



# Open Environmental Restoration Resource (OER2) Webinar

## Five Year Review Refresher

Presented by: Donna Caldwell  
NAVFAC Environmental Restoration Program

- Submit all questions via chat box throughout the presentation
- Presentation is being recorded
- Complete the webinar survey (main feedback mechanism)

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# Speaker Introduction



**Donna Caldwell**

**NAVFAC Atlantic, VA**



**Ms. Caldwell is a geologist with more than 35 years' experience. Ms. Caldwell works in NAVFAC Atlantic's Environmental Restoration Program (ERP) providing technical support to Remedial Project Managers. Ms. Caldwell is NAVFAC Atlantic's Five Year Review and Vapor Intrusion subject matter expert. She has been supporting review of Five Year Reviews in the ERP since 2008. She was a member of the Federal Facilities Five Year Review Workgroup and chair of the Vapor Intrusion Subgroup of the Tri-Service Environmental Risk Assessment Workgroup and is a member of NAVFAC's Risk Assessment Workgroup. Ms. Caldwell also provides technical support and review of Proposed Plans/Records of Decisions**

# OER2 Webinar Series



- Why Attend?

- Obtain and hear about the latest DOD and DON's policies/guidance, tools, technologies and practices to improve the ERP's efficiency
- Promote innovation and share lessons learned
- **FEEDBACK** to the ERP Leadership

- Who Should Attend?

- ERP Community Members: RPMs, RTMs, Contractors, and other remediation practitioners who support and execute the ERP
- Voluntary participation

- Schedule and Registration:

- Every other month, 4<sup>th</sup> Wed (can be rescheduled due to holidays)
- Registration link for each topic (announced via ER T2 email)

- Topics and Presenters:

- **ERP community members** to submit topics (non-marketing and DON ERP-relevant) to POCs (Gunarti Coghlan – [gunarti.coghlan@navy.mil](mailto:gunarti.coghlan@navy.mil) or Anthony S. Nelson – [anthony.s.nelson@navy.mil](mailto:anthony.s.nelson@navy.mil))
- Selected topic will be assigned a Champion to work with presenter



# Five Year Review Refresher

Donna Caldwell, NAVFAC Atlantic

# Purpose



This presentation is intended to provide RPMs a Five Year Review (FYR) refresher and present information on resources developed by the EPA and Federal Facilities Five Year Review workgroup with emphasis on a training module for writers and reviewers of FYRs. Information will be presented to help RPMs more effectively prepare FYR reports and better understand potential issues and their impact on the development of appropriate protectiveness determinations.

# Presentation Overview



- Overview of Five Year Review (FYR) Process
- Federal Facility Five Year Review Workgroup; Training for Writers and Reviewers of Five Year Reviews
- Challenges and Questions Preparing FYRs
- Protectiveness Determination Examples
- Resources for FYRs

# Overview of FYR Process



- FYR is required for remedial actions where hazardous substances, pollutants, or contaminants remain at a site above levels that allow for unlimited use and unrestricted exposure (UU/UE)
  - Required every five years to assure that human health and the environment are being protected by the remedial action
- FYR objectives:
  - Determine if the remedy functioning as intended
  - Document post-ROD optimization efforts and cleanup progress
  - Identify issues that affect current or future protectiveness and recommendations to address issues
  - Document protectiveness determinations in Protectiveness Statements for each Site/Operable Unit (OU)



# Overview of FYR Process

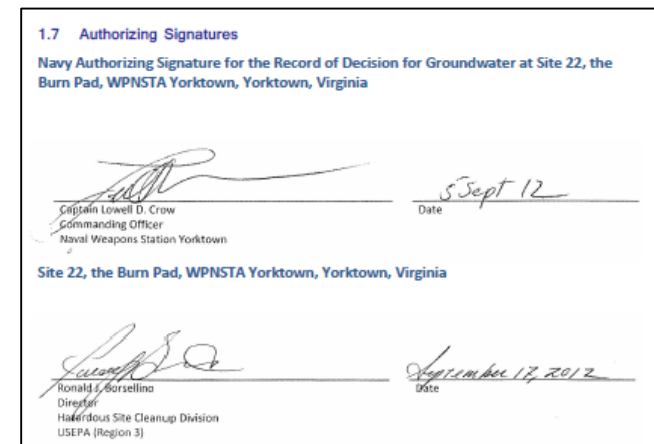


- **FYR Trigger Dates**

- First Five-Year Review for an installation is 5 years after the start of first remedial action at a Site/OU
  - Remedies with construction component (RA-C) is date of on-site mobilization
  - Remedies without RA-C:
    - LUC remedy - start date is the date of ROD signature
    - MNA remedy - start date is the date of 1st post-ROD monitoring event

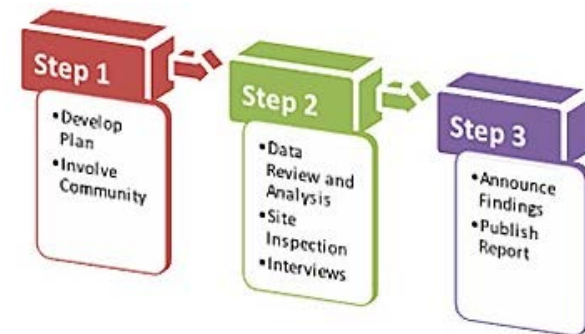
- **Subsequent Five-Year Reviews**

- One installation-wide FYR document to address all Sites/OU with action ROD
- Trigger date is five years from the DON signature date of the previous FYR



# Overview of FYR Process

- Plan and begin at least 2 years before FYR due date
- Notify stakeholders and the public the FYR is being conducted
- Assemble FYR team and compile site and remedy operational data
- Conduct interviews with community members and personnel associated with the site
- Conduct technical assessment, document optimization efforts and determine protectiveness
- Prepare FYR report for Navy and EPA signature
- Notify public final FYR is available



# Presentation Overview

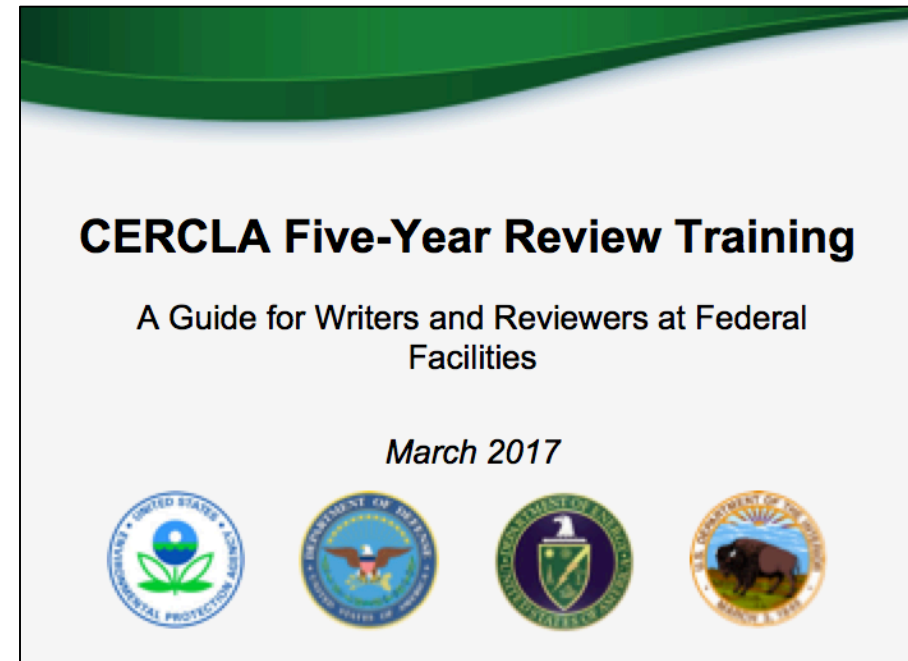


- Overview of Five Year Review (FYR) Process
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# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Objectives
  - Shorter focused FYR reports
  - Know what reviewers are looking for; fewer review comments
  - Reduce FYR cost
  - Meet statutory deadlines
  - Appropriate protectiveness determinations supported by technical assessment
  - Avoid common errors



# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



## Common EPA Comments on Federal Facility FYRs

1. One protectiveness statement per OU not issued
2. Protectiveness statements for OUs that are not needed
3. Protectiveness statements not issued for OUs that need them, particularly for sites under construction
4. The wrong protectiveness statement was chosen
5. A sitewide protectiveness statement was not issued where appropriate, or vice versa

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



## Common EPA Comments on Federal Facility FYRs

6. Reports are long and not focused on supporting protectiveness
7. Report provides insufficient support for the protectiveness
8. Technical evaluations do not link to RAOs or risk in ROD
9. Not enough information to identify status of issues being tracked from the last FYR
10. Reports include issues that do not affect current or future protectiveness

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- What Sites/OUs are evaluated in FYR and require a protectiveness determination / statement?
  - Signed action ROD / DD
  - Contaminants remain above UU/UE
  - Contaminants below UU/UE within 5 years of last review or ROD signature

**ROD/DD Summary Table**

Evaluated OUs need protectiveness statements

OU	Facility Name	Common Name	Decision Date	RAOs	Remedy
OU1	OT020	Sitewide GW Plumes	9/29/94 Action Memo	Prevent exposure to GW > MCL	MNA
			8/30/04 ROD	Restore GW	ICs
OU2	ST022	Sump Leach Field	8/30/97 ROD	Reduce GW concentrations Prevent plume expansion	MNA
			9/30/02 ESD	Prevent exposures to HI > 1 or risk > 10 <sup>-5</sup>	ICs

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- No requirement to include sites/OUs in the FYR if there is no ROD/DD and therefore no remedy to evaluate
  - Navy preference not to include but ...those sites can be listed (not evaluated) for complete picture of restoration activities

For OUs that do not need protectiveness statements

OU	Facility Name	Common Name	Decision Date	Reason
OU3	OT014	Fire Training Area	No ROD	No ROD
OU4	MS015	Munitions Storage Area	9/30/97	UU/UE



# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



## • Getting started on the FYR

- Notify and engage public
  - Community Involvement Plan / Restoration Advisory Board (CIP/RAB)
- Compile site documents for review
- Conduct and document site inspections
  - Photographs, checklists, land use control boundary /signs



### New FYR Community Tools

- *Before the Review:* Video and training module to help communicate the FYR's purpose
- *After the Review:* Fact sheet template for sharing FYR findings: <https://www.epa.gov/fedfac/five-year-review-federal-facility-cleanups>

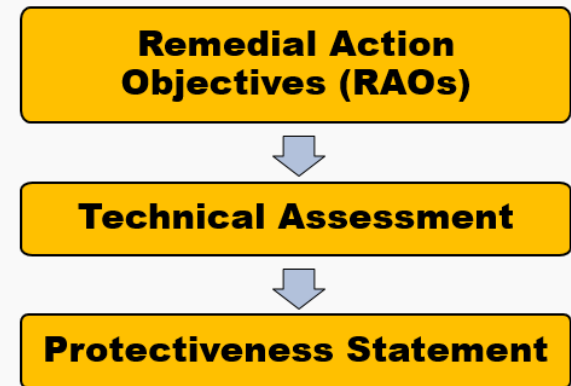


# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- **Assessing Protectiveness is goal of FYR**
  - RAOs in ROD link risk to remedy components
  - Conduct technical assessment of remedy consistent with those RAOs to determine protectiveness

## Critical Information Path



## Technical Assessment Questions

**A**

Is the remedy working?

**B**

Are exposure assumptions still valid?

**C**

Is there anything else to consider?

## Determine Protectiveness

Protective

Protective in the Short Term

Will Be Protective

Protectiveness Deferred

Not Protective

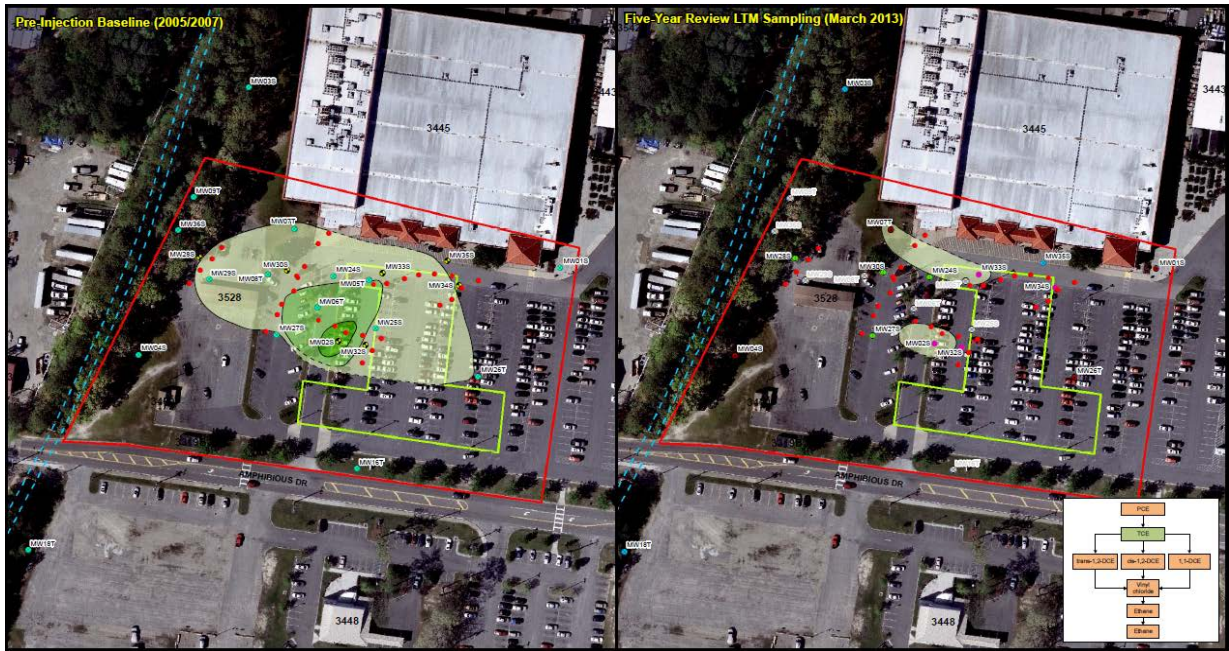
# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Is the Remedy Working?
  - Is the remedy progressing to achieve RAOs?
  - Present data to support the answer

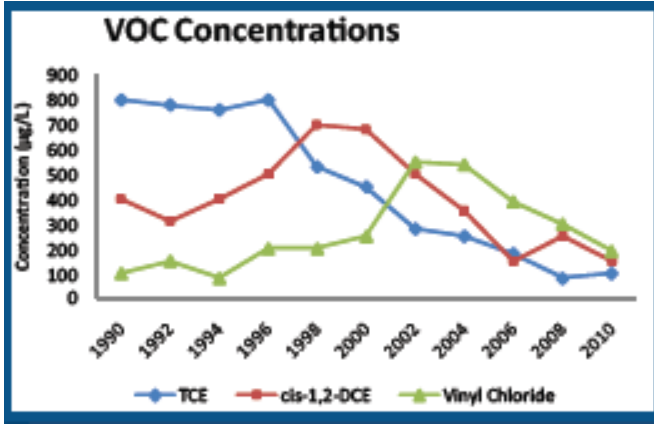
**A**

Is the remedy working?



2008

2017



# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Are exposure assumptions, toxicity data, cleanup levels and RAOs still valid?

- New exposure pathways**
  - Physical site conditions
  - Land use/ receptors
  - Risk methodologies
- Changes in toxicity**
  - New chemicals of concern
  - More stringent criteria

**B**

Are exposure assumptions still valid?

- A risk assessment may be needed to support the answer

Analyte	Ingestion Exposure								Inhalation Exposure <sup>a</sup>								Tap Water RSL (TR =10-6; HQ = 0.1)			
	RfDo (mg/kg-day)				SfO (mg/kg-day) <sup>-1</sup>				RfC (mg/m <sup>3</sup> )				IUR (ug/m <sup>3</sup> ) <sup>-1</sup>				ug/L			
	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf
1,1-Dichloroethene	5.0E-02	I	5.0E-02	I	n/a		n/a		2.0E-01	I	2.0E-01	I	n/a		n/a		2.6E+01	nc	2.8E+01	nc
1,2-Dichloropropane	9.0E-02	A	4.0E-02	P	3.6E-02	C	3.7E-02	P	4.0E-03	I	4.0E-03	I	1.0E-05	C	3.7E-06	P	3.8E-01	ca	8.2E-01	nc
Tetrachloroethene	6.0E-03	I	6.0E-03	I	2.1E-03	I	2.1E-03	I	4.0E-02	I	4.0E-02	I	2.6E-07	I	2.6E-07	I	3.5E+00	nc	4.4E+00	nc
trans-1,2-Dichloroethene	2.0E-02	I	2.0E-02	I	n/a		n/a		6.0E-02	P	n/a		n/a		n/a		8.6E+00	nc	3.6E+01	nc
Trichloroethene	5.0E-04	I	5.0E-04	I	4.6E-02	I	4.6E-02	I	2.0E-03	I	2.0E-03	I	4.1E-06	I	4.1E-06	C	2.6E-01	nc	2.8E-01	ca
Vinyl chloride	3.0E-03	I	3.0E-03	I	7.2E-01	I	7.2E-01	I	1.0E-01	I	1.0E-01	I	4.4E-06	I	4.4E-06	I	1.5E-02	ca	1.9E-02	ca

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



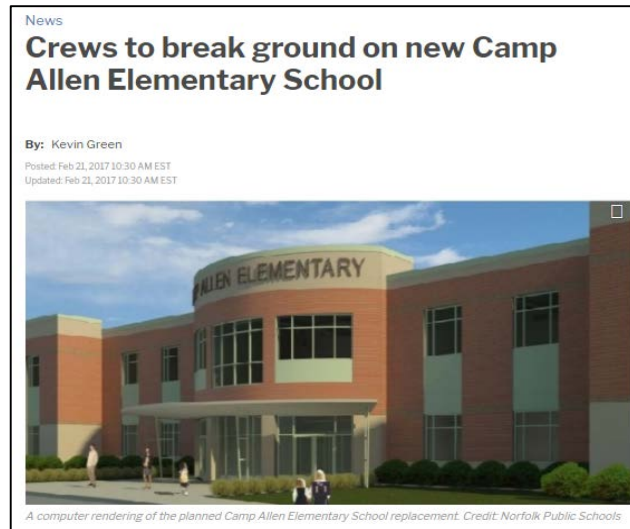
- Is there new information that could question the protectiveness of the remedy?
  - Planned land use changes?
  - Unplanned land use changes?
  - Natural disasters?

C

Is there anything else to consider?



NOAA photo





# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Protectiveness determinations based on Technical Assessment
  - **Protective**
    - Remedy is protective; risks currently under control and anticipated to be under control in the future
  - **Protective in the Short-Term**
    - Remedy is currently protective but for the remedy to be protective in the long-term action is needed to address an issue affecting future protectiveness
  - **Will be Protective**
    - Construction activities are ongoing and the remedy is expected to be protective when completed and there are no current exposure pathways that could result in unacceptable risk

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Protectiveness determinations based on Technical Assessment
  - **Not Protective**
    - Human and/or ecological risks are currently not under control
  - **Protectiveness Deferred**
    - There is insufficient information to answer technical assessment questions A, B and C and insufficient documentation to conclude risks are currently under control
    - **Five Year Review Addendum** required to document a protectiveness determination after sufficient information is obtained to answer technical assessment questions

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- **Protectiveness Statements**
  - Template language

## What do reviewers look for in a Protectiveness Statement?

1. **One protectiveness statement per OU**
2. **Correct protectiveness determination**
3. **Adequate support in technical evaluation**
4. **Consistency with issues and recommendations tables**
5. **Progress toward RAOs**
6. **Standard format followed for protectiveness statements**
7. **If a sitewide protectiveness statement is needed**

### Anatomy of a Protectiveness Statement

*“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.”*





# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



## • Writing the FYR

- Synthesize and streamline
- Use tables / graphs & figures
- Write for diverse audience, use plain language
- Be concise
- Do not copy and paste RI risk tables or raw LTM data tables; summarize the information

## Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS .....	
I. INTRODUCTION .....	
<b>FIVE-YEAR REVIEW SUMMARY FORM .....</b>	
II. RESPONSE ACTION SUMMARY .....	
Basis for Taking Action .....	
Response Actions .....	
Status of Implementation .....	
IC Summary Table .....	
Systems Operations/Operation & Maintenance .....	
III. PROGRESS SINCE THE LAST REVIEW .....	
IV. FIVE-YEAR REVIEW PROCESS .....	
Community Notification, Involvement & Site Interviews .....	
Data Review .....	
Site Inspection .....	
V. TECHNICAL ASSESSMENT .....	
QUESTION A: Is the remedy functioning as intended by the decision documents? .....	
QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid? .....	
QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy? .....	
VI. ISSUES/RECOMMENDATIONS .....	
<b>OTHER FINDINGS .....</b>	
VII. PROTECTIVENESS STATEMENT .....	
VIII. NEXT REVIEW .....	
APPENDIX A – REFERENCE LIST .....	

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



## Executive Summary Form

List Sites/OU(s) that are Protective

**Issues/Recommendations**

**OU(s) without Issues/Recommendations Identified in the Five-Year Review:**  
Click here to enter text.

Identify Sites/OU(s) with issues affecting current or future protectiveness

**Issues and Recommendations Identified in the Five-Year Review:**

<b>OU(s):</b> Click here to enter text.	<b>Issue Category:</b> Choose an item.			
	<b>Issue:</b> Click here to enter text.			
	<b>Recommendation:</b> Click here to enter text.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
Choose an item.	Choose an item.	Choose an item.	Choose an item.	Enter date.

Yes or No

Protectiveness Determination

**Protectiveness Statement(s)**

<b>Operable Unit:</b> Click here to enter text!	<b>Protectiveness Determination:</b>	<b>Addendum Due Date (if applicable):</b> Click here to enter date.
--	--------------------------------------	--

Protectiveness Statement

**Protectiveness Statement:**  
Click here to enter text.

Construction complete?

Site-wide Protectiveness Statement

**Sitewide Protectiveness Statement (if applicable)**

*For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.*

<b>Protectiveness Determination:</b> Choose an item.	<b>Addendum Due Date (if applicable):</b> Click here to enter date.
<b>Protectiveness Statement:</b> Click here to enter text.	

# Federal Facility FYR Workgroup: CERCLA Five-Year Review Training



- Notify public of intent to conduct FYR and notify and make FYR available to public upon completion
- Navy initiated Quality Document Review process
  - SMEs review prior to regulatory submittal
    - Five Year Reviews
    - Proposed Plans
    - Records of Decision



[https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er\\_pdfs/q/navfac-ev-QDR-20180615.pdf](https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/q/navfac-ev-QDR-20180615.pdf)

# Presentation Overview



- Overview of Five Year Review (FYR) Process
- Federal Facility Five Year Review Workgroup; Training for Writers and Reviewers of Five Year Reviews
- Challenges and Questions Preparing FYRs
- Protectiveness Determination Examples
- Resources for FYRs

# Challenges and Questions Preparing FYRs

## Challenge: Clearly identify Risk / RAO / Remedy / Cleanup Goal in the ROD and link to Performance Metrics

- Challenging when an older ROD did not document these cleanup factors
- Answer technical assessment questions in the context of these links to determine protectiveness

OU / Site	Media	Land Use	Risk Basis for Action / COCs	RAOs	Remedy / Cleanup Goal	Performance Metric
1	Soil	Industrial	Human health direct exposure / lead	Reduce concentration & prevent exposure	Excavation / > 1000 LUCs / > 400 (mg/kg)	Response Complete for industrial risk LUC compliance for residential soil > 400 mg/kg
1	Ground water	Industrial	Potable use / TCE & PCE	Beneficial use & prevent exposure	MNA & LUCs / > MCL 5 µg/L	Decreasing concentrations of TCE & PCE LUC compliance to prevent residential use until MCLs achieved

# Challenges and Questions Preparing FYRs

## Challenge: Identifying changes in exposure assumption / toxicity / ARARs

- Consult risk assessor for changes in last 5 years
  - Compare ROD COCs to changes and determine if COC remains a basis for action or if a COC can be eliminated
  - Compare RI COPCs to changes to determine if risk assessment is needed that could elevate a COPC to a COC

Analyte	Ingestion Exposure								Inhalation Exposure <sup>a</sup>								Tap Water RSL (TR =10-6; HQ = 0.1)			
	RfDo (mg/kg-day)				SFo (mg/kg-day) <sup>-1</sup>				RfC (mg/m <sup>3</sup> )				IUR (ug/m <sup>3</sup> ) <sup>-1</sup>				ug/L			
	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf	2013	Rf	2018	Rf
1,1-Dichloroethene	5.0E-02	I	5.0E-02	I	n/a		n/a		2.0E-01	I	2.0E-01	I	n/a		n/a		2.6E+01	nc	2.8E+01	nc
1,2-Dichloropropane	9.0E-02	A	4.0E-02	P	3.6E-02	C	3.7E-02	P	4.0E-03	I	4.0E-03	I	1.0E-05	C	3.7E-06	P	3.8E-01	ca	8.2E-01	nc
Tetrachloroethene	6.0E-03	I	6.0E-03	I	2.1E-03	I	2.1E-03	I	4.0E-02	I	4.0E-02	I	2.6E-07	I	2.6E-07	I	3.5E+00	nc	4.4E+00	nc
trans-1,2-Dichloroethene	2.0E-02	I	2.0E-02	I	n/a		n/a		6.0E-02	P	n/a		n/a		n/a		8.6E+00	nc	3.6E+01	nc
Trichloroethene	5.0E-04	I	5.0E-04	I	4.6E-02	I	4.6E-02	I	2.0E-03	I	2.0E-03	I	4.1E-06	I	4.1E-06	C	2.6E-01	nc	2.8E-01	ca
Vinyl chloride	3.0E-03	I	3.0E-03	I	7.2E-01	I	7.2E-01	I	1.0E-01	I	1.0E-01	I	4.4E-06	I	4.4E-06	I	1.5E-02	ca	1.9E-02	ca

- Consult counsel and regulations for changes in ARARs

### NCP 300.430(f)(B)(1)

“Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment”

# Challenges and Questions Preparing FYRs



## Challenge: Emerging contaminants in FYR?

- Before an emerging contaminant affects current or future protectiveness:
  - Must be documented to be present
  - Must have peer reviewed toxicity value to be able to quantify risk
  - The existing remedy for COCs does not address current and / or future exposure to the emerging contaminant
- Document emerging contaminants
  - Affecting protectiveness in the Executive Summary Form and Technical Assessment
  - Not affecting protectiveness in “Other Findings” that warrant discussion and recommended action
- Only 3 PFAS compounds (PFOA, PFOS and PFBS) have toxicity values that could affect protectiveness
  - PFAS compounds without toxicity values would not affect protectiveness
  - Do not include in executive summary form



# Challenges and Questions Preparing FYRs



## Challenge: Protectiveness Determinations

- Protectiveness Deferred

- Age old debate..... Professional judgement that sufficient environmental data and documentation are (are not) available to make a decision...

- **Is there sufficient information to conclude there is (or is not) a current uncontrolled exposure posing unacceptable risk?**

- Interpreting guidance

- EPA 2012 "***An emerging contaminant is present and the current risk has not been evaluated***"
    - EPA OSWER Directive 9200.2.84 "***Available data are insufficient to determine whether there is a potential or actual vapor intrusion exposure pathway and further evaluations are necessary***"

A scanned image of an EPA memorandum. The header includes the EPA logo and the text "UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, D.C. 20460". The date "SEP 13 2012" is stamped in the center. The recipient is "National Superfund Program Managers, Region 1-10". The sender is "James E. Woolford, Director, Office of Superfund Remediation and Technology Innovation". The subject is "Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews".

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
SOLID WASTE AND  
EMERGENCY RESPONSE  
OSWER 9200.2-111

SEP 13 2012

**MEMORANDUM**

**SUBJECT:** Clarifying the Use of Protectiveness Determinations for Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews

**FROM:** James E. Woolford, Director  
Office of Superfund Remediation and Technology Innovation

Reggie Cheatham, Director  
Federal Facilities Restoration and Reuse Office

**TO:** National Superfund Program Managers, Region 1-10



## Challenge: Protectiveness Determinations

- Short-Term Protective

- EPA 2012 “...data and/or documentation review also raise issues that could impact future protectiveness or remedy performance but not current protectiveness”

- Interpreting guidance

- EPA OSWER Directive 9200.2.84 “A potential or actual VI exposure pathway exists but site conditions prevents current exposure...” and “...VI pathway does not currently exist but....a future assessment could be deemed appropriate...”

*Assessing Protectiveness at Sites for Vapor Intrusion*

Supplement to the “Comprehensive Five-Year Review Guidance”

OSWER Directive 9200.2-84

**Purpose**

The purpose of this supplemental guidance is to provide recommendations for assessing the protectiveness of a remedy for vapor intrusion at private and federal facility Superfund sites during the five-year review process described in the *Comprehensive Five-Year Review Guidance* (EPA, 2001). It also provides recommendations for assessing protectiveness at sites where a vapor intrusion remedy has not been implemented and: 1) the vapor intrusion pathway was never adequately characterized; or 2) changes in site conditions since the last five-year review have potentially led to a complete vapor intrusion pathway.


# Challenges and Questions Preparing FYRs

## Challenge: Don't overlook the importance of community involvement

- Public notices
  - Intent to conduct FYR
  - FYR report available upon completion
- Fact sheets to explain pre and post FYR
- Video



## Post Five Year Review Fact Sheet Template

Federal Facility One, State Federal Facility Contact email / phone # Month Year		<b>Site Name</b> <b>Five-Year Review Fact Sheet</b>		Federal Agency Logo Here	
<b>What is a Five-year Review?</b> 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 protectiveness are found during the five-year review recommendations are made to address them. The report addresses three major questions: <ul style="list-style-type: none"> <li>• Is the remedy functioning as intended?</li> <li>• Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?</li> <li>• Has any other information surfaced that could affect the protectiveness of the remedy?</li> </ul>		<b>Site History</b> Insert Text Here		<b>Major Developments since Last Five-Year Review</b> • Insert Text Here	
<b>Site Chronology</b> <ul style="list-style-type: none"> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> <li>• Year – Text Describing Event</li> </ul>		<b>Site Map</b>		<b>Issues, Follow-up Actions, and Schedule Dates</b> • Insert Text Here	
<b>Protectiveness Summary</b> OU - #, #, # • Protectiveness statement OU - # • Protectiveness statement Sitewide • Protectiveness statement Next Five Year Review • No later than Month YEAR		<b>Contact Information</b> (Federal Agency, State, and EPA) and the repository/docket location for all the publicly available site-specific documentation <a href="http://www.SiteSpecificInfo.htm">www.SiteSpecificInfo.htm</a> 			

# Challenges and Questions Preparing FYRs

**Question: How do I address “in perpetuity” sites (e.g. landfill) in FYR?**

- “In perpetuity sites are addressed like any other
  - Assess remedy protectiveness as long as the site is not UU/UE and installation remains on the NPL
- A landfill site is response complete when RAOs are achieved even though it is not UU/UE
  - Navy requires long-term management of sites that do not achieve site close out (UU/UE)
    - FYR can be used to document optimization of LTM
  - Does not prevent installation delisting from NPL



# Challenges and Questions Preparing FYRs



**Question: Can FYR be used to change aspects of the remedy or LTM?**

- Yes, document when a COC achieves UU/UE
  - Recommend follow up with a Memo to File
- Yes, document basis for modifying LTM and follow up to update LTM Plan
  - Frequency / parameters / locations
- Yes, document changes in site conditions and refine / update CSM
  - Smaller or larger LUC boundaries, update base planning documents
  - New or demolished buildings
- No, document the basis for a significant or fundamental change to the remedy BUT follow up with ESD or ROD Amendment

# Challenges and Questions Preparing FYRs

## Question: Does a natural disaster affect protectiveness?

- Yes; it can affect the remedy requiring mitigating actions... BUT
- CERCLA provides an act of God defense to strict liability for releases of hazardous substances

## Question: Am I required to address climate change in FYR?

- No; climate change is not the responsibility of PRPs
- Regardless of cause site conditions impacting remedies need to be addressed

**DON will implement due diligence to guard against the influence of storms and rising sea level on CERCLA remedies**



# Presentation Overview



- Overview of Five Year Review (FYR) Process
- Federal Facility Five Year Review Workgroup; Training for Writers and Reviewers of Five Year Reviews
- Challenges and Questions Preparing FYRs
- Protectiveness Determination Examples
- Resources for FYRs

# Protectiveness Determination Examples



- **The next four slides are an exercise in determining protectiveness**
- **You will be given a scenario briefly noting Risk, RAO, Remedy and Technical Assessment**
- **You are then asked to determine if the remedy is**



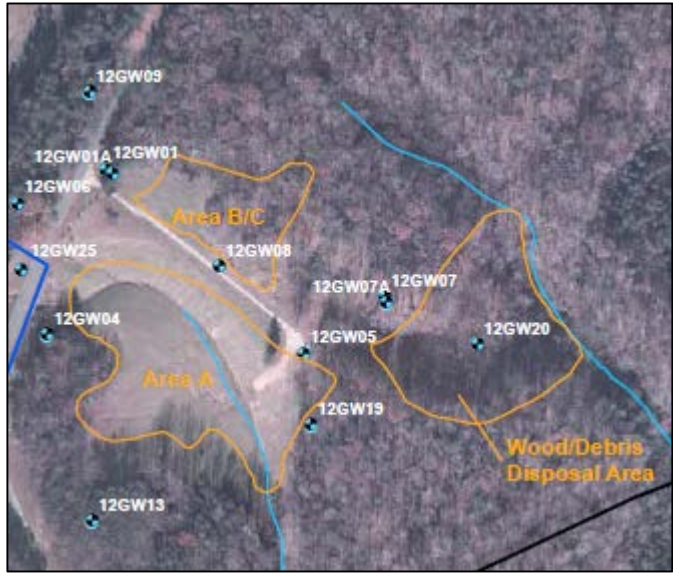
**READY?**



# Protectiveness Determination Examples

- **Risk:** landfilled waste & groundwater; COCs TCE, As, Fe.
- **RAO:** Prevent exposure to waste and COCs in groundwater, minimize leaching to groundwater, reduce groundwater COCs at landfill boundary to MCL cleanup goal
- **Remedy:** Soil cover, LUCs, groundwater monitoring
- **Technical Assessment:** : Remedy is functioning as intended; Groundwater COCs at waste boundary < MCL; LUC inspection found ruts in landfill cover and lock on gate missing; No new exposure or toxicity data

Protective
Protective in the Short Term
Will Be Protective
Protectiveness Deferred
Not Protective



**Go To Poll**



# Protectiveness Determination Examples

- **Risk:** landfilled waste & groundwater; COCs TCE, As, Fe.
- **RAO:** Prevent exposure to waste and COCs in groundwater, minimize leaching to groundwater, reduce groundwater COCs at landfill boundary to MCL cleanup goal
- **Remedy:** Soil cover, LUCs, groundwater monitoring
- **Technical Assessment:** TCE at waste boundary > MCL, exceedance outside LUC boundary but within Base boundary, no potable wells on Base.; No inspection issues and no new exposure or toxicity data

Protective

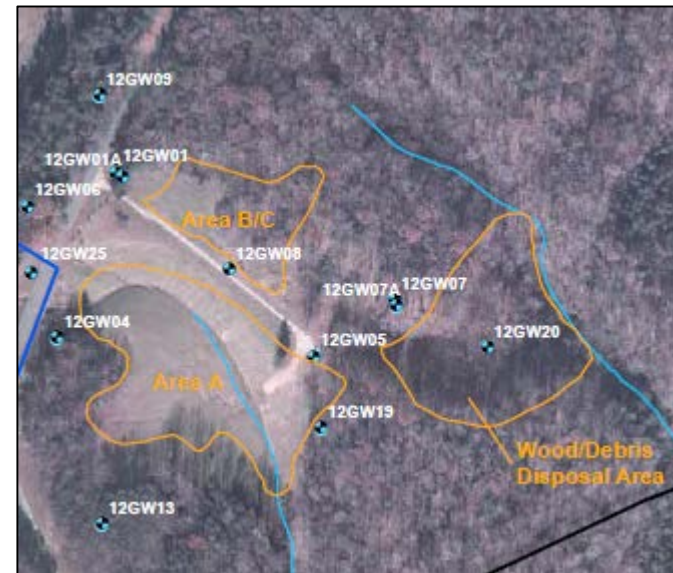
Protective in the Short Term

Will Be Protective

Protectiveness Deferred

Not Protective

**Go To Poll**



# Protectiveness Determination Examples

- **Risk:** Groundwater COCs TCE, PCE.
- **RAO:** Prevent exposure to groundwater, reduce COCs to MCLs
- **Remedy:** MNA, LUCs, groundwater monitoring
- **Technical Assessment:** Remedy is functioning as intended; COCs > VISL, no VI sampling has been conducted, 2 buildings near the plume, an unoccupied warehouse (gw ~ 100 x VISL) and a hanger with bay doors (gw ~ 1.5 x VISL); No inspection issues and no new toxicity data

Protective

Protective in the Short Term

Will Be Protective

Protectiveness Deferred

Not Protective

**Go To Poll**



# Protectiveness Determination Examples



- **Risk:** Groundwater COCs TCE, PCE.
- **RAO:** Prevent exposure to groundwater, reduce COCs to MCLs
- **Remedy:** MNA, LUCs, groundwater monitoring
- **Technical Assessment:** Remedy is functioning as intended; New information identified former fire training area near the site that raised questions for potential PFAS in groundwater; No PFAS sampling has been conducted; Site is located in center of Base, no groundwater use on Base, VOC plume has not migrated off Base. No inspection issues and no new toxicity data

Protective

Protective in the Short Term

Will Be Protective

Protectiveness Deferred

Not Protective



**Go To Poll**

# Presentation Overview



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# Resources for FYR



- **Navy**
  - DON Environmental Restoration Program (NERP) Manual 2018
  - Five-Year Review Update (DUSD memo) 2 June 2014
  - Toolkit for Preparing FYRs 2013
  - Navy and Marine Corps Policy for Conducting CERCLA FYRs 2011
  - NAVFAC ER,N Program Directive for Quality Document Review (QDR) of DON Installation Restoration Program (IRP) Sites, June 2018
- **Navy and EPA**
  - CERCLA FYR Training; A Guide for Writers and Reviewers at Federal Facilities 2017
  - FYR Recommended Template 2016
- **EPA**
  - Groundwater Technical Considerations during the FYR 2015
  - FYR Community Videos 2014
  - Clarifying the Use to Protectiveness Determinations for CERCLA FYRs 2012
  - Assessing Protectiveness at Sites for Vapor Intrusion 2012
  - FYR Summary Form Template 2011
  - FYR Interview Form 2011
  - Recommended Evaluation of Institutional Controls: 2011
  - FYR Frequently Asked Questions 2009
  - FYR Addendum Sample 2008
  - FYR Inspection Form 2001
  - EPA Comprehensive Five-Year Review Guidance 2001

# Resources for FYR



## Useful websites:

- [https://www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/exwc/products\\_and\\_services/ev/erb/5-yr-rvw.html](https://www.navfac.navy.mil/navfac_worldwide/specialty_centers/exwc/products_and_services/ev/erb/5-yr-rvw.html)
- <https://www.epa.gov/fedfac/five-year-review-federal-facility-cleanups>
- <https://www.epa.gov/superfund/superfund-five-year-reviews>

The screenshot shows the NAVFAC website header with the title "Engineering and Expeditionary Warfare Center". Below the header is a navigation menu with "ABOUT US", "CONTACT EXWC", "PRODUCTS AND SERVICES", and "NEWS". The main content area is titled "Five Year Reviews" and includes a sidebar with links to "ER Program", "Acronyms Glossary", "Guidance, Policy, and Regulations", "ER Publications A-Z", "Chlorinated Solvents", "Emerging Issues", "ER Safety", "Five Year Reviews", and "Green and Sustainable". The main content area features a diagram with three steps: Step 1 (Develop Plan, Involve Community), Step 2 (Data Review and Analysis, Site Inspection, Interviews), and Step 3 (Announce Findings, Publish Report).

[https://www.navfac.navy.mil/navfac\\_worldwide/specialty\\_centers/exwc/products\\_and\\_services/ev/erb/5-yr-rvw.html](https://www.navfac.navy.mil/navfac_worldwide/specialty_centers/exwc/products_and_services/ev/erb/5-yr-rvw.html)



Environmental Topics    Laws & Regulations    About EPA    Search EPA.gov

## Cleanups at Federal Facilities

CONTACT US    SHARE            

- Home
- FEDFacts
- Base Realignment and Closure (BRAC)
- Emerging Contaminants and Contaminants of Concern
- Federal Agency Hazardous Waste Compliance Docket

## Five-Year Review of Federal Facility Cleanups

Overview    Training & Tools    FYR Information

### Overview

Section 121 of CERCLA requires remedial actions that result in any hazardous substance pollutants



Environmental Topics    Laws & Regulations    About EPA    Search EPA.gov

## Superfund

CONTACT US    SHARE            

- Superfund Home
- Learn About Superfund
- Superfund Task Force
- Community Involvement
- Cleanup Support
- Accomplishments & Benefits
- Cleaning up Sites
  - Superfund Site Assessment Process

## Superfund: Five Year Reviews

Five-year reviews (FYRs) generally are required by CERCLA or program policy when hazardous substances remain on site above levels that permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Generally, reviews take place five years following the start of a CERCLA response action, and are repeated every succeeding five years so long as future uses remain restricted. Five-year reviews can be performed by EPA or the lead agency for a site. EPA retains responsibility for determining the protectiveness of the remedy.

- FYR Home
- Writing FYRs
- Memoranda and Fact Sheets
- Annual Report to Congress
- Search for FYRs



# Points of Contact



## POCs

- [donna.caldwell@navy.mil](mailto:donna.caldwell@navy.mil) Presenter
- [jennifer.Segura@navy.mil](mailto:jennifer.Segura@navy.mil) Champion
- [anthony.s.nelson@navy.mil](mailto:anthony.s.nelson@navy.mil) Moderator



# Questions



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# Wrap Up



- Please complete the feedback questionnaire at the end of this webinar. We are counting on your feedback to make this webinar series relevant!

- **Next OER2 Webinar Info....**

Title: EPA Remedy Optimization Program

Presenter: Kirby Biggs and **Carlos** Pachon, EPA

Date: February 20, 2019

Time: 11:00-12:00 Pacific Standard Time

- Thank you for participating!