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PART III, OPERATING UNIT GROUP 3 PERMIT CONDITIONS
LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT
FACILITY

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PART III, OPERATING UNIT GROUP 3 PERMIT CONDITIONS

LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY

UNIT DESCRIPTION

The Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility (200 Area ETF) consists of an aqueous waste treatment system that provides treatment, storage integral to the treatment process, and storage of secondary wastes from the treatment process for a variety of aqueous mixed waste. LERF and 200 Area ETF is located in the 200 East Area. Aqueous wastes managed by LERF and 200 Area ETF include process condensate from 242-A Evaporator and other aqueous waste generated from onsite remediation and waste management activities.

The LERF consists of three lined surface impoundments, or basins. Aqueous waste from LERF is pumped to the 200 Area ETF for treatment in a series of process units, or systems, that remove or destroy essentially all of the dangerous waste constituents. The treated effluent is discharged to a State-Approved Land Disposal Site (SALDS) north of the 200 West Area, under the authority of a Washington State Waste Discharge Permit (Ecology 2000) and [200 Area ETF Delisting \(40 CFR 261, Appendix IX, Table 2\)](#). Construction of LERF began in 1990. Waste management operations began at LERF in April 1994. Construction of the 200 Area ETF began in 1992. Waste management operations began at 200 Area ETF in November of 1995. The operating permit was issued in 1998.

This Chapter provides unit-specific Permit conditions applicable to the dangerous waste management units for LERF and 200 Area ETF.

LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 3

Addendum A	Part A Form dated October 1, 2008
Addendum B	Waste Analysis Plan
Addendum C	Process Information
Addendum D	Groundwater Monitoring
Addendum E	Security
Addendum F	Preparedness and Prevention
Addendum G	Personnel Training
Addendum H	Closure
Addendum I	Inspection Plan
Addendum J	Contingency Plan

DEFINITIONS

State and federal delisting actions

The state delisting action pursuant to [WAC 173-303-910\(3\)](#), August 8, 2005, and the federal delisting action appearing in [40 CFR 261, Appendix IX](#), Table 2 applicable to the United States, Department of Energy, Richland, Washington.

ACRONYMS

LERF Liquids Effluent Processing Facility

ETF Effluent Treatment Facility

- 1 **III.3.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS**
- 2 **III.3.A.1** The Permittees will comply with all Permit Conditions in this Chapter and its
3 Addendums with respect to dangerous waste management and dangerous waste
4 management units in LERF and 200 Area ETF, in addition to requirements in Permit
5 Part I and Part II.
- 6 **III.3.B GENERAL WASTE MANAGEMENT**
- 7 **III.3.B.1** The Permittees are authorized to accept dangerous and/or mixed waste for treatment in
8 dangerous waste management units that satisfy the waste acceptance criteria in Permit
9 Addendum B. [[WAC 173-303-300](#)]
- 10 **III.3.B.2** The Permittees are authorized to manage dangerous and/or mixed wastes physically
11 present in the dangerous waste management units in LERF and 200 Area ETF as of the
12 effective date of this Permit according to the requirements of Permit Condition III.3.B.1.
- 13 **III.3.B.3** The Permittees are authorized to treat and/or store dangerous/mixed waste in the
14 dangerous waste management units in LERF and 200 Area ETF according to the
15 following requirements:
- 16 **III.3.B.3.a** The Permittees are authorized to treat, and store as necessary in support of treatment,
17 dangerous waste in the 200 Area ETF tank systems identified in Permit Addendum C,
18 Section C.2, and Section C.4 according to the Permit Conditions of this Chapter.
- 19 **III.3.B.3.b** The Permittees are authorized to store and treat those dangerous and/or mixed waste
20 identified in Permit Addendum C, Section C.3, in containers according to the
21 requirements of this Chapter. All container management activities pursuant to this Permit
22 Condition will take place within the container storage area or within the 200 Area ETF
23 process area identified in Permit Addendum C, Figure C.3.
- 24 **III.3.B.3.c** Treatment in containers authorized by Permit Condition III.3.B.3.b is limited to decanting
25 of free liquids, and addition of sorbents to free liquids. The Permittees will ensure that
26 sorbents are compatible with wastes and the containers. Sorbents will be compliant with
27 the requirements of [WAC 173-303-140](#)(4)(b)(iv), incorporated by reference.
- 28 **III.3.B.3.d** The Permittees are authorized to treat aqueous waste in LERF Basins (Basins 42, 43 and
29 44) subject to the following requirements:
- 30 **III.3.B.3.d.1** Following treatment in a LERF basin, aqueous wastes must be treated in 200 Area ETF
31 according to Permit Conditions III.3.B.3.a through c. [[40 CFR 268.4](#)(2)(iii), incorporated
32 by reference by [WAC 173-303-140](#)]
- 33 **III.3.B.3.d.2** The Permittees must ensure that for each basin, supernatant is removed on a flow-through
34 basis, to meet the requirement of [40 CFR 268.4](#)(a)(2)(ii) incorporated by reference by
35 [WAC 173-303-140](#). In addition, incoming waste must be shown to not contain solids by
36 either: (1) sampling results showing the waste does not contain detectable solids, or (2)
37 filtering through a 10 micron filter; [[WAC 173-303-815](#)(2)(b)(ii)]
- 38 **III.3.B.4** The Permittees will maintain the physical structure of LERF and 200 Area ETF as
39 documented in the applicable sections of Permit Addendum C, Section C.2.
40 [[WAC 173-303-630](#)(7), [WAC 173-303-640](#)(3), [WAC 173-303-640](#)(4)]
- 41 **III.3.B.5** The Permittees are authorized to use treated effluent for recycle/makeup water purposes
42 at the 200 Area ETF as outlined in Permit Addendum C, Section C.2.5.5, and the letters
43 dated August 19, 2005, EPA Region 10 to Keith A. Klein; and August 8, 2005,
44 Department of Ecology to Keith A. Klein. [[WAC 173-303-815](#)(2)(b)(ii)]
- 45 **III.3.B.6** The Permittees will maintain and operate systems for the 200 Area ETF documented in
46 Permit Addendum C, Section C.2.5 as necessary for proper operation of the 200 Area

1 ETF, compliance with the conditions of this Permit, and protection of human health and
2 the environment. For purposes of this Permit Condition, the Monitor and Control System
3 documented in Permit Addendum C, Section C.2.5.1, is considered to include all
4 indicators, sensors, transducers, actuators and other control devices connected to but
5 remote from the centralized monitor and control system (MCS) computer that serve to
6 control such systems as necessary for proper operations of LERF and 200 Area ETF
7 dangerous waste management units.

8 **III.3.B.7** The Permittees must complete the following requirements prior to acceptance for
9 treatment in 200 Area ETF aqueous waste streams with listed waste numbers subject to
10 the requirements of the State and Federal delisting: [[WAC 173-303-815\(2\)\(b\)\(ii\)](#)]

11 **III.3.B.7.a** The Permittees will prepare a written waste processing strategy according to the
12 requirements of the State and Federal Delisting Actions Conditions (1)(a)(ii) and (1)(b),
13 incorporated by reference, and Permit Addendum B, Section B.2.2.2.

14 **III.3.B.7.b** The waste processing strategy required by Permit Condition III.3.B.7.a, must document
15 the proposed processing configuration for the 200 Area ETF, values for primary
16 operating parameters, and the expected treated effluent characteristics based on the
17 process model and treatability envelope data required by [State and Federal Delisting](#)
18 [Conditions \(1\)](#).

19 **III.3.B.7.c** The written waste processing strategy required by Permit Condition III.3.B.7.a must
20 demonstrate that the projected treated effluent characteristics satisfy the delisting
21 exclusion limits in [State and Federal Delisting Condition \(5\)](#) of the state and federal
22 delisting actions, and the discharge limits of the [State Discharge Permit ST-4500](#).

23 **III.3.B.7.d** The Permittees will place a copy of the written waste processing strategy required by
24 Permit Condition III.3.B.7.a in the Hanford Facility Operating Record, LERF and
25 200 Area ETF, file as part of the documentation of waste streams accepted for
26 management at the 200 Area ETF.

27 **III.3.B.8** Treatment of aqueous waste streams in the 200 Area ETF with listed waste numbers that
28 are subject to the requirements of the state and federal delisting actions must comply with
29 the requirements of [State and Federal Delisting Condition \(1\)\(c\)](#), incorporated by
30 reference. [[WAC 173-303-815 \(2\)\(b\)\(ii\)](#)]

31 **III.3.B.9** The Permittees will manage treated effluent in the final verification tanks according to
32 the requirements of the [State and Federal Delisting Conditions \(3\) and \(5\)](#), incorporated
33 by reference. [[WAC 173-303-815 \(2\)\(b\)\(ii\)](#)]

34 **III.3.B.10** The Permittees will manage treated effluent from the 200 Area ETF according to the
35 requirements of the [State Waste Discharge Permit ST 4500](#) and [State and Federal](#)
36 [Delisting Condition \(7\)](#). [[WAC 173-303-815\(2\)\(b\)\(ii\)](#)]

37 **III.3.B.11** The Permittees will ensure compliance with treatment standards ([40 CFR 268](#),
38 incorporated by reference by [WAC 173-303-140](#)) applicable to treated effluent prior to
39 discharge to the State Authorized Land Disposal Site (SALDS), the delisting criteria at
40 [40 CFR 261, Appendix IX](#), Table 2, and the corresponding state-approved delisting
41 (dated August 8, 2005, all incorporated by reference). Sampling and analysis necessary
42 for these demonstrations must meet the corresponding requirements in Permit
43 Addendum B. [[WAC 173-303-140](#), [WAC 173-303-815 \(2\)\(b\)\(ii\)](#)]

44 **III.3.C WASTE ANALYSIS**

45 **III.3.C.1** The Permittees will comply with requirements in Permit Addendum B for sampling and
46 analysis of all dangerous and/or mixed waste required by conditions in this Chapter.
47 [[WAC 173-303-300](#)]

- 1 **III.3.C.2** The Permittees will have an accurate and complete waste profile as described in Permit
2 Addendum B, Section B.2.1.2, for every waste stream accepted for management in LERF
3 and 200 Area ETF dangerous waste management units. [[WAC 173-303-380](#)(1)(a), (b)]
- 4 **III.3.C.3** The Permittees will place a copy of each waste profile required by Permit
5 Condition III.3.C.2 in the Hanford Facility Operating Record, LERF and 200 Area ETF
6 file required by Permit Condition II.I.2. [[WAC 173-303-380](#)(1)(a), (b)]
- 7 **III.3.C.4** The Permittees will make a copy of the waste profile required by Permit
8 Condition III.3.C.2 available upon request. [[WAC 173-303-380](#)(1)(a), (b)]
- 9 **III.3.C.5** Records and results of waste analysis described in this Permit will be maintained in the
10 Hanford Facility Operating Record, LERF and 200 Area ETF file required by Permit
11 Condition II.I.2. [[WAC 173-303-380](#)(1)(a), (b)]
- 12 **III.3.D RECORDKEEPING AND REPORTING**
- 13 **III.3.D.1** The Permittees will place the following into the Hanford Facility Operating Record,
14 LERF and 200 Area ETF file required by Permit Condition II.I.2:
- 15 **III.3.D.1.a** Records required by [WAC 173-303-380](#)(1)(k) and (o), incorporated by reference.
- 16 **III.3.D.1.b** Records and results of waste analysis pursuant to permit condition III.3.C.1, and by
17 [40 CFR §264.1034](#), incorporated by reference by WAC 173-303-690, [§268.4\(a\)](#),
18 [[WAC 173-303-310](#)(2)]
- 19 **III.3.D.1.c** An inspection log, summarizing inspections conducted pursuant to Permit
20 Condition III.3.H.1; [[WAC 173-303-380](#)(1)(e)]
- 21 **III.3.D.1.d** Records required by the State and Federal Delisting Condition (6), incorporated by
22 reference; [[WAC 173-303-815](#)(2)(b)(ii)]
- 23 **III.3.E SECURITY**
- 24 **III.3.E.1** The Permittees comply with the Security requirements specific to the LERF and 200
25 Area ETF in Addendum E and Permit Attachment 3 as required by Permit Condition II.L.
26 [[WAC 173-303-310](#)(2)]
- 27 **III.3.F PREPAREDNESS AND PREVENTION**
- 28 **III.3.F.1** The Permittees will comply with the Preparedness and Prevention requirements specific
29 to LERF and 200 Area ETF in Addendum F. [[WAC 173-303-340](#)]
- 30 **III.3.G CONTINGENCY PLAN**
- 31 **III.3.G.1** The Permittees will comply with Addendum J in addition to the requirements of Permit
32 Condition II.A when applicable. [[WAC 173-303-350](#)]
- 33 **III.3.H INSPECTIONS**
- 34 **III.3.H.1** The Permittees will comply with Addendum I in addition to the requirements of Permit
35 Condition II.X. [[WAC 173-303-320](#)]
- 36 **III.3.I TRAINING PLAN**
- 37 **III.3.I.1** The Permittees will include the training requirements described in Addendum G of this
38 Chapter specific to the dangerous waste management units and waste management
39 activities at LERF and 200 Area ETF into the written training plan required by Permit
40 Condition II.C.
- 41 **III.3.J GENERAL REQUIREMENTS**

- 1 **III.3.J.1** The Permittees will comply with the requirements of [WAC 173-303-395](#)(1), incorporated
2 by reference, for prevention of reaction of ignitable, reactive, or incompatible wastes.
- 3 **III.3.K CLOSURE**
- 4 **III.3.K.1** The Permittees will close dangerous waste management units in the LERF and 200 Area
5 ETF in accordance with Addendum H, Closure Plan, and Permit Condition II.J.
6 [\[WAC 173-303-610](#)(3)(a)]
- 7 **III.3.L POST-CLOSURE – RESERVED**
- 8 **III.3.M CRITICAL SYSTEMS – RESERVED**
- 9 **III.3.N RESERVED**
- 10 **III.3.O CONTAINERS**
- 11 **III.3.O.1** Container Storage and Treatment Unit Standards
- 12 **III.3.O.1.a** As part of or in addition to the requirements of Permit Condition III.3.B.2, the Permittees
13 will ensure the integrity of container storage secondary containment and the chemically
14 resistant coating described in Addendum C, Section C.3.4.1 as necessary to ensure any
15 spills or releases to secondary containment do not migrate to the underlying concrete or
16 soils.
- 17 **III.3.O.1.a.1** Include documentation of any damage and subsequent repairs in the Hanford Facility
18 Operating Record, LERF and 200 Area ETF file required by Permit Condition II.I.2.
- 19 **III.3.O.2 Container Management Standards**
- 20 **III.3.O.2.a** The Permittees will maintain and manage wastes in accordance with the requirements of
21 Addendum C, Section 4.3.2, and Section 4.3.2. [\[WAC 173-303-630](#)(2)]
- 22 **III.3.O.2.b** The Permittees will label containers in accordance with the requirements of
23 Addendum C, Section C.3.2, and Section C.3.3. [\[WAC 173-303-630](#)(3)]
- 24 **III.3.O.2.c** The Permittees will comply with the requirements for managing wastes in containers in
25 [WAC 173-303-630](#)(5), incorporated by reference.
- 26 **III.3.O.2.d** The Permittees will ensure wastes are compatible with containers and with other wastes
27 stored or treated in containers within the 200 Area ETF according to the requirements of
28 Addendum C, Section C.3.4.3. [\[WAC 173-303-630](#)(4), [WAC 173-303-630](#)(9)]
- 29 **III.3.O.2.e** The Permittees may treat wastes in containers via decanting of free liquids and addition
30 of sorbents. The Permittees may not use addition of sorbents for purposes of changing
31 the treatability group of a waste with respect to the land disposal restriction standards of
32 [40 CFR 268](#), incorporated by reference by [WAC 173-303-140](#).
- 33 **III.3.O.2.f** The Permittees will remove any accumulated liquids from container storage areas in
34 200 Area ETF according to the requirements of Addendum C, Section C.3.4.2, to ensure
35 containers are not in contact with free liquids and to prevent overflow of the container
36 storage area secondary containment.
- 37 **III.3.O.2.g** The Permittees will comply with the requirements for air emissions from containers in
38 Addendum C, Section C.6.3.2. [\[WAC 173-303-692\]](#)
- 39 **III.3.P TANK SYSTEMS**
- 40 **III.3.P.1 Tank System Requirements**
- 41 **III.3.P.1.a** The Permittees will develop a schedule for conducting integrity assessments (IA). The
42 schedule will meet the requirements of Addendum C, Section C.4.2, and consideration of
43 the factors in [WAC 173-303-640](#)(2)(e) or [WAC 173-303-640](#)(3)(b) as applicable:

- 1 **III.3.P.1.b** The Permittees will maintain a copy of the schedule required by Permit
2 Condition III.3.P.1.a, in the Hanford Facility Operating Record, LERF and 200 Area ETF
3 file, and conduct periodic integrity assessments according to the schedule. The
4 Permittees will document results of integrity assessments conducted according to the
5 III.3.P.1.a in the Hanford Facility Operating Record, LERF and 200 Area ETF file.
- 6 **III.3.P.1.c** For existing tank systems, if a tank system is found to be leaking, or is unfit for use, the
7 Permittees must follow the requirements of [WAC 173-303-640\(7\)](#), incorporated by
8 reference. [[WAC 173-303-640\(3\)\(b\)](#)]
- 9 **III.3.P.2 Tank System Operating Requirements**
- 10 **III.3.P.2.a** The Permittees will comply with the requirements of [WAC 173-303-640\(5\)\(a\)](#),
11 incorporated by reference.
- 12 **III.3.P.2.b** The Permittees will comply with the requirements of Addendum C, Section C.4.5.2.
13 [[WAC 173-303-640\(5\)\(b\)](#)]
- 14 **III.3.P.2.c** The Permittees will comply with the requirements of Addendum C, Section C.4.6.
15 [[WAC 173-303-640\(5\)\(d\)](#)]
- 16 **III.3.P.2.d** The Permittees will comply with the requirements of [WAC 173-303-640\(7\)](#), incorporated
17 by reference, in response to spills or leaks from tanks systems at 200 Area ETF.
18 [[WAC 173-303-640\(5\)\(c\)](#)]
- 19 **III.3.P.2.e** The Permittees will ensure that the Waste Processing Strategy required by Permit
20 Condition III.3.B.7.a, provides for the immediate treatment or blending of waste accepted
21 for management at the 200 Area ETF such that the resulting waste or mixture is no longer
22 reactive or ignitable when further managed in 200 Area ETF tank systems.
23 [[WAC 173-303-640\(9\)](#)]
- 24 **III.3.P.2.f** The Permittees will comply with the requirements of [WAC 173-303-640\(10\)](#),
25 incorporated by reference.
- 26 **III.3.Q SURFACE IMPOUNDMENTS**
- 27 **III.3.Q.1** The Permittees will maintain the three LERF basins according to the requirements of
28 [WAC 173-303-650 \(2\)\(f\)](#), incorporated by reference.
- 29 **III.3.Q.2** The Permittees will operate the LERF basins according to the requirements of
30 Addendum C, Section C.5.3, and Addendum I, Section I.2.2.3.1 to prevent over-topping.
31 [[WAC 173-303-650 \(2\)\(c\)](#)]
- 32 **III.3.Q.3** The Permittees will develop and maintain, and operate the LERF basins to ensure that
33 any flow of waste into the impoundment can be immediately shut off in the event of
34 overtopping or liner failure. [[WAC 173-303-650 \(2\)\(d\)](#)]
- 35 **III.3.Q.4** The Permittees will comply with the requirements of [WAC 173-303-650 \(2\)\(g\)](#),
36 incorporated by reference.
- 37 **III.3.Q.5** The Permittees will comply with the requirements of [WAC 173-303-650 \(4\)\(b\)](#),
38 incorporated by reference.
- 39 **III.3.Q.6** The Permittees will comply with the requirements of [WAC 173-303-650 \(4\)\(c\)](#),
40 incorporated by reference. The certification required by this Permit Condition must be
41 provided to Ecology no later than seven calendar days after the date of the certification.
42 A copy of the certification will be placed in the Hanford Facility Operating Record,
43 LERF and 200 Area ETF file required by Permit Condition II.I.2. [[WAC 173-303-650](#)
44 (4)(c)]

- 1 **III.3.Q.7** The Permittees will comply with the requirements of [WAC 173-303-650\(5\)\(b\)](#),
2 incorporated by reference, in response to events in [WAC 173-303-650\(5\)\(a\)](#), incorporated
3 by reference.
- 4 **III.3.Q.8** The Permittees will comply with the requirements of [WAC 173-303-650\(5\)\(d\)](#) for any
5 LERF basin that has been removed from service in accordance with Permit
6 Condition III.3.Q.7 that the Permittees will restore to service. [[WAC 173-303-650\(5\)\(d\)](#)]
- 7 **III.3.Q.9** The Permittees will close any LERF basin removed from service in accordance with the
8 requirements of Permit Condition III.3.Q.7 or a basin that cannot be repaired or that the
9 Permittees will not to return to service. [[WAC 173-303-650\(5\)\(e\)](#)]
- 10 **III.3.Q.10** The Permittees will comply with the requirements of Addendum C, Section C.5.10 with
11 respect to management of ignitable or reactive wastes in the LERF basins.
12 [[WAC 173-303-650\(7\)](#)]
- 13 **III.3.Q.11** The Permittees can place incompatible wastes and materials in the same LERF basin only
14 if in compliance with the requirements of [WAC 173-303-395\(1\)\(b\)](#), (c).
15 [[WAC 173-303-650\(8\)](#)]
- 16 **III.3.Q.12** The Permittees will use the action leakage rate in Addendum C, Section C.5.8, for
17 operation of LERF basins, and comply with the requirements of
18 [WAC 173-303-650\(10\)\(b\)](#). [[WAC 173-303-650\(10\)](#)]
- 19 **III.3.Q.13** The Permittees will comply with the requirements of [WAC 173-303-650\(11\)](#),
20 incorporated by reference.
- 21 **III.3.R** **GROUNDWATER MONITORING**
- 22 **III.3.R.1.a** The Permittees will comply with the requirements of Addendum D, Groundwater
23 Monitoring Plan. [[WAC 173-303-645](#)]
- 24 **III.3.R.1.b** The Permittees will evaluate on an annual basis, data from wastes streams accepted by
25 the LERF basins for purposes of evaluating the adequacy of constituents subject to
26 monitoring pursuant to Addendum D, LERF Groundwater Monitoring Plan. The purpose
27 of this evaluation will be to identify any dangerous constituents that are present in wastes
28 accepted by one or more of the LERF basins, which may be candidates for monitoring
29 constituents in the LERF Groundwater Monitoring Plan. The following factors are to be
30 considered:
- 31 **III.3.R.1.b.1** The concentration and total quantity of each constituent accepted for management in the
32 LERF basins;
- 33 **III.3.R.1.b.2** Environmental fate and transport of each constituent;
- 34 **III.3.R.1.b.3** Analytical detectability of each constituent.

- 1 **III.3.R.1.c** The evaluation will be documented in the Hanford Facility Operating Record, LERF and
2 200 Area ETF file. If the evaluation indicates that Addendum D, LERF Groundwater
3 Monitoring Plan, needs to be modified, the Permittees will submit a permit modification
4 to Ecology per [WAC 173-303-645\(9\)\(h\)](#).
- 5 **III.3.R.1.d** Continue monitoring the four existing wells.
- 6 **III.3.R.1.e** Update the Groundwater Monitoring Network
- 7 **III.3.R.1.e.1** Within 60-days of the effective date of this permit, the Permittees will submit a Class 2
8 Permit modification [WAC 173-303-830 Appendix I, C.1.a] to update Addendum D and
9 include the fifth well into the groundwater monitoring network. Concurrently with the
10 permit modification request, the Permittees will submit a revised “Liquid Effluent
11 Retention Facility Characterization Report” (Administrative Record Accession
12 #0906160165) for the fifth well that includes:
- 13 **III.3.R.1.e.1.i** Groundwater sample results from the new well (299-E26-14) and the four existing wells
14 (299-E26-10, 299-E26-11, 299-E26-77, and 299-E26-79) for all constituents in the
15 Addendum D, Groundwater Monitoring Plan,
- 16 **III.3.R.1.e.1.ii** Results of evaluating final well development data and drilling logs,
- 17 **III.3.R.1.e.1.iii** A well use designation (upgradient or downgradient).
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