Federal Facility Five-Year Reviews

FEBRUARY 9, 2022

FEDERAL FACILITIES RESTORATION AND REUSE OFFICE

OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION

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Group Poll

What experiences have you had with FYRs at Federal Facility Superfund sites?

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Agenda

- Five Year Review (FYR) Purpose and Regulatory Context
- How to Review a FYR
- Community Involvement for FYRs
- Protectiveness Statements
- Case Study
- Independent Findings
- Addressing Emerging Contaminants

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Regulatory Context

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FYRs under CERCLA and NCP

- CERCLA §121(c) states: "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented."
- National Contingency Plan (NCP), 40 CFR Part 300.430(f)(4)(ii) states: "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less than every five years after the initiation of the selected remedial action."

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Purpose of a FYR

- A five-year review should determine whether the remedy at a site is or upon completion will be protective of human health and the environment.
- Follow up actions should be identified for any recommendations to ensure protectiveness.
- Five-year Review address the following technical questions:
  - Is the remedy functioning as intended by the decision documents?
  - Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?
  - Has any other information come to light that could call into question the protectiveness of the remedy?

PROTECTIVENESS

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Federal Facility Five-Year Reviews

- Consistent with EO 12580, other Federal Agencies are responsible for ensuring that FYRs are conducted at sites where required or appropriate.
- For Federal Facility sites, the Lead Agency conducts the review, prepares the reports, and submits the report to EPA and the state for review and comment.
  - EPA will either concur with the protectiveness determination or provide independent findings.
- The Lead Agency is responsible for ensuring that the recommendations and follow-up actions in the report are completed.

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2011 EPA Program Priority Memo Guidance for EPA RPMs

Determine Concurrence
- Concur or not on protectiveness determination(s) by the statutory due date

Write Letter
- Write a concurrence/non-concurrence letter to the other federal agency

Track Issues
- Track and update issues and recommendations affecting protectiveness

Specify Due Date
- Specify next FYR due date based on statutory review timeframe
- Late signature on a FYR does not delay future due dates

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How to Review a FF FYR

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Federal Facilities FYR Process

- The Federal Agency writes the reports
- EPA's role is to either agree or issue independent finding of protectiveness by meeting the statutory deadline date
- Track recommendations that affect current and future protectiveness
- Report is completed once information is entered into SEMS, five days after signature
- Report to Congress on the protectiveness determination and whether EPA made an independent finding and the reason why

Visit the Superfund and FFRRO FYR web pages to stay up to date on new FYR supplements, tools and resources

- https://www.epa.gov/fedfac/five-year-review-federal-facility-cleanups
- https://www.epa.gov/superfund/superfund-five-year-reviews

Check with your agency for agency-specific FYR tools and guidance documents

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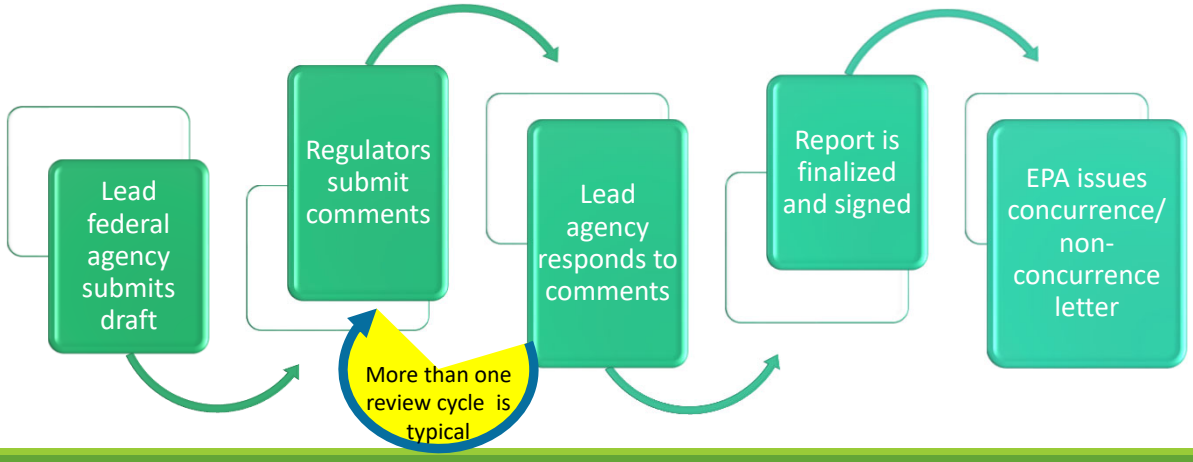
EPA Review and Submission Process



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Preparing for a FYR

- FYR team members should work together early and often to get real-time input while conducting the review and writing the report
- Site teams (regulatory and lead cleanup agency) should develop a schedule to meet the statutory deadlines (12-18 months ahead of due date)
- Ensure FYRs are completed for the required OUs (those OUs where a remedy has been selected)
  - OUs without a remedy or other activities that are included in the report do not need a protectiveness statement
  - OUs with a remedy but which have not initiated the remedial action do not need to be included

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OU Evaluation Triggers

Trigger	Y/N	Evaluate?	Notes
Is there a ROD (interim or final) for this OU?	N	N	
	Y	Y	Statutory review no later than five years after RA start
		Y	Policy review no later than five years after sitewide construction completion
Is there an Action Memo?	Y	Depends	Evaluate at NPL sites where no RA will occur
Does the OU meet UU/UE?	Y	N	Exceptions: - UU/UE for the first time, after statutory or policy triggers met - Where toxicity value changes indicate UU/UE site may no longer be UU/UE

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Common EPA Comments on Federal Facility FYRs

- One protectiveness statement per OU not issued
- Protectiveness statements issued for OUs that do not need them
- Protectiveness statements not issued for OUs that need them, particularly for sites under construction
- The wrong protectiveness statement was chosen
- A sitewide protectiveness statement was not issued where appropriate, or vice versa

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Common EPA Comments on Federal Facility FYRs

- Reports are long and not focused on supporting the protectiveness statement(s)
- Report provides insufficient support for the protectiveness statement
- Technical evaluations in the reports do not link to existing RAOs or the risk basis of the ROD
- Not enough information is provided to identify the status of issues being tracked from the last FYR
- Reports include issues that do not affect current or future protectiveness of the remedy, such as O&M issues

HQ Role and Responsibility

- May 3, 2007, Memorandum on Program Priorities
  - Improve the quality and consistency of reports by continuing to review 75% of draft reports
  - Continue training on five-year reviews during the Federal Facility RPM training and FF Academy
  - Follow-up with Regions on the implementation of the issues and recommendations identified in the report
- May 2018 memorandum and support for the annual Report to Congress
  - Identify sites where EPA made an independent assessment of the protectiveness
  - Regions send draft concurrence letters to HQ for review
  - Report the protectiveness of each site
  - Follow-up with the Regions where a site has a “not protective” determination

HQ FFRRO Review Process

- FFRRO Uses an ELMS Board to track FF 5YRs
  - Weekly Huddles
- Review Timelines
  - FFRRO strives to complete internal review of draft documents in 30 calendar days
- Multiple FFRRO SMEs may help with review
- FFRRO Comments to RPM
  - Discuss and resolve concerns before RPM sends their comments to the OFA

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Promoting National Consistency in 5YRs

- Goal is to develop recommendations that are rooted in guidance, are feasible to implement and represent best practices.
- Systematic approach to reviews
- FFRRO uses a Standard Operating Procedure (SOP) and review template for HQ review
- Long Term Effort
  - Analyze results of review to identify trends, gaps and refine best practices and finalize recommendations.

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State Role and Responsibilities

- The State role and responsibilities are described in the "State Involvement in Five-Year Reviews at Federal Facilities, Final Report," dated July 2018
- Resolution of State concerns:
  - NPL facilities – states should work through EPA under the FFA to resolve issues and concerns
  - Non-NPL facilities – States should first seek informal resolution; however, if that fails, States may seek dispute resolution through the Defense State Memorandum of Agreement (DSMOA)

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Community Involvement in FF FYRs

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Getting to Know the FYR: A Guide for Communities Near Federal Facilities

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FYR Community Involvement

- EPA 2001 FYR Guidance recommends, at a minimum:
  - BEFORE: Inform the community and other potentially interested parties that a FYR will be conducted
  - AFTER: Inform the community and other potentially interested parties that a FYR was conducted
- 2020 Community Involvement Handbook
  - Chapter 3, Section 10 covers FYRs
- 2018 Community Involvement Toolkit – Five-Year Reviews

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FYR Community Involvement

- Consider working with the site community involvement team on a communication strategy
  - Community members may be interviewed
- After the FYR is complete, consider:
  - Prepare a brief summary of the results using a fact sheet
  - Inform the community that the five-year review report is complete and available for review,
  - Post the report on a site webpage, and
  - Make the report and the summary available to the public in the information repository.

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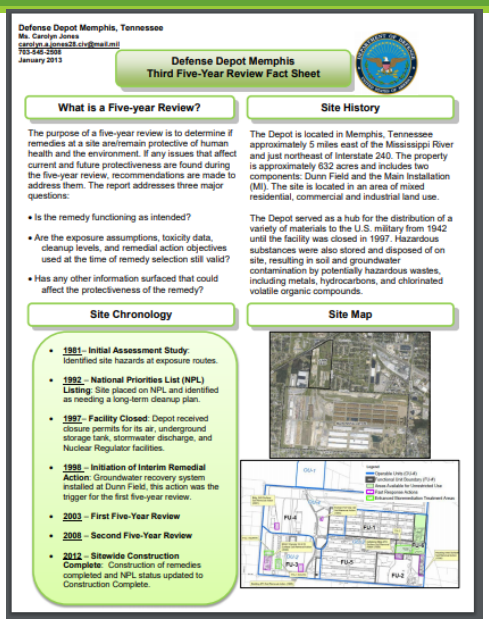


Defense Depot Memphis, Tennessee
Ms. Carolyn Jones
carolyn.a.jones28.civ@mail.mil
703-545-2508
January 2013

Defense Depot Memphis Third Five-Year Review Fact Sheet

What is a Five-year Review?

The purpose of a five-year review is to determine if remedies at a site are/remain protective of human health and the environment. If any issues that affect current and future protectiveness are found during the five-year review, recommendations are made to address them. The report addresses three major questions:

- Is the remedy functioning as intended?
- Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?
- Has any other information surfaced that could affect the protectiveness of the remedy?

Site History

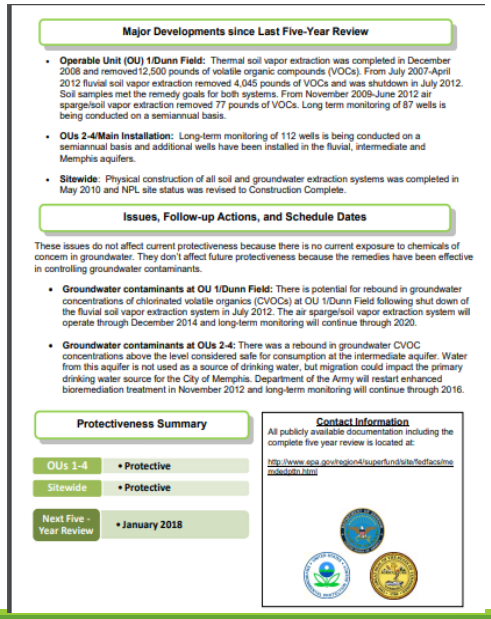
The Depot is located in Memphis, Tennessee approximately 5 miles east of the Mississippi River and just northeast of Interstate 240. The property is approximately 632 acres and includes two components: Dunn Field and the Main Installation (MI). The site is located in an area of mixed residential, commercial and industrial land use.

The Depot served as a hub for the distribution of a variety of materials to the U.S. military from 1942 until the facility was closed in 1997. Hazardous substances were also stored and disposed of on site, resulting in soil and groundwater contamination by potentially hazardous wastes, including metals, hydrocarbons, and chlorinated volatile organic compounds.

Site Chronology

- 1981 – Initial Assessment Study: Identified site hazards at exposure routes.
- 1992 – National Priorities List (NPL) Listing: Site placed on NPL and identified as needing a long-term cleanup plan.
- 1997 – Facility Closed: Depot received closure permits for its air, underground storage tank, stormwater discharge, and Nuclear Regulator facilities.
- 1998 – Initiation of Interim Remedial Action: Groundwater recovery system installed at Dunn Field, this action was the trigger for the first five-year review.
- 2003 – First Five-Year Review
- 2008 – Second Five-Year Review
- 2012 – Sitewide Construction Complete: Construction of remedies completed and NPL status updated to Construction Complete.

Site Map



Major Developments since Last Five-Year Review

- **Operable Unit (OU) 1/Dunn Field:** Thermal soil vapor extraction was completed in December 2008 and removed12,500 pounds of volatile organic compounds (VOCs). From July 2007-April 2012 fluvial soil vapor extraction removed 4,045 pounds of VOCs and was shutdown in July 2012. Soil samples met the remedy goals for both systems. From November 2009-June 2012 air sparge/soil vapor extraction removed 77 pounds of VOCs. Long term monitoring of 87 wells is being conducted on a semiannual basis.
- **OUs 2-4/Main Installation:** Long-term monitoring of 112 wells is being conducted on a semiannual basis and additional wells have been installed in the fluvial, intermediate and Memphis aquifers.
- **Sitewide:** Physical construction of all soil and groundwater extraction systems was completed in May 2010 and NPL site status was revised to Construction Complete.

Issues, Follow-up Actions, and Schedule Dates

These issues do not affect current protectiveness because there is no current exposure to chemicals of concern in groundwater. They don't affect future protectiveness because the remedies have been effective in controlling groundwater contaminants.

- **Groundwater contaminants at OU 1/Dunn Field:** There is potential for rebound in groundwater concentrations of chlorinated volatile organics (CVOCs) at OU 1/Dunn Field following shut down of the fluvial soil vapor extraction system in July 2012. The air sparge/soil vapor extraction system will operate through December 2014 and long-term monitoring will continue through 2020.
- **Groundwater contaminants at OUs 2-4:** There was a rebound in groundwater CVOC concentrations above the level considered safe for consumption at the intermediate aquifer. Water from this aquifer is not used as a source of drinking water, but migration could impact the primary drinking water source for the City of Memphis. Department of the Army will restart enhanced bioremediation treatment in November 2012 and long-term monitoring will continue through 2016.

Protectiveness Summary

OUs 1-4	• Protective
Sitewide	• Protective
Next Five-Year Review	• January 2018

Contact Information

All publicly available documentation including the complete five year review is located at:

http://www.epa.gov/region4/superfund/site/fedfacs/memdepotfin.html

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Protectiveness Statements

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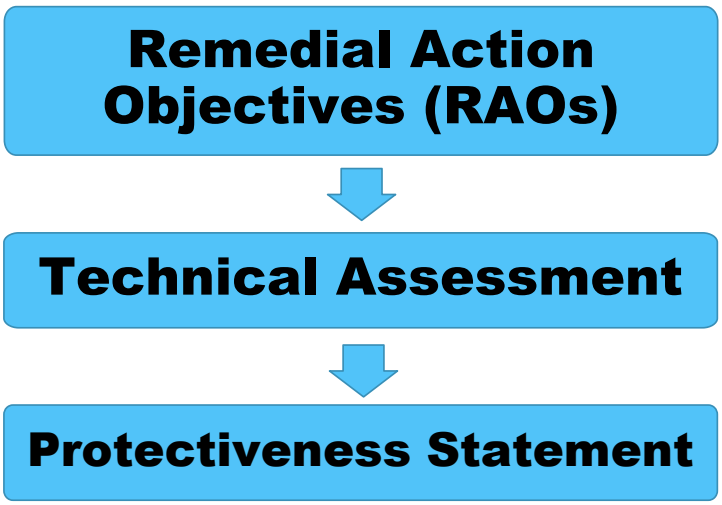
Critical Information Path

Determining protectiveness starts with considering the RAOs identified in the decision document



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Remedial Action Objectives Components

1. • Risk Drivers ---media, COCs, pathways, receptors
2. • Current and future land use
3. • Purpose of action ---prevent, minimize, eliminate, restore

RAO

Technical Evaluation

Think about the RAOs as you answer each question

A	B	C
Is the remedy working?	Are exposure assumptions still valid?	Is there anything else to consider?

Protectiveness Determinations in Five-Year Reviews

- Protective.
- Will be protective once the remedy is completed
- Protective in the short-term; however, in order for the remedy to be protective in the long-term, follow-up actions need to be taken…
- Protectiveness deferred and cannot be determined until further information is obtained (a time frame should be provided)…
- Not protective… [should identify what actions are necessary to achieve protectiveness]

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Group Poll

Have you worked on a FF FYR where the determination was protectiveness deferred? What was the cause for making that determination?

A. Sampling needed to confirm exposure pathways
B. New contaminant cleanup levels were issued and need to be evaluation
C. Emerging contaminants need to be investigated
D. Other

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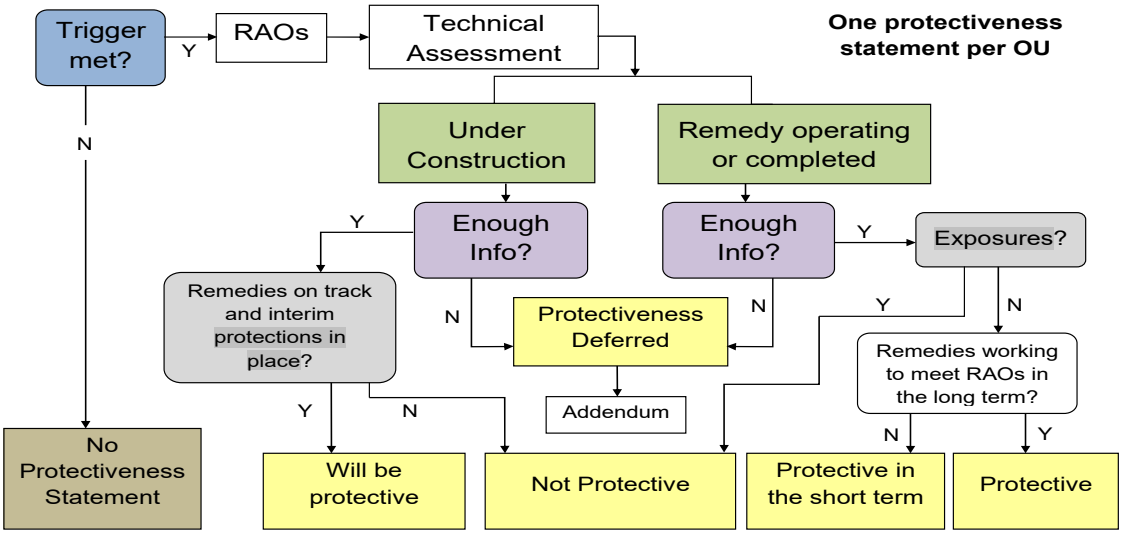
Choosing a Protectiveness Determination



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Apply Your Understanding

What protectiveness determination should EPA assign this OU?

A. Protective
B. Protective in the short term
C. Protectiveness deferred
D. Not protective

OU 1 is preparing for its second 5YR. The ROD was issued in 2005.

The cleanup level for the primary contaminant of concern (COC) became more stringent in 2012. Based on the existing data, COC concentrations exceeded the cleanup level.

Since the RAOs were met, no sampling has taken place and institutional controls are no longer in place. It is not known if the groundwater is being used. The other federal agency concludes that the remedy is still protective.

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What are items a reviewer should look for in a Protectiveness Statement?

- One protectiveness statement per OU
- Correct protectiveness determination
- Adequate support in technical evaluation
- Consistency with issues and recommendations tables
- Progress toward RAOs
- Standard format followed for protectiveness statements
- If a sitewide protectiveness statement is needed

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Anatomy of a Protectiveness Statement

Identify OU and protectiveness determination

Identify what activities justify the protectiveness statement

If not protective, Identify what activities are needed for the remedy to be fully protective

"The remedy at OU-Y currently protects human health and the environment because land use controls to prevent groundwater use are in place, and groundwater treatment will continue until concentrations throughout the plume are below the standard/MCL. To be protective in the long term, the IC boundary should be expanded."

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Remedies Considered Not Protective

- An immediate threat is present (e.g., exposure pathways that could result in unacceptable risks are not being controlled);
- Migration of contaminants is uncontrolled and poses an unacceptable risk to human health or the environment;
- Potential or actual exposure is clearly present or there is evidence of exposure (e.g., institutional controls are not in place or not enforced and exposure is occurring); or
- The remedy cannot meet a new cleanup level and the previous cleanup level is outside of the risk range.
  - Depends on site-specific considerations

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Follow Up Actions Based on FYR

- If the remedy is not protective, short-term protective, or protectiveness deferred, then recommendations to address protectiveness should be identified
- If the 5YR determines the remedy is not performing as designed, changes to the selected remedy may be needed through an ESD or ROD Amendment

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Following up on Recommendations between FYRs

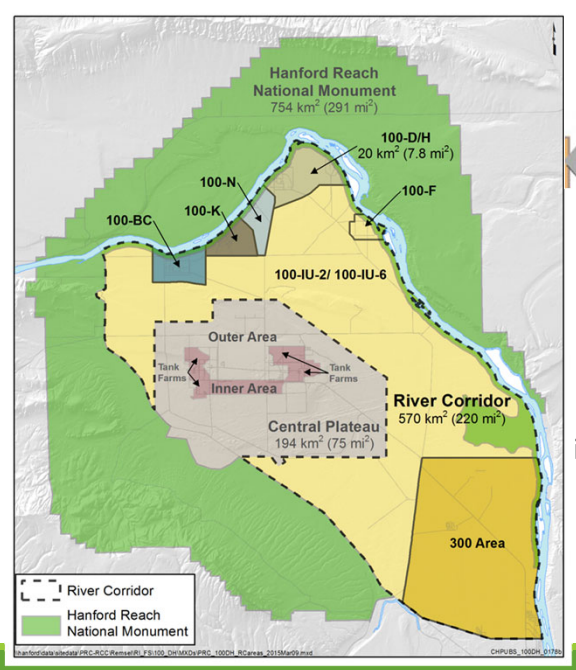
Five possible status statements in SEMS for updating each recommendation between FYRs

- Under discussion
- Ongoing
- Considered & not Implemented
- Completed
- Addressed in the next FYR

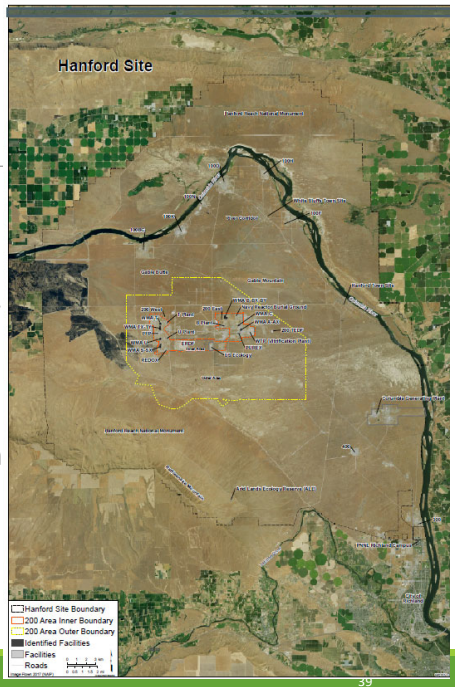
CASE STUDY - Hanford

LAURA BUELOW, RPM

REGION 10 HANFORD PROJECT OFFICE



The Hanford Site sits on 580 square miles of federally owned shrub steppe desert in southeastern Washington State



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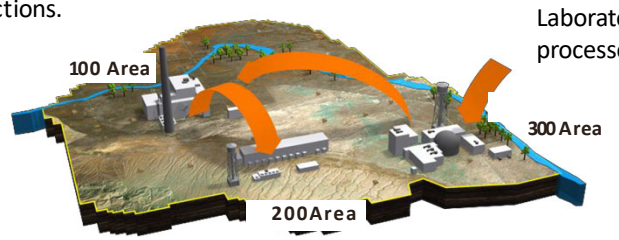
Four National Priorities Sites Listings

100 Area: Nine reactors operated to change a portion of the uranium to plutonium in nuclear reactions.

300 Area: Uranium was sent here to be fabricated into more than 20 million fuel rods for Hanford reactors. Laboratory testing of all processes.



200 Area: Hundreds of facilities operated to remove plutonium from reactor fuel rods and manage waste generated during the chemical separations processes.

1100 Area (Deleted): No production but contained logistical support buildings. Location of asbestos landfill.

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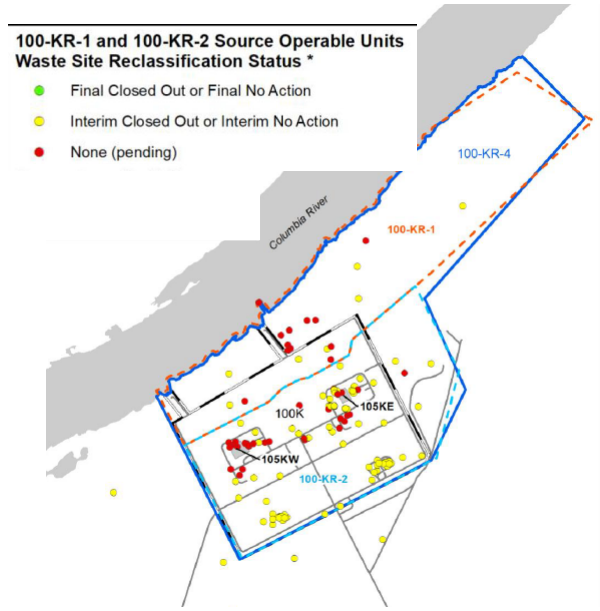
Hanford Five-Year Review

- Includes all 4 NPL listings and reviews all RODs (including interim)
- Total of 30 OUs with RODs
- The Fifth FYR is due May 2022
- Agreed to “cut-off” date of December 2020 for data and new decision documents

Protectiveness Determinations



100 K Area Waste Sites

- Interim ROD
  - No full risk assessment
  - Cleanup levels based on human health only
- Working on "final" ROD to conduct full human health and ecological risk assessment
- Protectiveness Determination
  - Could be "Will be Protective" since interim remedy is under construction.
  - Could be "Protective in the Short Term" since its known interim remedy did not consider ecological risk.
  - Went with "Will be Protective" since we are mid-construction and cannot say that it's currently protective, even in the "Short Term"

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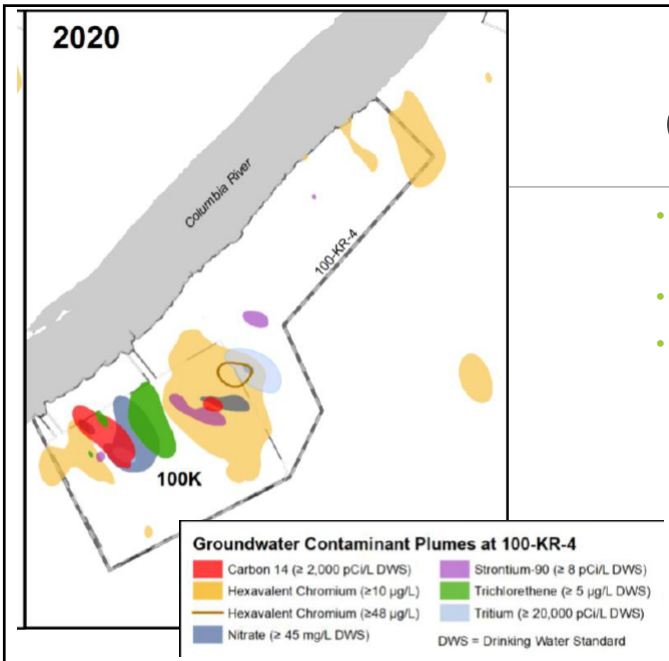

100 K Reactor Groundwater

- Interim ROD
  - Pump and Treat for Hexavalent Chromium (Cr (VI))
- Working on "final" ROD for all COCs
- Protectiveness Determination
  - DOE draft had "Will be Protective" since interim remedy doesn't meet cleanup levels for Cr (VI) yet.
  - EPA chose "Protective in the Short Term " since P&T is operational and preventing Cr (VI) from reaching Columbia River and ICs are in place to prevent drinking water use.
  - Comment to DOE: "In order to be protective in the long term, DOE needs to evaluate risk in final RI/FS for all contaminants. There needs to be an issue/recommendation for this."

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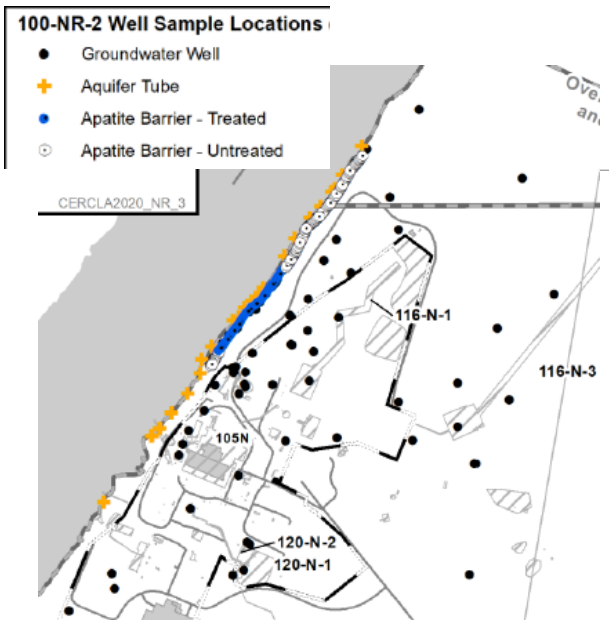

100 N Reactor Groundwater

- Interim ROD
  - Permeable reactive barrier with apatite 2500 ft long to sequester Sr-90
  - By 2011, 1020 ft of apatite was installed
  - Since then, expansion on hold for cultural resources review
- Protectiveness Determination
  - 2017 FYR stated "Not Protective" since interim remedy was not complete, and Sr-90 is reaching Columbia River above ecological screening levels (currently protective of human health in the Columbia River)
  - 2022 EPA chose "Will be Protective" since the recommendation is to implement the remedy.

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1100 Area- Asbestos Landfill

- Deleted from NPL in 1996
- Inspections for landfill cover and ICs are performed annually
- DOE skipped straight from background to Protectiveness Statement
- EPA is requiring a full FYR assessment for the 1100 Area

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Hanford FYR PFAS Comment

- Hanford has very limited PFAS groundwater data (in deep aquifer, away from potential sources of contamination)
- For each operable unit included in the five-year review, include as an issue and recommendation the need to investigate the potential for PFAS releases.
- Consider uses beyond that of AFFF, including but not limited to, metal plating, vehicle/machine washing operations, use of corrosion inhibitors, etc.
- May be able to consolidate into one, site-wide issue.

Community Involvement

- DOE placed a notice in the newspaper and sent announcement on Hanford Listserv
- EPA discussed the FYR with Tribes and stakeholders
- Identified as something to improve for the next FYR

HAB Hanford Advisory Board

OREGON DEPARTMENT OF ENERGY

Independent Findings

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Concurrence Letter or EPA's Independent Assessment of Protectiveness

- EPA concurs on the federal agency 's protectiveness determination per OU
- EPA issues an independent finding of protectiveness per OU
- Identify issues and recommendations and what action is being taken
- Request a response from the federal agency and the due date for the implementation of the action
- Protectiveness statement reported to Congress
- Due date for the next review

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Causes for Independent Findings

- No report
- Draft report submitted late or not at all for EPA review
- Draft report not finalized by statutory date
- EPA does not agree with the protectiveness determination
  - Emerging contaminants not addressed in the report
  - New exposure pathway
  - Land use controls not evaluated

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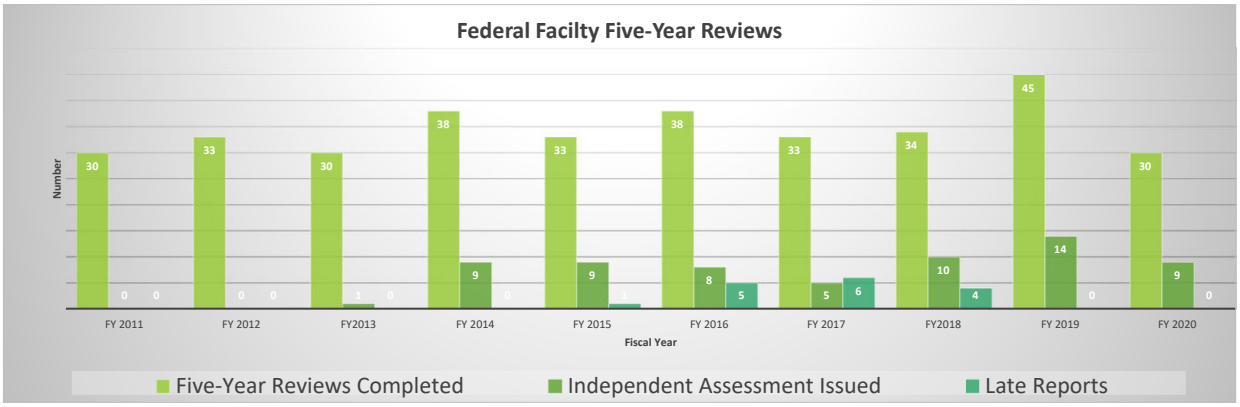
Trend on Issuing an Independent Finding on Protectiveness



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Group Poll

Have you worked on a FF FYR where EPA and the other federal agency disagreed on the protectiveness statement? How was this resolved?

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Apply Your Understanding

Scenario 1: As an EPA RPM, you received and reviewed a draft FYR report. After reviewing the document and providing the document for HQ-FFRRO review, you are able to concur with the protectiveness statements in the draft report. **However, the report will not by final by the statutory due date. What are the follow up actions for the EPA RPM?**

A. Write a concurrence letter agreeing with the federal agency protectiveness determination

B. Identify issues, recommendations, and actions that will be tracked in SEMS

C. Submit Letter and draft report to SEMS

D. Nothing. EPA cannot proceed until the report is finalized.

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Apply Your Understanding

Scenario 2: As an EPA RPM, you received and reviewed a draft FYR report. After reviewing the document and providing the document for HQ-FFRRO review, you are able to conclude that EPA **DOES NOT** agree with the protectiveness statements in the draft report**.** Also, the report will not be final by the statutory due date. **What are the follow up actions for the EPA RPM?**

A. Make an independent finding of the protectiveness by the statutory due date (letter to the federal agency)

B. Share the draft letter with the federal agency for approval

C. Submit Letter and draft report to SEMS

D. Send the draft letter to FFRRO for review before signature

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Apply Your Understanding

Scenario 3: As an EPA RPM, you received a draft 5YR report from the federal agency, **but don't have sufficient time to conduct a review .** The report will not be final by the statutory due date. **What are the follow up actions for the EPA RPM?**

A. Make an independent finding deferring a protectiveness determination by the statutory due date (letter to the federal agency)

B. Share the draft letter with the federal agency for approval

C. Submit Letter and draft report to SEMS

D. Send the draft letter to FFRRO for review

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Apply Your Understanding

Scenario 4: The FYR report has been finalized by the statutory due date. In later discussions, the Federal agency expresses it is not willing to implement the recommendations in the FYR report. **What are the potential follow up actions for the EPA RPM?**

A. There is nothing EPA can do

B. Send a letter to Federal Agency outlining the issues and recommendations, seeks plan of action and schedule from Federal Agency

C. If progress is not made in a reasonable time, consider sending a letter requiring the actions as "additional work" under the Federal Facilities Agreement, subject to dispute resolution

D. EPA will do the actions themselves

Addressing Emerging Contaminants

Addressing Emerging Contaminants in FYRs

1. Question B: Are there new contaminants or new contaminated sources that have been identified?
   - Provides broad overview of how the emerging contaminant is being considered in FYRs.
2. Were the emerging contaminant captured under Question B?
   - Existing guidance suggests this is most appropriate question as it addresses exposure assumptions and detection of new chemical(s).
3. Was it captured under Issues and Recommendations?
   - If there is any follow-on sampling included, then it needs to be captured here.
4. Does the emerging contaminant affect Protectiveness?
   - Unresolved issues could mean short-term protective or insufficient information.

HQ Federal Facility Contacts

- EPA RPMs should contact their FFRRO Regional Coordinator regarding HQ review of FYRs
- Monica McEaddy is the FFRRO FYR Coordinator

Region	FFRRO Regional Coordinator	FFRRO RC Backup
Region 1	Jon Tso	Doug Maddox
Region 2	John Burchette	Mary Cooke
Region 3	Mary Cooke	John Burchette
Region 4	John Burchette*	Emily Royal and Monica McEaddy
Region 5	Emily Royal	Doug Maddox
Region 6	Cal Baier-Anderson	Jyl Lapachin
Region 7	Jyl Lapachin	Cal Baier-Anderson
Region 8	Jill Branby	Cal Baier- Anderson
Region 9	Mary Cooke	Jon Tso
Region 10	Monica McEaddy	Doug Maddox

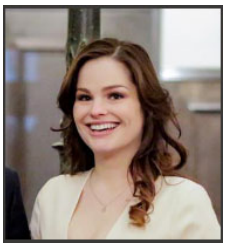
FFRRO Regional Coordinators – Here to Help!


R1/R9 Jon Tso


R2/R4 John Burchette


R3/R9 Mary T. Cooke

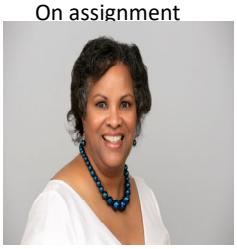

Emy Laija
On assignment


R4/ R5 Emily Royal


R6 Cal Baier-Anderson


R7 Jyl Lapachin


R8 Jill Branby


R10 Monica McEaddy
FYR SME

Questions