

Effective Date: XX/XX/XXXX
Expiration Date: XX/XX/XXXX

Hanford Air Operating Permit
Permit No. 00-05-06
Renewal 3

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**STATEMENT OF BASIS
HANFORD SITE AIR OPERATING PERMIT
NO. 00-05-006
RENEWAL 3
ATTACHMENT 1: ECOLOGY PERMITS**

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DRAFT

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

The Statement of Basis (Statement) is issued by Washington State Department of Ecology (Ecology), Washington State Department of Health (Health), and Benton Clean Air Agency (BCAA), collectively referred to as the permitting agencies, as a separate supporting reference document to the Hanford Air Operating Permit (AOP) Attachment 1. This Statement sets forth the legal and factual basis for the AOP Attachment 1 conditions, and is not intended for enforcement purposes. The Statement includes references to the applicable statutory or regulatory provisions, technical supporting information on specific emission units, and clarifications of specific requirements. The Statement of Basis is non-enforceable, but is a supporting reference document that provides a rationale for the development of the permit and offers clarification where deemed necessary.

[Washington Administrative Code (WAC) 173-401-700(8)]

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TABLE OF CONTENTS

1
2
3
4
5
6
7
8 1.0 EMISSION STANDARDS AND LIMITATIONS 7
9 1.1 General Standards for Maximum Emissions 7
10 1.2 Insignificant Emission Units 7
11 1.3 Emission Units and Activities Subject to Monitoring, Reporting, Recordkeeping, and Compliance
12 Certification 9
13 1.4 Emission Unit Specific Applicable Requirements 9
14 2.0 COMPLIANCE AND PERIODIC MONITORING PROVISIONS 11
15 2.1 Visible Emissions Surveys 11
16 2.2 General Standards Complaint Investigations 11
17 2.3 Measures to Control Fugitive Emissions and Fugitive Dust 11
18 2.4 Reserved 11
19 2.5 Recordkeeping for Boilers 12
20 2.6 Steam Generating Units Source Tests 12
21 2.7 SO₂ Emissions Compliance 12
22 2.8 Visible Emissions Enforceability 12
23 2.9 Sulfur Dioxide Enforceability 12
24 3.0 RECORDKEEPING 12
25 3.1 Emission Calculations 12
26 APPENDIX A 22
27 APPENDIX B 26
28 APPENDIX C 34
29 Discharge Points Removed 35
30 Discharge Points Revised 36
31 Discharge Points Added 37

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1 **1.0 EMISSION STANDARDS AND LIMITATIONS**

2 The purpose of this section is to identify emission standards and limitations for all non-radioactive
3 emission units, including insignificant emission units (IEUs) on the Hanford Site.

4 **1.1 General Standards for Maximum Emissions**

5 WAC 173-401-605(1) requires each operating permit to comply with general emission standards and
6 limitations. A set of general standards for maximum emissions for all sources and emission units are
7 listed in WAC 173-400-040. The general standards for maximum emissions in Table 1.1 of AOP
8 Attachment 1 apply to all emission units on the Hanford Site.

9 Table 1.1 of AOP Attachment 1, “General Standards for Maximum Emissions,” requires that the
10 permittee use good practice and procedures to reduce odorous emissions to a reasonable minimum. Based
11 on process knowledge and the lack of odor complaints filed with the regulatory agencies, Ecology has
12 determined that the Hanford Site is not a source of odorous emissions to the surrounding public. For
13 these reasons, the complaint response program for odor control described in Table 1.1 of AOP
14 Attachment 1 is considered adequate to maintain odorous emissions at a reasonable minimum.

15 Table 1.1 also requires that the permittee use reasonable precautions to control fugitive emissions and
16 fugitive dust. The Hanford Site generally is not a source of fugitive dust and emissions, except during
17 construction and demolition activities. Most of the construction activities occur in areas of the Hanford
18 Site remote from the Hanford Site boundaries. The Hanford Site uses a system of pre-job planning and
19 job safety analysis to reasonably control these emissions. Emissions that pass through a stack are not
20 sources of fugitive emissions.

21 WAC 173-401-605(3) requires each operating permit to consider reasonably available control technology
22 (RACT). Per RCW 70.94.154 requirement, RACT is required for existing sources. In addition, source-
23 specific RACT determinations may be performed when required by the Federal Clean Air Act. All
24 limitations and conditions established within the Washington State Implementation Plan (SIP) are
25 federally enforceable.

26 [WAC 173-400-030(32)] or fugitive dust [WAC 173-400-030(38)].

27 **1.2 Insignificant Emission Units**

28 Insignificant emission units (IEUs) are small, minor pollution sources at industrial facilities that are
29 subject to the operating permit regulation (specific IEU criteria are defined in WAC 173-401-530).
30 Examples of IEUs include bathroom vents, lubricating-oil storage tanks, plastic pipe welding, and wet
31 sand-and-gravel screening. IEUs can also be emission sources which have emissions below established
32 thresholds.

33 In compliance with WAC 173-401-530 the IEUs and insignificant emission activities have been listed in the
34 permit application. The AOP regulations do not require that each IEU be listed in the AOP. The types of
35 units and activities determined to be insignificant based on their size or production rate are summarized in
36 the Appendices of this Statement of Basis for Attachment 1.

37 WAC 173-401-530 establishes several criteria for determining if an emission unit is insignificant. Following
38 AOP issuance, no emission unit that qualifies as an IEU based on actual emissions can exceed the emission
39 thresholds in WAC 173-401-530 and -531 without first obtaining a permit modification.

40 In the fall of 1993, Ecology developed Washington’s original air operating permits regulation [WAC 173-
41 401] to comply with federal regulation [40 CFR 70, or Title 5 of the Clean Air Act, as amended (CAA)].
42 At the same time, Ecology applied to the EPA for program approval. In November 1994, EPA granted
43 Ecology interim approval for the air operating permits program. However, EPA also directed the state to
44 correct several issues in order to be granted full approval for the program.

1 Ecology made the changes requested by EPA, with the exception of the requested change related to IEUs.
2 IEUs are small, minor pollution sources at industrial facilities that are subject to the operating permit
3 regulation. They include such emissions as bathroom vents, lubricating-oil storage tanks, plastic pipe
4 welding, and wet sand-and-gravel screening. Ecology disagreed with EPA about requiring IEUs to meet
5 monitoring, record-keeping, and reporting (MRR) requirements of Title 5 of the CAA. Washington's
6 state rule exempted IEUs from these requirements in order to focus on the larger sources of pollution,
7 where the most important air quality gains can be made. Ecology believed that subjecting the
8 insignificant units and activities to the same level of rigorous MRR would place more attention than
9 necessary on small emissions.

10 As a result of the disagreement with EPA about IEUs, Ecology sued EPA in the 9th District Court of
11 Appeals in the spring of 1995. The lawsuit had two main points. The first was that, since EPA's rules
12 were silent on the issue of MRR for IEUs, Washington's approach should be acceptable to EPA. The
13 second was that EPA was treating permitting authorities inconsistently by approving similar provisions in
14 other states, while not approving the same kinds of provisions in Washington's program. In June 1996,
15 the court ordered EPA to approve Washington's program with respect to IEUs.

16 In the meantime, EPA began revising the federal operating permit regulations. After a revision of this
17 type takes place, states are required to revise their regulations to reflect the federal changes.
18 Consequently, many states in the nation, including Washington, were faced with the prospect of revising
19 their programs twice in a short period of time. To address this concern, EPA extended existing interim
20 approvals of state programs for up to five years. However, because federal law expressly prohibits
21 extending interim approvals, EPA was sued over this issue in the fall of 2000. The resulting settlement
22 agreement provided that EPA would take comment on all 50 states' operating permit programs.

23 Just one commenter addressed Washington's operating permit program. One of the comments was that
24 Washington's rules on IEUs did not meet requirements of the federal regulations. EPA agreed with this
25 comment and issued a notice of deficiency (NOD) on December 14, 2001. Ecology then initiated a
26 compromise with EPA over the issue of IEUs, which led to an agreement on new language for Ecology's
27 regulation. Ecology proposed the new language in April 2002 for public participation and EPA review.
28 As the result of the approval of this WAC 173-401-530 revision, full approval of the Washington
29 operating program was granted on January 2, 2002.

30 The IEU evaluation process and results supporting the Hanford Site AOP renewal application are
31 documented below. The purpose of an IEU evaluation for the Hanford AOP renewal application is to
32 verify that:

- 33 • Emission units and activities identified as insignificant in the initial AOP (i.e., DOE/RL 95-07)
34 have remained insignificant, and
- 35 • Emission units or activities not included in the initial application (because they commenced
36 during the permit term) are appropriately permitted.

37 The IEU evaluation process focuses on criteria/hazardous air pollutant emission units or activities subject
38 to regulation under the Federal Clean Air Act with a potential to emit, but where operations have not
39 increased, consistent with the regulatory definition of modification. The following areas/activities on the
40 Hanford Site were excluded from the WAC 173-401-530 evaluation process effort:

- 41 • Areas regulated under the *Comprehensive Environmental Response, Compensation, and Liability*
42 *Act (CERCLA)*. This includes sources and activities at a CERCLA Operable Unit(s).
- 43 • Areas regulated by the *Resource Conservation and Recovery Act, Subparts AA, BB, and CC*.
- 44 • Emission units that have been closed (e.g., power plants or package boilers) since the original
45 application. This exclusion category generally has closure documentation in previous years'
46 annual submittal report, pursuant to WAC 173-400-105, and/or in a previously transmitted AOP
47 modification(s).

- 1 • Emission units and activities in an active Ecology notice of construction (NOC) approval (i.e.,
2 approval order) and/or listed in AOP Attachment 1.
- 3 • Emission units, activities, or portions of the Hanford Site: (1) that were evaluated in the IEU
4 effort included in the initial AOP application and (2) where current operations of such units,
5 activities, or portions results in no increased potential to emit criteria/hazardous air pollutants
6 (e.g., Fuel and Materials Examination Facility).
- 7 • Emission units, activities, or portions of the Hanford Site that are in surveillance and maintenance
8 modes of operation (e.g., S Plant, U Plant, PUREX, B Plant, etc.).

9 Emission units or activities remaining after applying the above exclusion criteria were then evaluated for
10 IEU status per the five categories below:

- 11 1. Emission units or activities listed as categorically exempt in WAC 173-401-532.
- 12 2. Fugitive emission sources, pursuant to WAC 173-401-530(1)(d), that are subject to no applicable
13 requirement other than generally applicable requirements of the state implementation plan.
- 14 3. Emission units or activities defined as insignificant based on size and production rates are listed
15 in WAC 173-401-533. Appendix B provides a table of WAC 173-401-533(2)(a)-(bb) activities; a
16 "yes" or "no" response indicates whether or not that unit exists on the Hanford Site major
17 stationary source.
- 18 4. Emission units or activities not addressed in items 1 through 3, above, and for which a chemical
19 inventory is readily available, were screened against the criteria/hazardous air pollutant thresholds
20 listed in WAC 173-401-530(4) and WAC 173-401-531. Candidates above these thresholds were
21 considered as significant and included in AOP Attachment 1, Section 1.4 No additional Hanford
22 Site IEUs with emissions below the threshold levels of WAC 173-401-530(4) and WAC 173-401-
23 531 were identified. IEUs which likely have emissions below the referenced thresholds were
24 determined to fit into at least one of the IEU categories in Appendix B.
- 25 5. Any remaining emission units or activities not addressed in items 1 through 4, above, that are
26 insignificant are listed by category type in Appendix B of this Statement of Basis.

27 As a result of the above process, the IEUs included in the AOP renewal application are provided in
28 Appendix B through C of this Statement of Basis. Appendix A includes a listing of insignificant emission
29 units and activities on the Hanford Site along with applicable standards. Compliance with the standards is
30 required; however, no monitoring is required for IEUs.

31 **1.3 Emission Units and Activities Subject to Monitoring, Reporting, Recordkeeping, 32 and Compliance Certification**

33 All Chapter 401 permits shall contain compliance certification, testing, monitoring, reporting, and
34 recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit.
35 Any document, including reports, required by a Chapter 401 permit shall contain a certification by a
36 responsible official that meets the requirements of WAC 173-401-520. [WAC 173-401-630]

37 Any application form, report, or compliance certification submitted pursuant to this chapter shall contain
38 certification by a responsible official of truth, accuracy, and completeness. This certification and any
39 other certification required under this chapter shall state that, based on information and belief formed after
40 reasonable inquiry, the statements and information in the document are true, accurate, and complete.
41 [WAC 173-401-520]

42 **1.4 Emission Unit Specific Applicable Requirements**

43 This section contains emission unit specific requirements in addition to general standards for maximum
44 emissions.

1 Internal combustion engine stationary sources that were previously classified as IEUs but, as a result of
2 federal rule changes to 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, and 40 CFR 63 Subpart ZZZZ,
3 are now subject to a federally enforceable rule. In accordance with WAC 173-401-530(2)(a), sources
4 subject to a federally enforceable rule cannot be classified as an IEU.

5 In Attachment 1, Section 1.4 of the AOP is intended to capture the periodic monitoring, emission limit
6 and other approval conditions for all emission units. However, Section 1.4 does not list all conditions
7 included in the approval order as "Approval Conditions." Most of the excluded conditions have been
8 captured elsewhere in the AOP as applicable requirements. The categories of excluded approval
9 conditions include the following:

- 10 • Conditions and requirements addressed in Section 4.0, Permit Provisos, of the Hanford Site AOP.
- 11 • Conditions and requirements addressed in Section 5.0, Permit Administration, of the Hanford Site
12 AOP, such as the condition to send reports to the Ecology office or the requirement to allow
13 access to the facility for inspection.
- 14 • Conditions and requirements that re-state portions of applicable codified regulations.
- 15 • The requirement to prepare and maintain an Operation and Maintenance Manual.

16 Discharge Points in Section 1.4 in Attachment 1 of the AOP derived from Approval Orders includes only
17 the emission limits and conditions identified in the "Approval Conditions" section of the regulatory
18 orders. Information included in other sections of the orders, such as "Findings," "Background,"
19 "Description," or similarly titled sections are not included in the section.

20 Certain approval orders become obsolete when the facilities cease to operate. Certain approval orders contain
21 activities that will end at activity completion, as described in the notice of construction (NOC) application.
22 The permittee is not required to continue to comply with approval order terms and conditions after these
23 become irrelevant. For example, a number of approval orders for old coal-fired boilers at 200 Areas are
24 irrelevant because the boilers were demolished. Many approval orders contain the requirement to conduct
25 an initial, one time only, startup test. Once that initial startup test requirement has been completed
26 satisfactorily, that condition is deemed irrelevant, and the permittee is no longer bound by that particular
27 requirement.

28 An approval to construct the Waste Sampling and Characterization Facility (WSCF) was submitted to
29 Ecology. In a letter dated September 17, 1990, Ecology concurred with the determination that radioactive
30 emissions from the proposed WSCF would be offset by decreased emissions from 200-C Plant, Strontium
31 Semi-Works, which ceased operation in July of 1987. It further was determined that the proposed WSCF
32 would not increase radionuclide emissions on the Hanford Site, and therefore was not subject to
33 prevention of significant deterioration (PSD) review (40 CFR 52).

34 This approval to construct pre-dated the effective date of both WAC 173-460 ("Controls for New Sources
35 of Toxic Air Pollutants," effective 06/18/91) and WAC 246-247 ("Radiation Protection - Air Emissions,"
36 effective 01/31/91), and imposed no terms or conditions. For this reason, the September 17, 1990,
37 approval from Ecology is not considered an AOP applicable requirement and therefore is not listed in the
38 AOP.

39 Subpart AA of 40 CFR Part 264 and 265 applies to process vents that treat organic waste using
40 designated treatment technologies. Subpart AA requires organic emissions from all affected process
41 vents on the Hanford Site be less than 1.4 kilograms per hour and 2.8 megagrams per year, or control
42 devices must be installed to reduce organic emissions by 95%. Currently the 200 Area Effluent
43 Treatment Facility (ETF) and the 242-A Evaporator are operating treatment, storage, or disposal (TSD)
44 units contributing to the Hanford Facility volatile organic emissions under 40 CFR 264 and 265, Subpart
45 AA. For process vents emitting organic toxic air pollutants (TAPs) currently regulated under NOCs and
46 RCRA Subpart AA, Ecology is deferring regulation of the organic emissions from process vents to

1 RCRA, Subpart AA.

2 Hanford has a long operating history since 1943. Many processes and procedures are imbedded in the
3 process knowledge. Process knowledge is knowledge of a particular process obtained from some
4 documented source or sources. The documented source or sources can include a policy, operating
5 procedure, manufacturer's recommendations or manuals, or other peer-reviewed documentation. Process
6 knowledge also can include familiarity with analytical data.

7 **2.0 COMPLIANCE AND PERIODIC MONITORING PROVISIONS**

8 The permittee is authorized to operate the non-radioactive portion of the air emission units identified in
9 Attachment 1 and all insignificant emission units not specifically identified in this permit.

10 Compliance and periodic monitoring provisions, including opacity monitoring requirements, are
11 described in details in this section. Specific monitoring provisions include visible emission surveys
12 (subsection 2.1), general standards complaint investigations (subsection 2.2), measures to control fugitive
13 emissions and fugitive dust (subsection 2.3), recordkeeping for boilers (subsection 2.5), steam generating
14 units source tests (subsection 2.6), SO₂ Emissions Compliance (subsection 2.7), visible emissions
15 enforceability (subsection 2.8), and SO₂ enforceability (subsection 2.9).

16 **2.1 Visible Emissions Surveys**

17 Three methods (Tier 1 through 3) are used for visible emission surveys at Hanford. Tier 1 applies
18 primarily to fossil fuel combustion units and other emission units that might be a source of visible
19 emissions. The method consists of requiring personnel observation and EPA Method 9, if visible
20 emissions are observed.

21 Tier 2 applies to “normally clean” emission units which are unlikely sources of visible emissions. This
22 category of emission sources on the Hanford Site have little or no ability to emit visible emissions. For
23 example, boilers firing natural gas and sources where particulate matter or other condensables are not
24 expected to be present. Such sources are candidates for less frequent visible emission surveys. Tier 2
25 provide progressive survey requirements, including EPA Method 9, if visible emission is observed or the
26 event is likely to re-occur.

27 Tier 3 applies to emission units with abatement control technology, such as High Efficiency Particulate
28 Air (HEPA) filters. Ecology acknowledges that the opacity monitoring requirements from mixed
29 (radioactive and non-radioactive) airborne effluent streams are not necessary due to the presence of
30 HEPA filtration abatement technology required by Health under WAC 246-247. HEPA filters control
31 particulate emissions to less than visible levels. Because of the particulate control effectiveness provided
32 by HEPA filters, no additional opacity monitoring, beyond visible emissions surveys, is required for those
33 emission units required to have HEPA filters that are listed in Attachment 2. Health imposes significant
34 monitoring requirements on HEPA filters in Enclosure 1 of Attachment 2.

35 **2.2 General Standards Complaint Investigations**

36 This subsection of Attachment 1 specifies the requirements for DOE and contractors to respond to a
37 complaint investigation. Ecology shall first assess the validity of a complaint. Once the validity is
38 established, Ecology will contact DOE for formal investigation.

39 **2.3 Measures to Control Fugitive Emissions and Fugitive Dust**

40 This subsection of Attachment 1 lists specific measures to control fugitive emissions and fugitive dust
41 through pre-job planning and job safety analysis.

42 **2.4 Reserved**

43 Reserved

1 **2.5 Recordkeeping for Boilers**

2 This subsection of Attachment 1 specifies recordkeeping for boilers.

3 **2.6 Steam Generating Units Source Tests**

4 This subsection specifies all source tests for the boilers regulated by NOC 97NM-138. The removal of
5 future 5-year follow-up AOP compliance testing and its justification is also included.

6 **2.7 SO₂ Emissions Compliance**

7 There are two tiers of SO₂ emission compliance for Hanford emission units, fuel-oil fired combustion
8 units (Tier 1) and other significant emission units (Tier 2). The calculation model for Tier 1 is described
9 in Section 3.1 (i.e., Model 1).

10 **2.8 Visible Emissions Enforceability**

11 This subsection is self-explanatory.

12 **2.9 Sulfur Dioxide Enforceability**

13 No person shall cause or permit the emission of a gas containing sulfur dioxide from any emissions unit
14 in excess of 1,000 parts per million (ppm) of sulfur dioxide on a dry basis and based on the average of any
15 period of sixty consecutive minutes, except for the limited conditions specified in WAC 173-400-40(6).

16 **3.0 RECORDKEEPING**

17 WAC 173-401-615(2) requires that the Permittee maintain records of all required monitoring data and
18 support information for five (5) years from the date of the monitoring sample, measurement, report, or
19 application. Section 3.1 documents approved emission calculation methods, which are self-explanatory.
20 In addition to these emission calculation methods, calculations methods listed in NOC approval
21 applications are acceptable to the agency for compliance demonstration. These NOC approval
22 applications should be kept as records.

23 **3.1 Emission Calculations**

24 The following section contains emission calculations for SO₂, nitrogen oxides, volatile organic
25 compounds, ammonia, gas cylinders, chemical inventory, air concentrations, and TAPs. In addition to
26 these models the NOC approval applications contains the calculation methods used to estimate SO₂,
27 nitrogen oxides, volatile organic compounds, ammonia, gas cylinders, chemical inventory, air
28 concentrations, and TAPs, as required for the discharge point or project/process being permitted.

29 **3.1.1 MODEL 1 Description: Compliance with 1000 ppm SO₂ @7% O₂ Internal
30 Combustion Engines >500 hp SO₂ Emission Calculations**

31 Stoichiometric calculations were done to show emissions for a specific diesel engine (2200 HP, with fuel
32 consumption rate of 99.4 gal/hr) were well below the 1000 ppm SO₂ standard.

33 Theoretical air required (ft³/lb) = 1710 * (C/12+ H/2 + S/32)

34 Multiply this by fuel consumption rate * fuel density to get ft³/min

35 Assumptions: diesel fuel is predominantly C₁₆H₂₄

36 Fuel density = 7.107 lb/gal

37 Heat content diesel = 140000 BTU/gal

38 Sulfur (S) concentration of 0.5% by weight (wt%)

39 AP-42 emission factors for large Internal Combustion (IC) engines

- 1 CO = 0.85 lb/mmBTU
- 2 CO₂ = 165 lb/mmBTU
- 3 TOC (as CH₄) = 0.09 lb/mmBTU
- 4 NO_x (as NO₂) = 3.2 lb/mmBTU

5 Assuming complete combustion of the fuel, emissions were shown in the calculations below to be less
 6 than 250 ppm SO₂ at 7% O₂. Calculations were also done varying the fuel consumption rate. Since the
 7 theoretical air required was proportional to the fuel consumption rate, theoretical SO₂ emissions were
 8 independent of engine size or fuel consumption rate. Actual SO₂ emissions would be diluted by excess
 9 air.

10 Therefore, as a class, these engines cannot exceed the general standard when using fuel with S
 11 concentration < 0.5%.

13 Stoichiometric Calculations to Estimate SO₂ Emissions Normalized to 7% O₂ From Combustion of
 14 Diesel #2 Fuel Oil using AP-42 Factors For Large Internal Combustion Engines (> 500 HP)

15 Assumptions: Diesel #2 Fuel Oil (C₁₆H₂₄), 0.5wt% Sulfur; Heat Content = 140,000 BTU/gal;

16 Case 1: 2200 HP IC Engine; Fuel consumption rate = 99.4 gal/hr.

17 $MW_C := 12.01115 \cdot \frac{\text{gm}}{\text{mole}}$ $MW_O := 15.9994 \cdot \frac{\text{gm}}{\text{mole}}$ $MW_H := 1.0079 \cdot \frac{\text{gm}}{\text{mole}}$

18 $MW_S := 32.064 \cdot \frac{\text{gm}}{\text{mole}}$ $MW_N := 14.0067 \cdot \frac{\text{gm}}{\text{mole}}$ $P := 1 \cdot \text{atm}$ $MM := 1 \cdot 10^6$

19 $MW_{\text{fuel}} := 16 \cdot MW_C + 24 \cdot MW_H$ $MW_{\text{fuel}} = 216.368 \cdot \frac{\text{gm}}{\text{mole}}$

20 $MW_{\text{SO}_2} := MW_S + 2 \cdot MW_O$ $MW_{\text{SO}_2} = 64.063 \cdot \frac{\text{gm}}{\text{mole}}$

21 $MW_{\text{Air}} := 2 \cdot (.21 \cdot MW_O + .79 \cdot MW_N)$ $MW_{\text{Air}} = 28.85 \cdot \frac{\text{gm}}{\text{mole}}$

22 $MW_{\text{CO}} := MW_C + MW_O$ $MW_{\text{CO}} = 28.011 \cdot \frac{\text{gm}}{\text{mole}}$

23 $MW_{\text{CO}_2} := MW_C + 2 \cdot MW_O$ $MW_{\text{CO}_2} = 44.01 \cdot \frac{\text{gm}}{\text{mole}}$

24 $MW_{\text{CH}_4} := MW_C + 4 \cdot MW_H$ $MW_{\text{CH}_4} = 16.043 \cdot \frac{\text{gm}}{\text{mole}}$

25 $MW_{\text{NO}_2} := MW_N + 2 \cdot MW_O$ $MW_{\text{NO}_2} = 44.013 \cdot \frac{\text{gm}}{\text{mole}}$

26 $S_f := 0.005$ $C_f := 16 \cdot \frac{MW_C}{MW_{\text{fuel}}}$ $H_f := 24 \cdot \frac{MW_H}{MW_{\text{fuel}}}$

$$1 \quad V_{th_air} := \left[1710 \cdot \left(\frac{C_f}{12} + \frac{H_f}{2} + \frac{S_f}{32} \right) \right] \frac{ft^3}{lb} \quad V_{th_air} = 222.424 \cdot \frac{ft^3}{lb}$$

$$2 \quad V_{fuel} := 99.4 \cdot \frac{gal}{hr} \quad T_{SC} := 527.67 \cdot R \quad T_{SC} = 293.15 \cdot K$$

$$3 \quad SO2_{conc} := \frac{71 \cdot lb}{1000 \cdot gal} \quad R_{gas} := \frac{P \cdot 22.4 \cdot liter}{mole \cdot T_{SC}} \quad R_{gas} = 0.076 \cdot \frac{liter \cdot atm}{mole \cdot K}$$

$$4 \quad S_{fuel} := SO2_{conc} \cdot \frac{MW_S}{MW_{SO2}} \quad S_{fuel} = 0.036 \cdot \frac{lb}{gal}$$

$$5 \quad \rho_{fuel} := \frac{S_{fuel}}{.005} \quad \rho_{fuel} = 7.107 \cdot \frac{lb}{gal}$$

$$6 \quad Fuel := \frac{V_{fuel} \cdot \rho_{fuel}}{MW_{fuel}} \quad Fuel = 1.481 \cdot 10^3 \cdot \frac{mole}{hr}$$

$$7 \quad S := \frac{V_{fuel} \cdot S_{fuel}}{MW_S} \quad S = 49.969 \cdot \frac{mole}{hr} \quad SO2 := S \quad SO2 = 49.969 \cdot \frac{mole}{hr}$$

$$8 \quad V_{air} := V_{th_air} \cdot \rho_{fuel} \cdot V_{fuel} \quad V_{air} = 2.619 \cdot 10^3 \cdot \frac{ft^3}{min}$$

9 Heat of combustion of fuel reported at 140,000 BTU/gal; however, based on AP-42 factors, results in
 10 using more fuel than supplied based on the stoichiometry for the combustion of fuel. By trial and error,
 11 adjusted the heat of combustion of the fuel so that the remaining amount of uncombusted carbon was
 12 essentially "zero."

$$13 \quad H_{c_fuel} := 138903.34 \cdot \frac{BTU}{gal} \quad H_{c_total} := H_{c_fuel} \cdot V_{fuel} \quad H_{c_total} = 1.381 \cdot 10^7 \cdot \frac{BTU}{hr}$$

$$14 \quad CO_{produced} := H_{c_total} \cdot 81 \cdot \frac{lb}{MM \cdot BTU} \quad CO_{produced} = 11.184 \cdot \frac{lb}{hr}$$

$$15 \quad CO := \frac{CO_{produced}}{MW_{CO}} \quad CO = 181.104 \cdot \frac{mole}{hr}$$

$$16 \quad CO2_{produced} := H_{c_total} \cdot 165 \cdot \frac{lb}{MM \cdot BTU} \quad CO2_{produced} = 2.278 \cdot 10^3 \cdot \frac{lb}{hr}$$

$$17 \quad CO2 := \frac{CO2_{produced}}{MW_{CO2}} \quad CO2 = 2.348 \cdot 10^4 \cdot \frac{mole}{hr}$$

$$18 \quad CH4_{produced} := H_{c_total} \cdot 109 \cdot \frac{lb}{MM \cdot BTU} \quad CH4_{produced} = 1.243 \cdot \frac{lb}{hr}$$

$$19 \quad CH4 := \frac{CH4_{produced}}{MW_{CH4}} \quad CH4 = 35.134 \cdot \frac{mole}{hr}$$

1 $\text{NO}_2 \text{ produced} := H_{c_total} \cdot 3.1 \cdot \frac{\text{lb}}{\text{MM} \cdot \text{BTU}}$

$\text{NO}_2 \text{ produced} = 42.802 \cdot \frac{\text{lb}}{\text{hr}}$

2 $\text{NO}_2 := \frac{\text{NO}_2 \text{ produced}}{\text{MW}_{\text{NO}_2}}$

$\text{NO}_2 = 441.111 \cdot \frac{\text{mole}}{\text{hr}}$

3 $\text{H}_2\text{O} := \frac{24 \cdot \text{Fuel} - 4 \cdot \text{CH}_4}{2}$

$\text{H}_2\text{O} = 1.77 \cdot 10^4 \cdot \frac{\text{mole}}{\text{hr}}$

4 $\text{Air}_{\text{actual}} := \frac{P \cdot V_{\text{air}}}{R_{\text{gas}} \cdot T_{\text{SC}}}$

$\text{Air}_{\text{actual}} = 1.986 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

5 $\text{O}_{\text{actual}} := 2.21 \cdot \text{Air}_{\text{actual}}$

$\text{O}_{\text{actual}} = 8.343 \cdot 10^4 \cdot \frac{\text{mole}}{\text{hr}}$

6 $\text{N}_{\text{actual}} := 2.79 \cdot \text{Air}_{\text{actual}}$

$\text{N}_{\text{actual}} = 3.138 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

7 $\text{O}_{\text{remaining}} := \text{O}_{\text{actual}} - 2 \cdot \text{SO}_2 - \text{NO}_2 - 2 \cdot \text{CO}_2 - \text{CO} - \text{H}_2\text{O}$

$\text{O}_{\text{remaining}} = 1.804 \cdot 10^4 \cdot \frac{\text{mole}}{\text{hr}}$

8 $\text{O}_{2_remaining} := \frac{\text{O}_{\text{remaining}}}{2}$

$\text{O}_{2_remaining} = 9.022 \cdot 10^3 \cdot \frac{\text{mole}}{\text{hr}}$

9 $\text{N}_{\text{remaining}} := \text{N}_{\text{actual}} - \text{NO}_2$

$\text{N}_{\text{remaining}} = 3.134 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

10 $\text{N}_{2_remaining} := \frac{\text{N}_{\text{remaining}}}{2}$

$\text{N}_{2_remaining} = 1.567 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

11 Verification that remaining carbon is essentially "zero".

12 $\text{C}_{\text{remaining}} := 16 \cdot \text{Fuel} - \text{CO} - \text{CO}_2 - \text{CH}_4$ $\text{C}_{\text{remaining}} = 3.781 \cdot 10^{-4} \cdot \frac{\text{mole}}{\text{hr}}$

13 Recalling that Mole % = Volume % (for gasses only) one can easily calculate the volume % of the
 14 constituents in the exiting gas stream.

15 $\text{Moles}_{\text{total}} := \text{O}_{2_remaining} + \text{N}_{2_remaining} + \text{CO} + \text{CO}_2 + \text{SO}_2 + \text{NO}_2 + \text{CH}_4 + \text{H}_2\text{O}$

16 $\text{Moles}_{\text{total}} = 2.076 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

17 Gas calculations are to be done on a dry basis; therefore, water contributions are subtracted.

18 $\text{Moles}_{\text{total_dry}} := \text{Moles}_{\text{total}} - \text{H}_2\text{O}$ $\text{Moles}_{\text{total_dry}} = 1.899 \cdot 10^5 \cdot \frac{\text{mole}}{\text{hr}}$

19 $\text{O}_2\% := \frac{(\text{O}_{2_remaining} \cdot 100)}{\text{Moles}_{\text{total_dry}}}$ $\text{O}_2\% = 4.751$

20 $\text{N}_2\% := \frac{(\text{N}_{2_remaining} \cdot 100)}{\text{Moles}_{\text{total_dry}}}$ $\text{N}_2\% = 82.513$

1 $CH_4\% := \frac{CH_4 \cdot 100}{\text{Moles}_{\text{total_dry}}}$ $CH_4\% = 0.019$

2 $SO_2\% := \frac{SO_2 \cdot 100}{\text{Moles}_{\text{total_dry}}}$ $SO_2\% = 0.026$

3 $NO_2\% := \frac{NO_2 \cdot 100}{\text{Moles}_{\text{total_dry}}}$ $NO_2\% = 0.232$

4 $CO\% := \frac{CO \cdot 100}{\text{Moles}_{\text{total_dry}}}$ $CO\% = 0.095$

5 $CO_2\% := \frac{CO_2 \cdot 100}{\text{Moles}_{\text{total_dry}}}$ $CO_2\% = 12.364$

6 Check to see if sum equals 100%

7 $SUM_{\text{dry}} := O_2\% + N_2\% + CH_4\% + SO_2\% + NO_2\% + CO\% + CO_2\%$ $SUM_{\text{dry}} = 100$

8 $ppm := \frac{1}{1000000}$ $SO_2\ 7\%O_2 := SO_2\% \cdot \left(\frac{14}{21 - O_2\%} \right)$ $SO_2\ 7\%O_2 = 0.023$

9 Since SO_2 concentration is already in % divide by 100 to express in ppm

10 $SO_2\ 7\%O_2 := \frac{SO_2\ 7\%O_2}{100}$ $SO_2\ 7\%O_2 = 226.694 \cdot ppm$

11

1 **3.1.2 MODEL 2 Nitrogen Oxides Emission Calculations**

2 MODEL 2B Description: Compliance with 75.5 lbs/hr NO_x (Engine E) or 42 lbs/hr NO_x (Engine W)

3 ER = F * AP₄₂ * CF

4 Where: ER = Emission rate for NO_x in lbs/hr

5 F = Diesel burn rate (gal/hr)

6 AP₄₂ = AP-42 factor (3.1 lbs/mmBTU)

7 CF = 0.139 mmBTU/gal

8 Assumptions: heat of combustion for diesel #2 oil = 140,000 BTU/gal

9 F = 104.7 gal/hr (Engine E, 2200 hp), manufacturer's specification

10 F = 90.8 gal/hr (Engine W, 1850 hp), manufacturer's specification

11 ER (Engine E) = 45.1 lbs/hr

12 ER (Engine W) = 39.1 lbs/hr

13 Fuel used divided by hours logged will demonstrate the average fuel
14 consumption rate is below manufacturer's specification

15 Engine E will be in continuous compliance with the NO_x emission limit of 75.5
16 lbs/hr

17 Engine W will be in continuous compliance with the NO_x emission limit of 42
18 lbs/hr.

19

1 **3.1.3 MODEL 4 Volatile Organic Compounds Emission Calculations**

2 MODEL 4A Description: Compliance with 50 ppm and 500 ppm VOC

3 Assumptions: A Total Organic Carbon Analyzer or similar instrument will be used to determine
4 VOC concentrations in the stack effluent using EPA method 25A or an approved alternative. The
5 VOC concentration will be determined in accordance with the frequency identified in the tables.

6 MODEL 4B Description: Compliance with 0.8 lbs VOC emitted in any hour

7 VOC emission rate in lbs/hr = $10 \times [\sum_{i=1 \text{ to } 3} (U_i * RF_i)]$

8 Where i=1 for organic gases

9 i=2 for volatile organic vapors/liquids

10 i=3 for organic liquids

11 U_i = Maximum Annual Average Hourly Usage Rate (lb/hr) =
12 (Maximum annual usage, lbs/yr)/(8760 hrs/yr)

13 RF_i = Release fractions

14 $RF_1 = 1$ for organic gases

15 $RF_2 = 0.1$ for volatile organic vapors/liquids

16 $RF_3 = 10^{-3}$ for organic liquids

17 Assumptions:

18 Maximum emission rate in any hour is 10 times the maximum annual average hourly emissions, as stated
19 in NOC approval condition 2.

20 If usage is not available, U may be estimated by assuming the inventory is used in a year.

21

1 **3.1.4 MODEL 5 Ammonia Emission Calculations**

2 Description: Compliance with 0.05 lbs/hr NH₃

3 ER = C * S_f * CF

4 Where: ER = Emission rate for NH₃ in lbs/hr

5 C = Concentration of NH₃ in ppm

6 S_f = Stack flow (Vent & Balance measurements) in cfm

7 CF = 2.20 E-6 * 1.70 * 0.71 = 2.66 E-6 lb / (ppm*cfm*hr)

8 Assumptions:

9 (1) Stack exhausts at ambient temperature

10 (2) Vent & Balance measurements for average stack flow

11 (3) Draeger tube measurement for NH₃ (minimum of one per year) during operations will
12 demonstrate NH₃ levels are below the threshold which would be equal to 0.05 lbs/hr

13 (4) If measurements during peak activities are below threshold, continuous compliance is assumed.
14 For example, at 800 cfm, the concentration of NH₃ must be below 23.5 ppm.

15 **3.1.5 Reserved**

16 Reserved

17 **3.1.6 MODEL 7A – Emissions from Use of Chemical Inventory**

18 Emissions:

19 Emissions from the use of the chemical inventory in the building will be determined as follows:

20 Use rate x release fraction x (1 - control efficiency).

21 In addition to chemical use rate, chemical inventory data may be used to estimate emissions. If
22 the inventory information is used, the annual ASILs will be determined assuming the entire
23 inventory is released in a year, and the 24-hour ASILs will be determined assuming the entire
24 inventory is released during 20 days. The above methods and assumptions may be modified with
25 Ecology's concurrence.

26 **3.1.7 MODEL 7B – Air Concentrations for Comparison to ASILs**

27 Total Building Emissions:

28 Calculate a building's total emissions by summing those due to the use of chemical inventory
29 from Model 7A and those from additional processes in the building whose emissions are not
30 included in Model 7A.

31 Total Building Ambient Air Concentrations

32 Calculate the air concentrations at the nearest points of unrestricted or uncontrolled public access
33 to the building using the EPA AERSCREEN or AERMOD dispersion models and compare them
34 to the ASILs.

35

1 **3.1.8 MODEL 7C – Emission Calculations for LERF/ETF**

2 Air Emission Concentrations for Comparison to ASILs and SQER

3 1. Emission concentrations (to compare to ASIL):

4
$$AC_i = TR_i * FC_i$$

5 AC_i : air concentration of species i, ug/m³

6 TR_i : transfer rate of species i, unitless

7 FC_i : feed concentration of species i, μg/m³

8 Transfer rates vary depending on the species. For acids, bases, and salts, a TR of 1E-12 is given in
9 DOE/RL-92-69. For other species it can be calculated using a variation of Raoult's Law:

10
$$TR_i = \left[\frac{1/MW_i}{DENSITY_i/MW_i} \right] * \left(\frac{VP_i}{760} \right) * \left[\frac{273}{(T + 273)} \right] * MW_i$$

11 TR_i : transfer rate of species i, unitless

12 MW_i : molecular weight of species i, kg/kgmol

13 $DENSITY_i$: density of pure liquid species, kg/m³

14 VP_i : vapor pressure of pure liquid species i at temperature T, mmHg

15 T : temperature, °C

16 Other values are conversion factors

17 Typical transfer rates: acetone = 1E-03

18 carbon tetrachloride = 1E-03

19 butanol = 1E-04

20 TBP = 1E-05

21 2. Hourly emission rate (to compare to SQER):

22
$$ERH_i = AC_i * FLOW * 0.02832 * 2.205 * 60 / 1,000,000$$

23 ERH_i : hourly emission rate of species i, lb/hr

24 AC_i : air concentration of species i, μg/m³

25 FLOW : ETF vessel off-gas flowrate = 27,250 ft³/min

26 Other values are conversion factors

27 3. Annual emission rate (to compare to SQER):

28
$$ERY_i = ERH_i * 24 * 365$$

29 ERY_i : annual emission rate of species i, lb/yr

30 Other values are conversion factors.

31

1 **3.1.9 MODEL 10C Description: VOC Emissions on a Daily Average**

2 Compliance with NSR VOC emission limit on a daily average:

3 $[2 \text{ ton} \times (2000 \text{ lb/ton})] / 365 = 24[(\text{VOC mg/m}^3) \times (339.8 \text{ m}^3/\text{hr}) \times (\text{lb} / 453,593 \text{ mg}) = \text{VOC}$
4 (lb/day)

5 Where:

6 2 tons/year = WAC 174-400-110 NSR threshold for VOCs

7 1 year = 365 days

8 1 day = 24 hours

9 339.8 m³/hr = volumetric flow rate

10 1 lb = 453,593 mg

11 VOC mg/m³ = vapor space sampling data from the TWINs database

12

DRAFT

1 **APPENDIX A**

2 **Excerpts from DOE/RL-95-07 Initial AOP Application (as supplemented) Insignificant**
 3 **Emission Units Summary Discussion**

4 Insignificant Emission Unit (IEU) General Requirements

5 Insignificant Emission Units (IEUs) are small, minor sources of emissions at industrial facilities that are
 6 not subject to the operating permit regulation (specific IEU criteria are defined in WAC 173-401-530).
 7 They can include types of emission sources such as bathroom vents, lubricating-oil storage tanks, plastic
 8 pipe welding, and wet sand-and-gravel screening. IEUs can also be emission sources which have potential
 9 emissions below established thresholds. The following limits or standards apply to insignificant emission
 10 units and activities on the Hanford Site. Compliance with the standards is required; however, no
 11 monitoring is required for IEUs. The applicable requirements are:

IEU Requirement	Standard	Limit	Monitoring/Compliance Method
WAC 173-400-040(2)	Opacity	20 %	None
WAC 173-400-040(3)	Fallout	^a	None
WAC 173-400-040(4)	Fugitive Emissions	^a	None
WAC 173-400-040(5)	Odor	^a	None
WAC 173-400-040(6)	Emissions Detrimental to Persons or Property	^a	None
WAC 173-400-040(7)	SO ₂	1000 ppm ^b	None
WAC 173-400-040(8)	Concealment and Masking	^a	None
WAC 173-400-040(9)	Fugitive Dust	^a	None

12 ^a Reasonable precautions and/or best management practices, as specified in the Hanford Site AOP

13 ^b For applicable sources; units in parts per million on a dry basis, corrected to seven percent oxygen

14 Potential Hanford Site IEUs were evaluated and identified using a process developed in coordination with
 15 Ecology for the Hanford Site AOP renewal application submitted in 2005, which was an extension of the
 16 approach used in the original AOP application (DOE/RL-95-07).

17 The following types of air emission sources were specifically excluded from this IEU evaluation and
 18 identification process:

- 19 • Emission sources listed in the current AOP or with an active NOC approval order.
- 20 • Emission sources subject to federally enforceable applicable requirements.
- 21 • Emission sources regulated under the Comprehensive Environmental Response, Compensation,
 22 and Liability Act of 1980 (CERCLA), including sources and activities supporting CERCLA
 23 activities.
- 24 • Emission sources regulated under the Resource Conservation and Recovery Act of 1976 Subparts
 25 AA, Subparts BB, or Subparts CC.
- 26 • Emission sources undergoing Surveillance and Maintenance activities.

27 The results of this process identified Hanford Site IEUs that potentially fall into five categories.

1 The specific types and categories of IEUs are shown in Sections 2.4.1 through 2.4.5 of the AOP Renewal
2 Application (DOE/RL-2017-31). They include:

- 3 • Fugitive emission sources subject to no applicable requirement other than generally applicable
4 requirements of the state implementation plan, such as the general standards identified in Table 2-
5 4. Per WAC 173-401-530(1)(d), these IEUs must be listed in the renewal application (see Section
6 2.4.1).
- 7 • Emission units or activities categorically exempt per WAC 173-401-532. Per WAC 173-401-
8 530(1)(b), these IEUs do not have to be listed in the renewal application. However, they have
9 been included for convenient reference and completeness (see Section 2.4.2).
- 10 • Emission units or activities defined as insignificant based on size and production rates in WAC
11 173-401-533. Per WAC 173-401-530(1)(c), these IEUs must be listed in the renewal application
12 (see Section 2.4.3).
- 13 • Emission units or activities meeting the description of selected miscellaneous category types
14 previously accepted by Ecology (see Section 2.4.4).
- 15 • Emission units or activities with emissions below the thresholds listed in WAC 173-401-530(4)
16 and WAC 173-401-531. Per WAC 173-401-530(1)(a), these IEUs must be listed in the renewal
17 application (see Section 2.4.5).

18 Fugitive Source Insignificant Emission Unit Processes/Activities

19 There are numerous activities on the Hanford Site that may generate fugitive air emissions. These
20 activities are often associated with construction or facility routine maintenance activities. Specific
21 locations for sources in this category are not listed since these activities involve all areas and a majority of
22 the facilities on the Hanford Site. The activities listed below may require operation of one or more point
23 sources of regulated criteria/hazardous air pollutants in conjunction with the categories listed below.
24 Projects utilizing the functions or categories listed below will be evaluated on a case-by-case basis to
25 determine applicable general requirements, new source review, and the definition of a new source.

26 Functions or categories associated with fugitive emissions may include but are not limited to the
27 following:

28 Site Preparation

- 29 • Vegetation clearing
- 30 • Land leveling, including preparing areas for foundations
- 31 • Excavation (e.g., power line trenching and plumbing trench activities)
- 32 • Dredging
- 33 • Dust suppression activities

34 Roofing

- 35 • Carpentry
- 36 • Concreting
- 37 • Coating
- 38 • Demolition and/or replacement
- 39 • Equipment and area cleaning
- 40 • Miscellaneous repair and/or activities

1 Concreting and Paving

- 2 • Construction of foundations, walls, floors, pads, and other structural elements
- 3 • Construction of parking areas, roads, and other vehicular areas

4 Structural Construction

- 5 • Building framing -- metal and/or wood
- 6 • Welding and cutting torch activities
- 7 • Interior construction and installations (e.g., walls, floors, ceilings, counters, and cabinets)
- 8 • Installation or removal of floor coverings

9 Electrical Work

- 10 • Interior lighting and power
- 11 • Exterior lighting and power, including excavation for wire trench
- 12 • Installation of temporary interior and exterior lighting
- 13 • Miscellaneous lighting and power activities

14 Plumbing

- 15 • Pipe threading
- 16 • Welding, brazing, soldering, or cutting torch activities supporting maintenance
- 17 • Acid etching
- 18 • Application of protective coatings
- 19 • Equipment and area cleaning

20 Metal Working Activities

- 21 • Cutting, grinding, finishing, welding, drilling, machining, and other maintenance activities
- 22 • Sheet metal application and/or repair

23 Agricultural and Landscaping Activities

- 24 • Site preparation
- 25 • Revegetation activities
- 26 • Application of agricultural and landscaping chemicals
- 27 • Application of surface coatings (e.g., rock, gravel, plastics, bark)

28 Miscellaneous Construction Activities

- 29 • Installation of miscellaneous systems or equipment
- 30 • Installation and use of portable sanitation facilities
- 31 • Equipment and area cleaning
- 32 • Fuel trucks and fuel filling operations

33 Abatement Activities

- 34 • Lead abatement positioning/repositioning
- 35 • PCB equipment management, abatement, and relocation
- 36 • Radiological contamination abatement

- 1 • Chemical contamination abatement
- 2 • Asbestos abatement methods
- 3 • Herbicide/pesticide abatement application

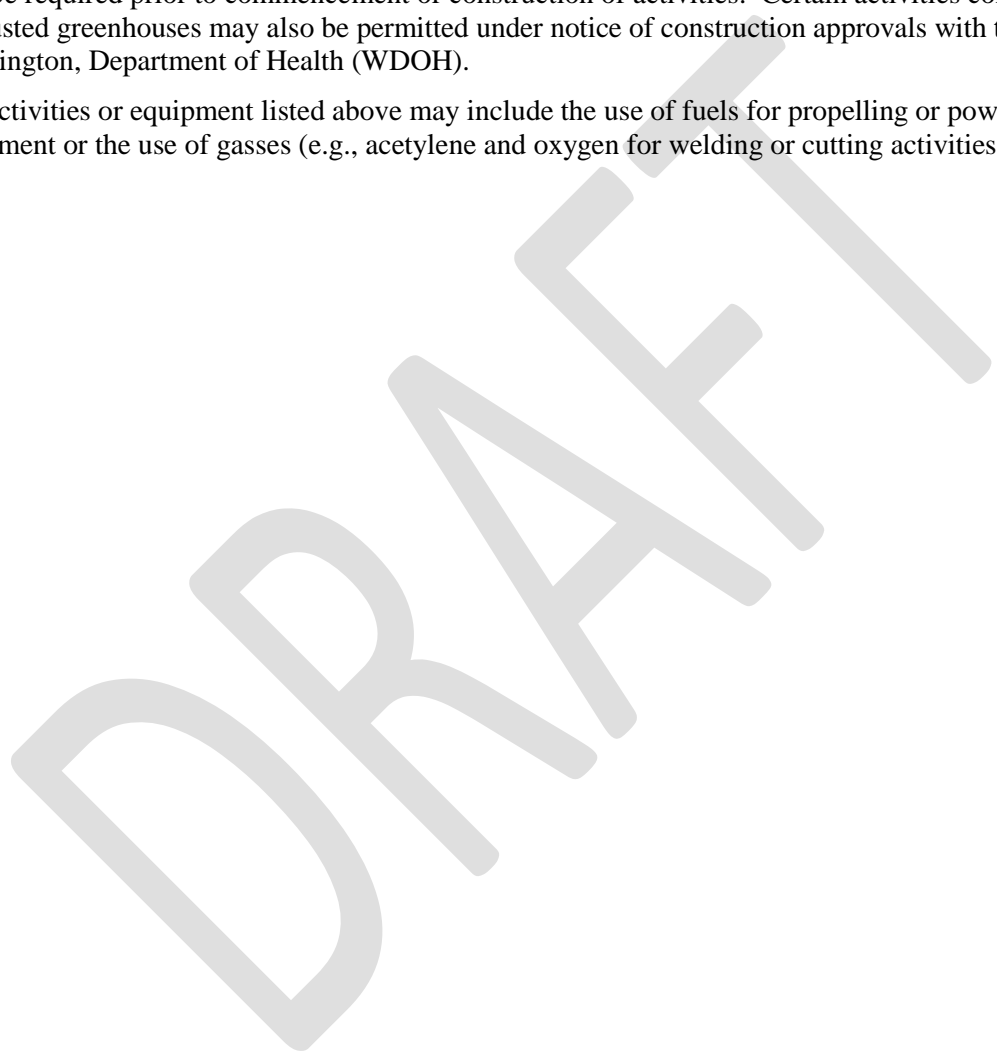
4 Demolition Activities

- 5 • Standard demolition practices and/or equipment

6 The activities listed above may be conducted in radiological and/or chemically contaminated areas.
7 Activities conducted in contaminated areas are assessed to determine regulatory agency approvals that
8 may be required prior to commencement or construction of activities. Certain activities conducted in
9 exhausted greenhouses may also be permitted under notice of construction approvals with the State of
10 Washington, Department of Health (WDOH).

11 The activities or equipment listed above may include the use of fuels for propelling or powering
12 equipment or the use of gasses (e.g., acetylene and oxygen for welding or cutting activities).

13



1 **APPENDIX B**

2 Table B-1 identifies each category of exempt IEUs listed in WAC 173-401-532 and whether or not that
 3 type of emission unit or activity is present on the Hanford Site.

4 **Table B-1. Washington Administrative Code 173-401-532 Categorically Exempt**
 5 **Insignificant Emission Units.**

IEU Description	IEU Present?	
	Yes	No
(2) Mobile transport tanks on vehicles, except for those containing asphalt.	x	
(3) Lubricating oil storage tanks.	x	
(4) Storage tanks, reservoirs, and pumping and handling equipment of any size, limited to soaps, lubricants, hydraulic fluid, vegetable oil, grease, animal fat, aqueous salt solutions, or other materials and processes using appropriate lids and covers where there is no generation of objectionable odor or airborne particulate matter.	x	
(5) Pressurized storage of oxygen, nitrogen, carbon dioxide, air, or inert gases.	x	
(6) Storage of solid material, dust-free handling.	x	
(7) Vehicle exhaust from auto maintenance and repair shops.	x	
(8) Vents from continuous emissions monitors and other analyzers.	x	
(9) Vents from rooms, buildings and enclosures that contain permitted emissions units or activities from which local ventilation, controls and separate exhaust are provided.	x	
(10) Internal combustion engines for propelling or powering a vehicle.	x	
(11) Recreational fireplaces including the use of barbecues, campfires, and ceremonial fires.	x	
(12) Brazing, soldering, and welding equipment and oxygen-hydrogen cutting torches for use in cutting metal where in components of the metal do not generate HAPs or HAPs precursors.	x	
(13) Atmospheric generators used in connection with metal heat treating processes.		x
(14) Metal finishing or cleaning using tumblers.		x
(15) Metal casting molds and molten metal crucibles that do not contain potential HAPs.		x
(16) Die casting.		x
(17) Metal or glass heat-treating, in absence of molten materials, oils, or VOCs.	x	
(18) Drop hammers or hydraulic presses for forging or metalworking.	x	
(19) Electrolytic deposition, used to deposit brass, bronze, copper, iron, tin, zinc, precious and other metals not listed as the parents of HAPs.		x
(20) Metal fume vapors from electrically heated foundry/forge operations wherein the components of the metal do not generate HAPs or HAP precursors. Electric arc furnaces are excluded from consideration for listing as insignificant.		x
(21) Metal melting and molten metal holding equipment and operations wherein the components of the metal do not generate HAPs or HAP precursors. Electric arc furnaces are not considered for listing as insignificant.		x
(22) Inspection equipment for metal products.	x	

Effective Date: XX/XX/XXXX
 Expiration Date: XX/XX/XXXX

Hanford Air Operating Permit
 Permit No. 00-05-06
 Renewal 3

IEU Description	IEU Present?	
	Yes	No
(23) Plastic and resin curing equipment, excluding FRP.		x
(24) Extrusion equipment, metals, minerals, plastics, grain or wood.		x
(25) Presses and vacuum forming, for curing rubber and plastic products or for laminating plastics.	x	
(26) Roller mills and calendars, rubber, and plastics.		x
(27) Conveying and storage of plastic pellets.		x
(28) Plastic compression, injection, and transfer molding and extrusion, rotocasting, pultrusion, blowmolding, excluding acrylics, PVC, polystyrene and related copolymers and the use of plasticizer. Only oxygen, carbon dioxide, nitrogen, air, or inert gas allowed as blowing agents.		x
(29) Plastic pipe welding.	x	
(30) Nonmetallic mineral mines and screening plants except for crushing and associated activities that are not subject to 40 CFR Part 60, Subpart OOO. Quarrying of silica rock and associated activities are not considered for listing as insignificant.	x	
(31) Wet sand and gravel screening.	x	
(32) Wax application.	x	
(33) Plant upkeep including routine housekeeping, preparation for and painting of structures or equipment, retarring roofs, applying insulation to buildings in accordance with applicable environmental and health and safety requirements and paving or stripping parking lots.	x	
(34) Agricultural activities on a facility's property that are not subject to registration or new source review by the permitting authority.		x
(35) Cleaning and sweeping of streets and paved surfaces.	x	
(36) Ultraviolet curing processes.		x
(37) Hot melt adhesive application with no VOCs in the adhesive formulation.	x	
(38) Laundering, dryers, extractors, tumblers for fabrics, using water solutions of bleach and/or detergents.	x	
(39) Steam cleaning operations.	x	
(40) Steam sterilizers.	x	
(41) Food preparing for human consumption including cafeterias, kitchen facilities, and barbecues located at a source for providing food service on the premises.	x	
(42) Portable drums and totes.	x	
(43) Lawn and landscaping activities.	x	
(44) Flares used to indicate danger to the public.	x	
(45) General vehicle maintenance including vehicle exhaust from repair facilities.	x	
(46) Comfort air conditioning or air cooling systems, not used to remove air contaminants from specific equipment.	x	
(47) Natural draft hoods, natural draft stacks, or natural draft ventilators for sanitary and storm drains, safety valves, and storage tanks subject to size and service limitations expressed elsewhere in this section.	x	

IEU Description	IEU Present?	
	Yes	No
(48) Natural and forced air vents and stacks for bathroom/toilet facilities.	x	
(49) Office activities.	x	
(50) Personal care activities.	x	
(51) Sampling connections used exclusively to withdraw materials for laboratory analyses and testing.	x	
(52) Firefighting and similar safety equipment and equipment used to train firefighters excluding fire drill pits.	x	
(53) Materials and equipment used by, and activity related to operation of infirmary; infirmary is not the source's business activity.	x	
(54) Fuel and exhaust emissions from vehicles in parking lots.	x	
(55) Carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, shot blasting, shot peening, sintering, or polishing: Ceramics, glass, leather, metals, plastics, rubber, concrete, paper stock, or wood provided that: (a) Activity is performed indoors (b) Particulate emission control in the immediate vicinity of the activity (c) Exhaust from the particulate control is within the building housing the activity (d) No fugitive particulate emissions enter the environment.	x	
(56) Oxygen, nitrogen, or rare gas extraction and liquefaction equipment subject to other exemption limitation, e.g., internal and external combustion equipment.		x
(57) Slaughterhouse equipment except rendering cookers.		x
(58) Ozonation equipment.		x
(59) Nonasbestos brake shoe bonding.		x
(60) Batch loading and unloading of solid phase catalysts.		x
(61) Demineralization and oxygen scavenging (deaeration) of water.	x	
(62) Pulse capacitors.		x
(63) Laser trimmers, using dust collection to prevent fugitive emissions.		x
(64) Plasma etcher, using dust collection to prevent fugitive emissions and using only oxygen, nitrogen, carbon dioxide, or inert gas.	x	
(65) Gas cabinets using only gasses that are not regulated air pollutants.	x	
(66) CO2 lasers used only on metals and other materials which do not emit HAPs in the process.		x
(67) Structural changes not having air contaminant emissions.	x	
(68) Confection cooking equipment.		x
(69) Mixing, packaging, storage and handling activities of any size, limited to soaps, lubricants, vegetable oil, grease, animal fat, aqueous salt solutions.	x	
(70) Photographic process equipment by which an image is reproduced upon material sensitized to radiant energy, e.g., blueprint activity, photocopiers, mimeograph, telefax, photographic developing, and microfiche.	x	

Effective Date: XX/XX/XXXX
 Expiration Date: XX/XX/XXXX

Hanford Air Operating Permit
 Permit No. 00-05-06
 Renewal 3

IEU Description	IEU Present?	
	Yes	No
(71) Pharmaceutical and cosmetics packaging equipment.		x
(72) Paper trimmers/binders.	x	
(73) Sample gathering, preparation, and management.	x	
(74) Repair and maintenance activities, not involving installation of an emission unit and not increasing potential emissions of a regulated air pollutant.	x	
(75) Handling equipment and associated activities for glass and aluminum which is destined for recycling, not the re-refining process itself.	x	
(76) Hydraulic and hydrostatic testing equipment.	x	
(77) Batteries and battery charging.	x	
(78) Porcelain and vitreous enameling equipment.		x
(79) Solid waste (as defined in the Washington Administrative Code) containers.	x	
(80) Salt baths using nonvolatile salts and not used in operations which result in air emissions.		x
(81) Shock chambers.		x
(82) Wire strippers.	x	
(83) Humidity chambers.	x	
(84) Solar simulators.		x
(85) Environmental chambers not using hazardous air pollutant (HAPs) gasses.	x	
(86) Totally enclosed conveyors.		x
(87) Steam vents and safety relief valves.	x	
(88) Air compressors, pneumatically operated equipment, systems, and hand tools.	x	
(89) Steam leaks.	x	
(90) Recovery boiler blow-down tank.	x	
(91) Salt cake mix tanks.		x
(92) Continuous digester chip feeders.		x
(93) Weak liquor and filter tanks.		x
(94) Process water and white water storage tanks.	x	
(95) Demineralizer tanks.	x	
(96) Clean condensate tanks.	x	
(97) Alum tanks.		x
(98) Broke beaters, repulpers, pulp and repulping tanks, stock chests and pulp handling.		x
(99) Lime mud filtrate tank.		x
(100) Hydrogen peroxide tanks.		x
(101) Lime mud water.		x
(102) Lime mud filter.		x
(103) Liquor clarifiers and storage tanks and associated pumping, piping, and handling.		x

IEU Description	IEU Present?	
	Yes	No
(104) Lime grits washers, filters, and handling.		x
(105) Lime silos and feed bins.		x
(106) Paper forming.		x
(107) Dryers (Yankee, after dryer, curing systems, and cooling systems).		x
(108) Vacuum systems exhausts.	x	
(109) Starch cooking.		x
(110) Stock cleaning and pressurized pulp washing.		x
(111) Winders.		x
(112) Chipping.		x
(113) Debarking.		x
(114) Sludge dewatering and handling.	x	
(115) Screw press vents.		x
(116) Pond dredging.		x
(117) Polymer tanks and storage devices and associated pumping and handling equipment, used for solids dewatering and flocculation.		x
(118) Non-PCB oil filled circuit breakers, oil filled transformers and other equipment that is analogous to, but not considered to be, a tank.	x	
(119) Electric or steam-heated drying ovens and autoclaves.	x	
(120) Sewer manholes, junction boxes, sumps, and lift stations associated with wastewater treatment systems.	x	
(121) Water cooling towers processing exclusively noncontact cooling water.		x

1 Table B-2 identifies each IEU size and production rate listed in WAC 173-401-533(2) and whether or not
 2 that type of emission unit or activity is present on the Hanford Site.

3
 4 **Table B-2. Insignificant Emission Units Based on Washington Administrative Code 173-**
 5 **401-533(2) Size and Production Rates.**

IEU Description	IEU Present?	
	Yes	No
(a) Operation, loading, and unloading of storage tanks and storage vessels with lids or other appropriate closure and less than two hundred sixty gallon capacity (35 cft), heated only to the minimum extent to avoid solidification if necessary.	x	
(b) Operation, loading and unloading of storage tanks, not greater than one thousand one hundred gallon capacity, with lids or other appropriate closure, not for use with hazardous air pollutants (HAPs), maximum (max.) vp 550mm Hg.	x	
(c) Operation, loading, and unloading of VOC storage tanks (including gasoline storage tanks), ten thousand gallons capacity or less, with lids or other appropriate closure, vp not greater than 80mm Hg at 21°C.	x	
(d) Operation, loading, and unloading storage of butane, propane, or liquefied petroleum gas (LPG), storage tanks, vessel capacity under forty thousand gallons.	x	

Effective Date: XX/XX/XXXX
 Expiration Date: XX/XX/XXXX

Hanford Air Operating Permit
 Permit No. 00-05-06
 Renewal 3

IEU Description	IEU Present?	
	Yes	No
(e) Combustion source less than five million Btu/hr. exclusively using natural gas, butane, propane, and/or LPG.	x	
(f) Combustion source, less than five hundred thousand Btu/hr., using any commercial fuel containing less than 0.4% by weight sulfur for coal or less than 1% by weight sulfur for other fuels.	x	
(g) Combustion source, of less than one million Btu/hr. if using kerosene, No. 1, or No. 2 fuel oil.	x	
(h) Combustion source, not greater than five hundred thousand Btu/hr. if burning used oil and not greater than four hundred thousand Btu/hr. if burning waste, wood, or waste paper.		x
(i) Welding using not more than one ton per day of welding rod.	x	
(j) Foundry sand molds, unheated and using binders with less than 0.25% free phenol by sand weight.		x
(k) "Parylene" coaters using less than five hundred gallons of coating per year.		x
(l) Printing and silk screening, using less than two gallon/day of any combination of the following: Inks, coatings, adhesives, fountain solutions, thinners, retarders, or nonaqueous cleaning solutions.	x	
(m) Water cooling towers and ponds, not using chromium-based corrosion inhibitors, not used with barometric jets or condensers, not greater than ten thousand gpm, not in direct contact with gaseous or liquid process streams containing regulated air pollutants.		x
(n) Combustion turbines, of less than 500 HP		x
(o) Batch solvent distillation, not greater than fifty-five gallons batch capacity.	x	
(p) Municipal and industrial water chlorination facilities of not greater than twenty million gallons per day capacity. The exemption does not apply to waste water treatment.	x	
(q) Surface coating, using less than two gallons per day.	x	
(r) Space heaters and hot water heaters using natural gas, propane, or kerosene and generating less than five million Btu/hr.	x	
(s) Tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases, and acids excluding: (i) 99% or greater H ₂ SO ₄ or H ₃ PO ₄ (ii) 70% or greater HNO ₃ (iii) 30% or greater HCl (iv) More than one liquid phase where the top phase is more than 1% VOCs	x	
(t) Equipment used exclusively to pump, load, unload, or store high boiling organic material, material with initial boiling point (IBP) not less than 150°C or vapor pressure (vp) not more than 5mm Hg at 21°C with lids or other appropriate closure.		x
(u) Smokehouses under twenty square feet.		x
(v) Milling and grinding activities, using paste-form compounds with less than 1% VOCs.	x	
(w) Rolling, forging, drawing, stamping, shearing, or spinning hot or cold metals.	x	
(x) Dip-coating operations, using materials with less than one percent VOCs.		x
(y) Surface coating, aqueous solution, or suspension containing less than 1% VOCs.	x	

IEU Description	IEU Present?	
	Yes	No
(z) Cleaning and stripping activities and equipment, using solutions having less than one percent VOCs by weight. On metallic substrates, acid solutions are not considered for listing as insignificant.	x	
(aa) Storage and handling of water based lubricants for metal working where the organic content of the lubricant is less than ten percent.	x	
(bb) Municipal and industrial waste water chlorination facilities of not greater than one million gallons per day capacity.		x

1 Table B-3 below identifies each category of miscellaneous emission units and activities previously
 2 accepted by Ecology as IEUs and whether or not they are present on the Hanford Site. No additional
 3 Hanford Site IEUs with emissions below the threshold levels of WAC 173-401-530(4) and WAC 173-
 4 401-531 were identified. IEUs which likely have emissions below the referenced thresholds were
 5 determined to fit into at least one of the IEU categories in Sections 2.4.1 through 2.4.4.

Table B-3. Miscellaneous Emission Units and Activities Listing

- Chemical or physical analytical laboratory operations or equipment including fume hoods and vacuum pumps regulated as insignificant per WAC 173-401-533(3)(c) (e.g., 338 Building Prototype Engineering Laboratory).
- Insecticide, pesticide, or fertilizer spray or broadcast equipment.
- Internal combustion engines less than the affected source size threshold for the United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. This includes attached fuel tanks.
- Laboratory testing and quality assurance/control testing equipment used exclusively for chemical or physical analysis, teaching, or experimentation, including non-production bench scale research equipment.
- Storage tanks:
 - (A) that do not store substances capable of emitting air contaminants; or
 - (B) with a rated capacity of 1,000 gallons (3,780 liters) or less used for storage of gasoline or diesel fuel; or
 - (C) with a rated capacity of less than 10,000 gallons (38,000 liters) used for storage of volatile organic compounds; or
 - (D) with a rated capacity of less than 40,000 gallons (150,000 liters) used for storage of volatile organic compounds with a true vapor pressure less than 0.01 kPa (0.002 psia).
- Storage tanks not regulated under 40 CFR Part 60 Subpart K, Ka, or Kb.
- Wipe solvent cleaning.
- Equipment maintenance and repair, including off-road equipment.
- Instrument functional checks/calibration, maintenance, and repair; including the use of alcohol, gases, or other solvents and fluids.
- Groundwater remediation operations.
- Solvent cleaning of non-motor vehicle parts

- Small industrial vacuum systems that vent outside.
- Miscellaneous abrasive blast units not requiring an Order of Approval.
- Liquid storage and transfer operations not requiring an NOC.
- Firearm training, maintenance, and cleaning.
- Hazardous waste worker training and training equipment.
- Any source emitting minimal amounts of criteria/hazardous air pollutants, but determined through evaluation not to trigger new source review applicability or portable/temporary notification pursuant to WAC 173-400-110, WAC 173-460-030, or WAC 173-400-035, respectively.

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1 **APPENDIX C**

2 This appendix documents the substantive changes that occurred in Attachment 1 of the Hanford Air
3 Operating Permit Renewal 2, Revision B. Minor typographical corrections, formatting changes, or
4 grammatical corrections are not captured.

5 The changes to each revision are shown in its own subsection of this appendix.

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DRAFT

1 **Discharge Points Removed**

2 The discharge points seen below were removed from the AOP. The deleted discharge point's assigned
3 number was reserved and will be continued in this fashion in the future. This was one of the major
4 changes to this renewal and is intended to avoid any future confusion of discharge points.

5 **1. 1.4.4 323 Boiler (<5mmBTU/hr – Natural Gas)**

6 The 323 Boiler Annex, which contained the 323 Boiler 1 emission unit, has been demolished.
7 There will be no future emissions from the unit. In letter 15-ESQ-0048 the DOE requested
8 for its ultimate removal from the AOP. All permit terms and conditions of the AOP will no
9 longer be applicable.

10 **2. 1.4.12 E-4250 001, G-3225BC 001**

11 The E-4250 001, G-3225BC 001 has been electrically isolated from automatic startup, the
12 batteries disconnected and removed, and the generator physically isolated from the fuel
13 source with no plans to operate the generator in the future. In letter 15-ESQ-0101 the
14 permittee requested for its removal from the AOP. All permit terms and conditions will no
15 longer be applicable.

16 **3. 1.4.21 P-296A042-001**

17 At the request of the permittee in email via Bryan Trimberger on September 26, Discharge
18 point P-296A042-001 will be removed from the AOP. The conditions in DE11NWP-001 will
19 be included in discharge point 1.4.32.

20 **4. 1.4.46 222 SE**

21 This engine was removed from the AOP as it was replaced with an engine covered by a
22 Notice of Construction under Discharge Point 1.4.80.

23 **5. 1.4.54 282-BA**

24 The 282-BA deep well pump emergency diesel engine was removed from service in 2015.
25 The diesel engine has been placed in a condition where it will not produce any power. The
26 diesel engine connections are open and racked out such that they can no longer pass electrical
27 energy to or from the generator. There are no plans to operate the emergency engine in the
28 future. In letter 16-ESQ-0051, the permittee requests to permanently shut down the engine.
29 The engine will no longer be allowed to operate and is no longer subject to the conditions of
30 the permit.

31 **6. 1.4.55 225BC**

32 The 225BC engine was removed from service in 2016. There are no plans to operate the
33 emergency engine in the future as the air compressor to which it provided power is no longer
34 required. The unit has been physically removed from the location. In letter 17-ESQ-0063,
35 the permittee requests to remove the 225BC emergency engine from the AOP. The engine
36 will no longer operate and is no longer subject to the conditions of the permit.

37 **7. 1.4.58 WTP MHF North-10 Laydown Area (Light Tower) 1 of 2**

38 In letter 15-ECD-0033, the permittee has requested the removal of the "nonroad" engine from
39 the AOP to be repurposed/relocated and operated the under NESHAP Subpart ZZZZ
40 standards at a different location in the South 40 Laydown Area operations as a stationary
41 engine. The engines will be removed from the AOP and the discharge point reserved.

42 **8. 1.4.59 WTP MHF North-10 Laydown Area (Light Tower) 2 of 2**

43 In letter 15-ECD-0033, the permittee has requested the removal of the "nonroad" engine from
44 the AOP to be repurposed/relocated and operated the under NESHAP Subpart ZZZZ
45 standards at a different location in the South 40 Laydown Area operations as a stationary
46 engine. The engines will be removed from the AOP and the discharge point reserved.

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Discharge Points Revised

1. 1.4.14 CWC

Language was added regarding visible emission surveys. The text had previously just referenced Tier 3 which already requires visible emission surveys but was not explicitly referenced in the text. Changed the test frequency to not applicable to when visible emissions are observed. Also added visible emission records under required records. The change does not increase emissions.

2. 1.4.15 Concrete Batch Plant

Made language change to condition for the diesel fired boiler. Changed ‘will’ to ‘has the potential to.’ The change does not increase emissions.

3. 1.4.18 Emergency Diesel Generators

Added new Approval Orders Amendments that were issued along with their respective dates issued to the heading. Changed the requirements of engines 331 and 325 to operate as a NESHAP engine subject to Subpart ZZZZ requirements. The third engine 3709A will not be subject to NESHAP Subpart ZZZZ requirements but still be subject to the requirements previously established under DE02NWP-001.

4. 1.4.19 P-2025E ETF

Language was added regarding visible emission surveys. The text had previously just referenced Tier 3 which already requires visible emission surveys but was not explicitly referenced in the text. Changed the test frequency to not applicable to when visible emissions are observed. Also added visible emission records under required records. The change does not increase emissions.

5. 1.4.20 P-WTP-001

Language was added regarding visible emission surveys. The text had previously just referenced Tier 3 which already requires visible emission surveys but was not explicitly referenced in the text. Changed the test frequency to not applicable to when visible emissions are observed. Also added visible emission records under required records. The change does not increase emissions.

6. 1.4.23 P-WTP-001

Included slight language change to give better descriptive meeting. Language was also added regarding visible emission surveys. The text had previously just referenced Tier 3 which already requires visible emission surveys but was not explicitly referenced in the text. Changed the test frequency to not applicable to when visible emissions are observed. Also added visible emission records under required records. The change does not increase emissions.

7. 1.4.26 200 Area SST Categorical Waste Retrieval

Language was added regarding visible emission surveys. The text had previously just referenced Tier 3 which already requires visible emission surveys but was not explicitly referenced in the text. Changed the test frequency to not applicable to when visible emissions are observed. Also added visible emission records under required records. The change does not increase emissions.

8. 1.4.32 241-AP, 241-SY, and 241-AY/AZ Ventilation

A number of revisions were issued under DE11NWP-001; however, some terms and conditions from subsequent revisions did not make it into the last renewal of the AOP. Operational and emission limits specified in Revision 4 have since been incorporated into the AOP. Emission limits were established for: VOC’s, TAPs, ammonia, dimethyl mercury, and N-nitrosodimethylamine. Operational limits were also included which specify how many tanks can be operated at one time and maximum ventilation rates. Conditions were established in order to demonstrate compliance with established emission and operational limits which can change with the type of activity or operation. Only two TAPs, dimethyl mercury and chromium

1 exceeded their acceptable source impact levels (ASILs). However, the filter train abatement
2 credit decreased the dispersed concentration of chromium to below the ASIL. A Second Tier
3 review was established for dimethyl mercury to satisfy WAC 173-460-090.

4 **9. 1.4.37 6120 Tent (200 East)**

5 Language was added regarding required maintenance of the engine. The change does not
6 increase emissions.

7 **10. 1.4.38 100K Water Treatment Plant**

8 Language was added regarding required maintenance of the engine. The change does not
9 increase emissions.

10 **11. 1.4.39 385 Building**

11 Language was added regarding required maintenance of the engine. The change does not
12 increase emissions

13 **12. 1.4.40 219H Tent and MO-414 (200 east)**

14 Language was added regarding required maintenance of the engine. The change does not
15 increase emissions

16 **13. 1.4.41 North of MO-414 (200 East) 1 of 2**

17 Language was added regarding required maintenance of the engine. The change does not
18 increase emissions

19 **14. 1.4.42 North of MO-414 (200 East) 2 of 2**

20 Language was added regarding required maintenance of the engine. The change does not
21 increase emissions

22 **15. 1.4.43 WTP MHF South-40 Laydown Critical Equipment Storage**

23 Language was added regarding required maintenance of the engine. The change does not
24 increase emissions

25 **16. 1.4.44 2720EA**

26 Language was added regarding required maintenance of the engine. The change does not
27 increase emissions

28 **17. 1.4.45 Rattle Snake Barricade**

29 Language was added regarding required maintenance of the engine. The change does not
30 increase emissions

31
32 **Discharge Points Added**

33 The following discharge points were added to the AOP:

34 **1. 1.4.71 200E Effluent Treatment Facility Engine**

35 The 200E Effluent Treatment Facility Engine is a non-emergency diesel engine regulated under
36 NESHAP Subpart IIII. The engine has a cylinder displacement of 3.3 L and is rated at 74
37 horsepower. With the information given in the NOC application, emission limits and compliance
38 determinations were established from the regulations which are specified in the AOP.

39 **2. 1.4.72 251W Substation Emergency Backup Engine**

40 The 251W Substation Emergency Backup Engine is regulated under NESHAP JJJJ. The engine
41 has a cylinder displacement of 6.8 L and is rated at 97.7 horsepower. With the information given
42 in the NOC application, emission limits and compliance determinations were established from the
43 regulations which are specified in the AOP.

1 **3. 1.4.73 WTP MHF South-40 Laydown Yard Laborers Tent**

2 The WTP MHF South-40 Laydown Yard Laborers Tent engine previously was operated as a
3 nonroad engine under WAC 173-400-030. However, the permittee has determined the engine has
4 the potential to operate at the same location for more than a year which would violate the nonroad
5 engine status. The permittee has requested to remove the nonroad designation and permit the
6 engines under NESHAP Subpart ZZZZ. The requirements listed in the AOP were extracted from
7 the regulations with the information the permittee provided.

8 **4. 1.4.74 WTP MHF South-40 Laydown Yard Warm-up/Cool-down Tent**

9 The WTP MHF South-40 Laydown Yard Warm-up/Cool-down Tent engine was previously
10 operated as a nonroad engine under WAC 173-400-030. However, the permittee has determined
11 the engine has the potential to operate at the same location for more than a year which would
12 violate the nonroad engine status. The permittee has requested to remove the nonroad
13 designation and permit the engines under NESHAP Subpart ZZZZ. The requirements listed in
14 the AOP were extracted from the regulations with the information the permittee provided.

15 **5. 1.4.75 400 Area Water Treatment System Engines**

16 The 400 Area Water Treatment System Engines are used to power seasonal usage light plants and
17 generators at the 400 Area Water System. The aggregate maximum power output of stationary
18 engines in the 400 Area WS will not exceed 142.7 horsepower. The requirements listed in the
19 AOP were extracted from the regulations with the information the permittee provided.

20 **6. 1.4.76 CWC Facility Existing Light Plant Engines**

21 The CWC Facility Existing Light Plant Engines is regulated under NESHAP Subpart ZZZZ. The
22 engine is operated as non-emergency compression ignition with a displacement of <10 L. With
23 the information given in the NOC application, conditions and compliance determinations were
24 established from the regulations which are specified in the AOP. More than one engine is
25 allowed with the aggregate power rating not to exceed 20 horsepower.

26 **7. 1.4.77 CWC Facility New Light Plant Engines**

27 The CWC Facility New Light Plant Engines are regulated under NESHAP Subpart IIII. The non-
28 emergency compression ignition engine has a displacement <10L and a max power output of < 25
29 horsepower. No more than an aggregate of 122.7 horsepower, with a max power output of a
30 single engine not to exceed 25 HP may be used. With the information given in the NOC
31 application, conditions and compliance determinations were established from the regulations
32 which are specified in the AOP.

33 **8. 1.4.78 200 W SWOC Administrative Offices Engine**

34 The W SWOC Administrative Office Engines are regulated under NESHAP Subpart IIII. The
35 non-emergency compression ignition engine has a displacement <10 L and a max power output <
36 25 horsepower. No more than an aggregate of 142.7 horsepower, with a max power output of a
37 single engine not to exceed 25 HP, may be used. With the information given in the NOC
38 application, emission limits and compliance determinations were established from the regulations
39 which are specified in the AOP.

40 **9. 1.4.79 222S Engine for Direct Drive Ventilation**

41 A new source review was performed under WAC 173-400 for the installation of this engine. The
42 engine is directly attached to a ventilation fan associated with the laboratory. It is used to
43 augment ventilation provided primarily from electrically driven fans. This engine replaces an
44 older engine that was permitted under NESHAP Subpart ZZZZ as discharge point 1.4.46.

45 **10. 1.4.80 Effluent Management Facility**

46 A new source review was performed under WAC 173-400 for the construction and operation of a
47 new Waste Treatment Plant support facility. The facility, the Effluent Management Facility, has

Effective Date: XX/XX/XXXX
Expiration Date: XX/XX/XXXX

Hanford Air Operating Permit
Permit No. 00-05-06
Renewal 3

1 one new emission unit with the potential to emit both radioactive and nonradioactive air
2 emissions. The associated air permit, DE16NWP-003, was issued on February 17, 2017.
3

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Permit No. 00-05-06
Renewal 3

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