threat to human health and safety is left up to the source.

Comment 24:

Section V.P.1(d), page 93-94 of 128: Verify that "a responsible official" is not necessarily the same as "the responsible official" as designated on page 1 of 128.

Puget Sound Clean Air Agency Response:
The "responsible official" referred to in Section V.P.1(d) is the person designated as the "responsible official" on Page 1 of the air operating permit. That person is Weldon Ihrig, Executive Vice President of the University of Washington.

Comment 25:

Section V.P.2.(b)(b), page 95 of 128: The scrubber is not equipped with a CEMS.

Therefore, this requirement is not applicable.

Puget Sound Clean Air Agency Response:
Section V.P.2(b) is an exact copy of Puget Sound Clean Air Agency Reg I: 12.04 (8/10/1989), and is an applicable requirement. The specific monitoring methods for the only scrubber listed in the air operating permit, EU-10, are listed in Section II.A.2(e)(10).

Comment 26:

Section V.P.2.(b)(f)(4), page 96 of 128: Submittal of annual CEMS relative accuracy test audit (RATA) results, within 30 days after the month in which it was conducted, is not feasible due to the time needed to prepare, review, and edit a Boiler No. 4/Boiler No. 7/Combined Stack RATA test report. Please note that PSCAA Regulation I, Section 3.07(c) allows compliance test results to be submitted no later that 60 days after the test is conducted.

Puget Sound Clean Air Agency Response:
Section V.P.2(b) is an exact copy of Puget Sound Clean Air Agency Reg I: 12.04 (8/10/1989) and is an applicable requirement.

Comment 27:

Table 13, first line item, page 101 of 128, states that permit deviations which represent a potential to human health or safety should be reported within six hours of discovery. Per Section V.P, page 93 of 128, "six hours" should be revised to "12 hours".

Puget Sound Clean Air Agency Response:
Change was made.

Comment 28:

Table 13, page 102 of 128: The UW requests that all Table 13 monthly and semiannual requirements be certified by the person exercising day-to-day managerial responsibility over the operation of the equipment for which monitoring is required. This person will have direct knowledge of the operations and will be better qualified to provide certification of the data.

Puget Sound Clean Air Agency Response:
All monthly and semiannual reporting noted in Table 13 as requiring certification by the "designated official" are requirements from 40 CFR 70 and Chapter 173-401 WAC, and cannot be changed.

Comment 29

Section VIII, Table 14, pages 123 and 124 of 128, first and third line items: The (2) Power Plant 4,400 bbl No. 6 fuel oil USTs were demolished with the installation of Boiler No. 7. They no longer exist, and should be deleted from the table. In addition, replace "(2) Power Plant 15,000 gallon No. 6 fuel oil USTs" with "(2) Power Plant 15,000 gallon No. 2 fuel oil USTs". These two USTs have never contained No. 6 fuel oil.

Puget Sound Clean Air Agency Response:
Changes were made.

Statement of Basis:

Comment 30:

Page 2 of 47: Boiler No. 4 is a Foster Wheeler unit.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 31:

Page 13 of 47, last paragraph: Substitute "Power Plant" for "power".

Puget Sound Clean Air Agency Response:
Change was made.

Comment 32:

Page 13 of 47, last paragraph: "When the older boilers are on-line, the main stack cannot meet the limits imposed on Boiler No. 7" is not necessarily a true statement -- especially in regard to opacity.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 33:

Page 14 of 47 states that "The boiler main exhaust stack has a continuous opacity monitoring system and is regulated under PSCAA Regulation I Section 9.09(b)." Please note that the UW Power Plant main stack is equipped with an opacity meter. The main stack is not equipped with a COMS. Please correct the statement to reflect

this fact. In addition, Power Plant ash and lime handling operations do not exist.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 34:

Figure 1, page 26 of 47: Revise the figure to indicate that Boiler No. 4 is equipped with a COMS, and the main stack is equipped with an opacity meter. In addition, a COMS does not exist on the main stack. Please revise the text on pages 27 and 28 accordingly.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 35:

Page 32-33 of 47: Lead melting operations do not occur at Fluke Hall. Please delete the statement on page 33.

Puget Sound Clean Air Agency Response:
Consultation with the inspector shows that lead melting apparatus is still in place at Fluke Hall. Lead melting occurs very infrequently, but the capability is there. No changes were made to the statement of basis as a result of this comment.

Comment 36:

Page 36 of 47, third paragraph: Is "a" responsible official the same as "the responsible" official?

Puget Sound Clean Air Agency Response:
Yes.

Comment 37:

Table, Page 41 of 47, ID No. 47 lists welding operations that occur at specific places on campus. Please note the UW personnel also perform maintenance-related welding operations at the Power Plant and other on-campus locations, as needed. Please revise the text to reflect this fact.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 38:

"Inapplicable Requirements", Page 44 of 47: A second paint spray booth was installed at the Ceramic/Metal Arts Building in December 2000. At the time that the project design was completed and subsequently reviewed by DCLU, it was determined that proposed spray painting operations were exempt from NOC application submittal requirements. This exemption was based upon the air pollution regulation in effect during DCLU review. Therefore, the UW requests that the AOP be revised to indicate that the recently installed Ceramic/Metal Arts paint booth is exempt from NOC submittal requirements

Puget Sound Clean Air Agency Response:
Consultation with the Agency inspector shows that we are uncertain whether the paint booth is in fact exempt from the NOC requirements. This will be verified during a future inspection.

Comment 39:

Page 45 of 47, 4th bullet: The listed four emergency backup diesel generators should be categorized as "insignificant emission units" since each has a heat input of no greater than 1MMBtu/hr. Please include these four units in the "Exempt due to size or capacity of emission unit" table beginning on page 37 of 47.

Puget Sound Clean Air Agency Response:
Change was made.

Comment 40:

Page 46 of 47, last bullet: At the time the Art Building paint booth was installed (more than 20 years ago), the spray booth was not required to be equipped with a vertical stack. Therefore, the UW questions the need to modify the paint booth exhaust ductwork to comply with current PSCAA regulations.

Puget Sound Clean Air Agency Response:
Regulation I, Section 9.16 applies to spray coating operations at facilities subject to Article 5 (Registration), Article 6 (New Source Review), or Article 7 (Air Operating Permits), where a coating that protects or beautifies a surface is applied by spray equipment. Reg. I, Section 9.16 applies to existing as well as new paint spray booths. There are a number of exemptions in Reg. I, Section 9.16, and it is possible that at least one of them might apply to the Art Building spray paint booth. University of Washington should examine the regulation (http://www.pscleanair.org/businfo/regulations.shtml) *and see if spray painting*

operations in the Art Building spray paint booth are exempted under any of the provisions of Reg. I, Section 9.16(b).

If you have any questions or require additional information, do not hesitate to contact me at 206-616-4146 or David Ogrodnik at 206-221-4285.

Sincerely,

Karen A. VanDusen
Director

Attachment

cc: John Chapman, John Kelly, David Ogrodnik

University of Washington, SEPA exemption, received 7/27/2001

UNIVERSITY OF WASHINGTON

CAPITAL PROJECTS OFFICE

DATE: July 27, 2001

SUBJECT: SEPA CATEGORICAL EXEMPTION

On August 16, 1996 the University of Washington issued a SEPA Categorical Exemption of a 3,310 square foot addition to the existing University of Washington Power Plant. This addition houses a new Boiler No. 7, which is connected to existing mechanical and electrical systems in the existing plant. At the time of project design and permitting, the UW understood that Boiler No. 7 would not be required to be equipped with a carbon monoxide (CO) continuous emissions monitoring system (CEMS).

Since a Boiler No. 7 CO CEMS is not required, the University is requesting the Puget Sound Clean Air Agency (PSCAA) to remove this condition from the University's Seattle Campus Draft Air Operating Permit [Section II.A.2(e)(8)] and PSCAA Notice of Construction (NOC) No. 7061 [Conditions 9(b), 9(d), 10(b) and 10(d)] to clarify that a CO CEMS is not a permit condition.

The action to correct the permit conditions is considered to be categorically exempt per paragraph 3 of WAC 187-11-800, RCW 43.21C – State Environmental Policy Act (SEPA). This section exempts projects from the threshold determination and environmental impact statement (EIS) requirements of SEPA which involve the repair, remodeling, maintenance, or minor alteration, including utilities involving no material expansions or changes in use beyond that previously existing. Modification of the NOC and removal of the continuos emissions monitoring system does not result in any change or increase in emissions.

University of Washington Additional Comments: (Puget Sound Clean Air Agency response is highlighted).

The Puget Sound Clean Air Agency met with the University of Washington on August 9, 2001 to discuss various compliance issues. We also asked University of Washington to take another look at the Draft Air Operating Permit. University of Washington provided the following additional comments on September 18, 2001. Puget Sound Clean Air Agency responses are highlighted.

Comment 1:

Section II.A.1.(d): I believe the heat output units should be 0.5 MMBtu/hr, not 0.5lb/MMBtu

Puget Sound Clean Air Agency Response:
Change was made.

Comment 2:

Section V.P.3(c), Table 13: Semi-annual reports will be submitted "with the first on January 31, 2002", not July 31, 2001

Puget Sound Clean Air Agency Response:
Change was made.

Comment 3:

Section II.A.2(e)(6): Verify the SO_2 distillate oil emission rate formula. I'm not sure of the basis of the 157 lb SO_2/1000 gal oil emission factor. I suggest the following:

[gallons oil/month] x [oil density (lb./gallon)] x [wt.% S] x [64 lb. SO2/ 16 lb. S] x [ton SO_2/2000 lb. SO_2]

Puget Sound Clean Air Agency Response:
The emission factor for uncontrolled or pre-control sulfur dioxide from combustion of fuel oil remains unchanged from the value taken from Table 1.3-1 of AP-42. That emission factor may be used as follows, assuming that 10,000 gallons of 2% sulfur oil are burned: *Multiply each thousand gallons of oil fired by the number 157, and then by the percent sulfur in the oil to get pounds of sulfur emitted. If a boiler burned 10,000 gallons of 2% sulfur oil, the unit would emit: 10 X 157 X 2 = 3,140 pounds, or 1.57 tons of sulfur dioxide*.

This factor is rated "A" by the US EPA, which means that the emission factor was

"Developed only from A-rated test data taken from many randomly chosen facilities in the industry population. The source category is specific enough so that variability within the source category population may be minimized." The pertinent section of the EPA emission factor document AP-42 and supporting documentation may be found on the EPA Technology Transfer web site at http://www.epa.gov/ttn/chief/ap42/ch01/.

The Agency used your suggested factor with the same 10,000 gallons of 2% sulfur oil, and assumed a density of 7.5 lb/gal (reasonable estimate, based on value used for engine oil in private pilot ground school calculations). It looks like your method calls for use of decimal equivalent to percent sulfur, so the formula went as follows: *10,000 X 7.5 X 0.02 X (16/4) X (1/2000) = 3.00 tons of sulfur dioxide*

Comment 4

Section II.A.2(e)(9) and (10): What is your interpretation of "checking for proper fan operation" and "checking for particulate emissions"? Checking that the fan is "on" is all the users can really do on a shift-wise basis. Looking at paint booth exhaust stacks to verify particulate matter is not spewing forth is not possible/practical either. Performing this task will require an operator to climbing to the building rooftop at 3 of 4 UW paint booths. Won't our monthly opacity inspections suffice?

Puget Sound Clean Air Agency Response:

The operator should not have to climb up on to the roof every shift. The requirements to check for proper fan operation and to check for evidence of particulate emissions have been deleted from Section II.A.2(e)(9). The requirement to check for evidence of particulate emissions has been incorporated into II.A.1(c), which is the quarterly campus-wide Inspections. Each spray coating booth is now required to have a pressure drop indicating gauge so that the operator will be able to tell at a glance if the fan is operating and if the hooding system is drawing air. The section now reads:

"**9. Spray Coating Booths**
University of Washington shall install and maintain a pressure differential gauge on each spray coating booth exhaust system. The gauge shall be mounted where it is readily viewable by the spray booth operator, and the range of the gauge shall be established using the manufacturer's recommendations, or the low end of the range will be no less than 50 percent of the clean filter pressure drop and the high end based on the operational experience at a pressure drop value below that at which the filters will fail. University of Washington shall inspect spray coating booth exhaust system and dry filters once each work shift that painting is taking place:

- Check dry exhaust filters for full coverage (no gaps, openings or tears in filters),
- Check for filter clogging,
- Check for proper operation of the pressure differential gauge and for acceptable range marking,
- Check to ensure that all VOC-containing material storage containers and tanks are kept closed except for when materials are being added, mixed or removed.
- Check to ensure that any containers used for solvent and paint wiping material disposal

are closed except for when such material is being added or removed.

University of Washington shall correct any problems identified during scheduled inspections or at any other time as soon as possible, but not later than the start of the next work shift after identification or shut down the unit or activity until it can be repaired.
Prior to applying surface coatings, University of Washington shall check to ensure that the spray coating operation is operated and maintained in accordance with IV.D below."

Comment 5:

Section II.A.2(e)(10): There are no lead melting operations at Fluke Hall.

Puget Sound Clean Air Agency Response:

The first paragraph Section II.A.2(e)(10) of used to say:

"University of Washington shall perform inspections, as described below, of the ECH horizontal fume scrubber with mist eliminator exhaust system once each work shift that lead melting takes place:"

Now it says:

"University of Washington shall perform inspections, as described below, of the ECH horizontal fume scrubber with mist eliminator exhaust system once each work shift that the fume scrubber is operated:"

University of Washington sent one more comment in an additional E-mail. The comment was as follows:

"Also note that the crematory is only equipped with an audible high-opacity alarm. There is no visual alarm -- unless you count the circular strip recording chart . . . .

Please edit Section II.A.2.(e)(5) accordingly?

Puget Sound Clean Air Agency Response:

The monitoring requirement for an audible alarm and flashing light has not changed. University of Washington should install a flashing light in parallel with the audible warning.

Administrative Amendment

On January 29, 2008, the University of Washington submitted an application to change the Responsible Official from Weldon Ihrig to Charles Kennedy. The Administrative Revision to make this change was issued on February 6, 2008.

Administrative Amendment

On February 5, 2018, the University of Washington submitted an application to change the Responsible Official from Charles Kennedy to John Chapman. The Administrative Revision to make this change was issued on July 24, 2018.

Administrative Amendment

On February 4, 2019, the University of Washington submitted an application

1) To change the Site Contact from Karen VanDusen to Doug Galluci.

2) To change the Site Contact from David M. Ogrodnik to Joseph M. Cook.

The Administrative Revisions to make this change was issued on May 6, 2019.

Administrative Amendment

On June 30, 2021, the University of Washington submitted an application

1) To change the Site Contact from John Chapman to Lou Cariello.

2) To change the Facility Address to Environmental Safety Office Building, 4019 Franklin Pl NE, Seattle, WA 98195.

The revisions were made.