

The U.S. Environmental Protection Agency (EPA), in collaboration with the U.S. Department of Defense, the U.S. Department of Energy and the U.S. Department of the Interior, developed this presentation to provide writers of five-year reviews (FYRs) at federal facilities with the tools and knowledge needed to avoid common pitfalls and produce streamlined, informative and accurate reports.

The FYR Interagency Workgroup was formed to help improve and standardize the federal facility FYR process. The purpose of the training is to help streamline the FYR process, promote consistency across agencies, and help writers understand and address the most common issues that reviewers find in FYR reports.

Some of the best management practices in the training may apply to Superfund sites. Therefore, this module could be useful for EPA remedial project managers (RPMs) that manage private Superfund sites. For federal facility sites, the report writer is either the lead federal agency project manager or a contractor for the lead federal agency. The reviewers of the report **may** be EPA and state regulators. Throughout the document, we may use the word “you.” “You” refers to the federal agency project manager or their contractor who is responsible for writing the report. When we refer to “you” as the reviewer of the draft document, we are talking about the EPA or state project manager and/or their contractor.

This training can help you...

- Write shorter, more focused reports
- Submit easily-reviewed reports with fewer comments
- Write for a broad audience
- Choose and support protectiveness statements
- Stay up to date
- Understand what the reviewer is looking for
- Reduce FYR costs
- Meet the statutory deadline
- Clarify the 2001 FYR Guidance & Addenda

The information in this training does not substitute for the 2001 Comprehensive FYR Guidance, other supplements or policy clarifications. The module reflects experiences from EPA and federal agency site managers implementing the FYR process at federal facility sites. The training module should be used as a resource to assist the writers and reviewers of federal facility FYR reports.

This training will address the most challenging aspects of conducting and writing a FYR to help you write short, easily-reviewed reports in a manner that follows EPA's 2001 Comprehensive FYR Guidance. The module will also provide guidance on how to choose and support a protectiveness statement and where to find the resources needed to stay up to date on recent FYR supplements. Throughout the module, we will highlight what reviewers look for when reviewing FYR reports.

In this training, "site" refers to the entire National Priorities Listing (NPL). "Operable unit (OU)" refers to a portion of the site.

Many documents in the training reference the Office of Solid Waste and Emergency Response (OSWER). In January 2016, OSWER changed its name to the Office of Land and Emergency Response (OLEM). The guidances and policies that reference OSWER are still applicable.

Training Overview

- FYR Purpose and Regulatory Context
- Preparing to Write the FYR Report
- Collecting Data
- Assessing Protectiveness
- Writing the FYR Report
- EPA Submission and Review Process



FYR Purpose and Regulatory Context

The Statute says
CERCLA § 121(c)

*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*

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This training is a tool to help improve your understanding of the information and data needed to support a protectiveness determination. This training does not substitute for the June 2001 Comprehensive FYR Guidance (OSWER Number 9355.7-03B-P) but augments it by providing more clarification based on almost 16 years of experience from Remedial Project Managers.

Let's start by reviewing why we conduct FYRs at federal facilities and document the findings in a report.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Contingency Plan (NCP) require that the lead agency review remedial actions at sites that do not allow for unlimited use/unrestricted exposure (UU/UE) at least once every five years. The lead agency documents the findings of the review in the FYR Report, which is submitted to and reviewed by EPA and/or states.

Common EPA Comments on Federal Facility FYRs

1. One protectiveness statement per OU not issued
2. Protectiveness statements issued for OUs that do not need them
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

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The next two slides list comments commonly made by EPA reviewers of federal facility FYRs. The top five comments all relate to the protectiveness statement. The purpose of the FYR is to assess the protectiveness of a remedy. Therefore, assessing, choosing, supporting and writing protectiveness statements correctly is a main focus for reviewers of FYR reports.

First, there should be one protectiveness statement for every OU evaluated during the review process. Not every OU requires an evaluation.

Second, a protectiveness statement is not needed if certain criteria are met, such as OUs where remedial action has not begun (no remedial action (RA), there is no Record of Decision (ROD)), or an OU was UU/UE in the last FYR and remains UU/UE. UU/UE means that the selected remedy will place no restrictions on the potential use of land or other natural resources.

Third, OUs still under construction need a protectiveness statement in a statutory review. In policy reviews, follow-on construction activities after a ROD Amendment will also get a review. The “will be protective” statement may apply.

Fourth, protectiveness statements should be consistent with FYR Guidance Exhibit 4-6 and the 2012 OSWER 9200.2-111 Memorandum. FYR writers often choose the wrong protectiveness statement. Decision logic for choosing protectiveness statements will be discussed later in the training.

Fifth, once a site achieves “Construction Completion,” a sitewide protectiveness statement is issued. A sitewide protectiveness determination is required and will generally be the same protectiveness determination as the least protective OU at the site (2012 OSWER 9200.2-111 Memorandum). This additional protectiveness statement should not be included until Construction Completion has been achieved, because all site remedies may not have been selected and put in place (FYR Guidance, Section 4.5.1).

Common EPA Comments on Federal Facility FYRs

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

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Sixth, the report should stay focused on the protectiveness message. Distill messages from operations and maintenance (O&M) and long-term monitoring (LTM) reports. Do not cut and paste. **Synthesize** information.

Seventh, the report needs to provide adequate rationale for the protectiveness statement(s). A remedial action should address one or more remedial action objectives (RAOs) and the technical evaluation should provide evidence that the remedial action is functioning as intended and meeting the RAOs.

Eighth, the technical evaluation must address the RAOs or risk basis of the ROD. Because remedies are selected to meet risk-based RAOs, these should be the basis of the issues and recommendations identified in the report.

Ninth, the “Progress since the last FYR” section should include adequate information about the status of issues being tracked since the last FYR. The choices are “continued in the next FYR,” where the issue would be carried over into the new issues list, “complete,” or “considered and not implemented.” This information is required in the Superfund Enterprise Management System (SEMS), EPA’s data tracking and project management tool.

Tenth, for FYRs for federal facilities, EPA may only track issues that affect current or future protectiveness. Identify an issue from any missing ROD elements required for long-term protectiveness (such as requiring the implementation of institutional controls (ICs) in a decision document).

Keeping these comments in mind will help you develop streamlined FYR reports that are easy to read and review.

Before Starting the FYR

- 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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The writer should use OSWER's 2001 Comprehensive FYR Guidance as a guide throughout the FYR process. Since 2001, EPA has also issued several updates and supplemental guidance. These supplements offer helpful guidance for addressing substantive issues and concerns. Visit the Superfund and Federal Facilities Restoration and Reuse Office (FFRRO) FYR web pages to stay up to date on recent supplements and new tools and training resources. Also be sure to check with your agency for any agency-specific FYR tools and guidance documents.

When starting the FYR, the lead federal agency project manager should contact the state RPM and technical specialists in their agency to stay up to date on emerging contaminants, exposure pathways and state and federal standards. Also be sure to check original sources such as the Integrated Risk Information System (IRIS) and relevant state websites. Early on, the FYR team should identify any new or changed regulations (applicable or relevant and appropriate requirements (ARARS)) and seek agreement on whether they impact RAOs or the protectiveness of the remedy.

Other Agency Links

- [Navy Toolkit](#)
- [USACE Five-Year Reviews of Military Munitions Response Projects EP 200-1-18](#)
- [DOE Long-Term Stewardship Resource Center](#)

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Navy Toolkit for Preparing Five-Year Reviews:

- https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/f/navfac-ev-tkit-5yrrvw-20131219f.pdf

U.S. Army Corps of Engineers (ACE)'s Five-Year Reviews of Military Munitions Response Projects EP 200-1-18:

- http://www.publications.usace.army.mil/Portals/76/Publications/EngineerPamphlets/EP_200-1-18.pdf

U.S. Department of Energy (DOE)'s Long-Term Stewardship Resource Center:

- <http://energy.gov/em/services/communication-engagement/long-term-stewardship-resource-center>
- Navy Policy on Five-Year Reviews



Let's walk through some of the most important steps that lead agency project managers should consider when preparing to write a FYR Report.

Assemble a FYR Team

Best Management Practice:

FYR team members should work together early and often to get real-time input while conducting the review and writing the report



For more information: [OSWER 2001 Comprehensive FYR Guidance, Exhibit 3-1: Potential Members of the FYR Team](#)

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The level of assistance and expertise needed to conduct the review will vary for each site and installation.

As discussed in the 2001 Comprehensive FYR Guidance (Section 3.3, pages 3-1 and 3-2) potential members of an integrated project team can include technical experts such as hydrogeologists, engineers or risk assessors, an institutional or land use control coordinator, legal counsel, a site community liaison, federal, state and tribal representatives, realty specialists, and land trustees.

Lead agency project managers should engage the integrated project team early in the review process and encourage regular communication between team members. This allows for real-time input from environmental regulators, legal representatives and others, and helps to identify and address issues proactively instead of waiting until later in the review process.

For more information: OSWER 2001 Comprehensive FYR Guidance, Exhibit 3-1: Potential Members of the FYR Team

Develop a Schedule

- Collect and review documents 12 to 18 months ahead of the due date
- Contact the EPA RPM to establish a plan for completing the FYR

Best Management Practice:

Plan three years in advance of the due date to secure funding

Secure Funding Data Collection Site Visit Draft Report Final report Due Date

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As discussed in the 2001 Comprehensive FYR Guidance (Section 3.2, page 3-1), you should prepare a schedule to help plan, track and manage the activities necessary to conduct, write and submit the FYR Report.

For federal facility sites, at minimum, you should begin planning three years in advance of the statutory deadline to secure the funding and contract support you will need to complete the review process and check the expiration of the contractor’s contract. You should begin data collection and report writing at least 12 to 18 months ahead of the due date. You may need to adjust this timeline, depending on the size and complexity of the site, whether you elect to have public meetings or comment periods, and any changes in site conditions, such as snow, that may cause delays in the review process.

You should also reach out to EPA and state project managers to establish a date for submittal of the draft FYR Report. Early agreement with reviewers on a review schedule, the scope of the FYR and key issues will allow EPA and state regulators and other reviewers time to review the draft report and resolve issues prior to the review’s statutory deadline.

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 3.2: “How should I develop a review schedule?”

OU Evaluation Triggers

Trigger	Y/N	Evaluate?	Notes	More info
Is there a ROD (interim or final) for this OU?	N	N		CERCLA 121(c) FYR Guidance Sec. 1.5.3
	Y	Y	Statutory review no later than five years after RA start	FYR Guidance Sec.1.3.1
		Y	Policy review no later than five years after sitewide construction completion	FYR Guidance Sec.1.3.2
Is there an Action Memo?	Y	Depends	Evaluate at NPL sites where no RA will occur	FYR Guidance Table 1-1 and Sec. 1.2.2 and 1.5.3
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	NCP 40CFR300.430 (f)(4)(ii) FYR Guidance Sec. 1.2.4 and 1.5.4

This table shows that not all OUs need to be evaluated during the FYR process. Generally, a decision document should be in place and a remedial action initiated within the OU that leaves waste in place. If the OU has no decision document (ROD, Action Memo, Resource Conservation and Recovery Act (RCRA) decision, or equivalent), then a remedy has not been selected and an evaluation is not required. If an RA start has not occurred at an NPL site requiring a statutory review, a review is not required. If the criteria for review have been met anywhere in the OU, an evaluation should take place and a protectiveness statement issued. Where there are OU subareas suitable for UU/UE, they can be carved out of the evaluations.

UU/UE means the selected remedy will place no restrictions on the potential use of the land or other natural resources. Unless an OU meets UU/UE criteria, it should be evaluated once the trigger for evaluation is met. If an OU is not UU/UE at the time of the ROD/decision document, an evaluation should take place and a protectiveness statement issued. The first FYR Report after the OU meets UU/UE conditions should include an evaluation that supports UU/UE and include a protectiveness statement for that OU. The report should state that this is the last time the OU will be evaluated in a FYR. The OU would not be part of future evaluations unless toxicity or other factors affecting UU/UE are no longer valid.

Discretionary evaluations may be performed at OUs where they are not required by CERCLA statute or policy. These are performed at the discretion of the lead federal agency. For example, where a FYR is required under a RCRA corrective action.

“No Further Action” and “No Further Remedial Action Planned” does not mean UU/UE. OUs deleted from the NPL will still need evaluation if they are not UU/UE.

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 1.5.1

ROD 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 ⁻⁵	ICs

This sample summary table is an example of a planning tool that the lead agency project manager can use as a starting point and scoping tool for the FYR process. The table identifies OUs that will be evaluated to meet statutory requirements (under CERCLA).

Developing a table like this one helps frame FYR discussions by allowing team members to identify the data and documents they will need to assess and determine protectiveness. For example, the team can discuss the tables and maps needed to support the protectiveness statements, considering each RAO and remedy listed in the table. The team should also discuss which OUs can be evaluated as part of the FYR, data gaps, people to interview and other relevant sources of information.

The table is organized by OU. It also lists the lead agency's designation and common name for the OU. The table includes ROD dates, RAOs and remedies. The exposure pathways of the RAOs are apparent here; contaminants are not. A column for contaminants and soil or numeric restoration goals could be added to the table.

Unevaluated OUs

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

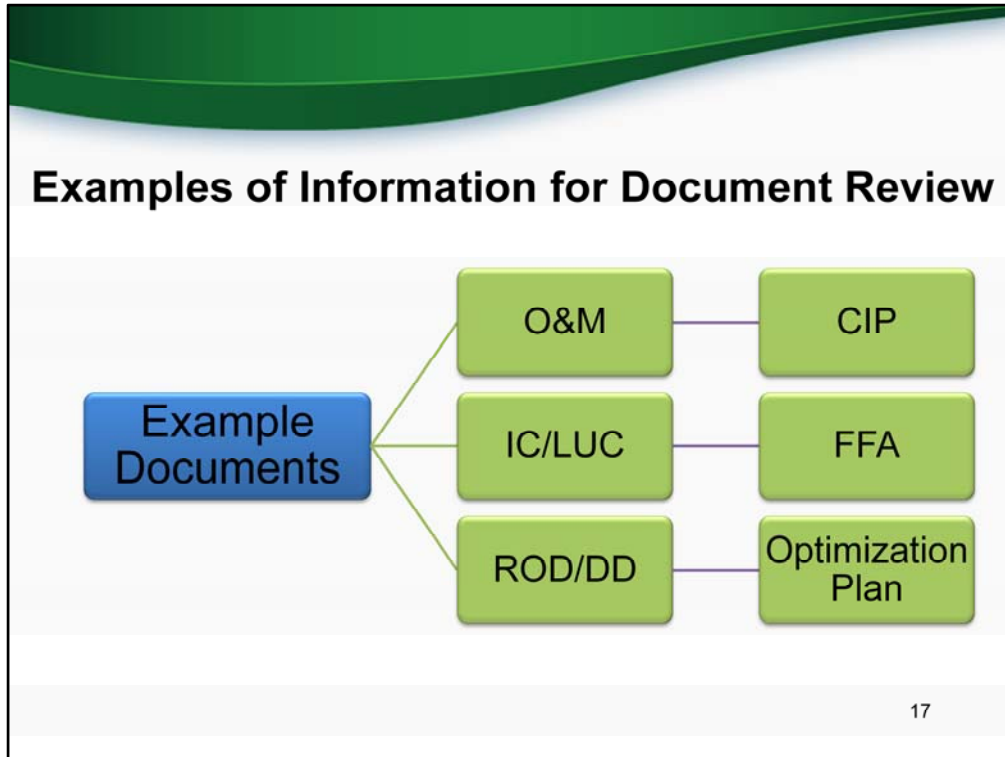
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In general, if a remedy has not been selected for an OU or it has been determined that the OU meets UU/UE, the protectiveness of the remedy should not be evaluated and a protectiveness determination is not required in the FYR Report. The team can use this table to identify OUs that should not be evaluated in the report.

For more information: OSWER 2001 Comprehensive FYR Guidance, Sections 1.3.1 and 1.3.2



Collecting Data



Another step in remedy assessment involves reviewing relevant documents and data. Examples of documents to review include remedy decision documents (DDs) such as RODs, ROD Amendments and Explanations of Significant Differences (ESDs); implementation documents such as remedial action reports; remedy performance documents such as inspection reports; O&M reports; IC instruments such as restrictive covenants and documents implementing land use controls (LUCs); legal documents such as deed notices or federal facility agreements (FFAs); optimization reports; and community involvement plans (CIPs).


Every site is different, so the documents you may need to review will vary. See Appendix B of the 2001 Comprehensive FYR Guidance for a more complete list of potential documents to be reviewed during the FYR process.

Reviewing remedy performance documents such as groundwater monitoring reports helps identify data trends that assist in determining whether a remedial action has achieved RAOs or is expected to achieve RAOs.

To simplify the document, synthesize key information from existing documentation such as RODs, remedial design documents, monitoring reports and close-out reports. Key data and findings should be distilled and sources of more information cited in the FYR Report. Writers should avoid cutting and pasting multiple pages of text. Instead, provide links to these documents to cite in-depth information.

FYR Site Inspection

- Include a recent site inspection
 - Take photographs
 - Complete checklists
 - Evaluate ICs and LUCs



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The site inspection should be conducted by an objective party (i.e., without bias or preconceived views or conclusions about the remedy and conditions at the site) and take place no more than nine months before the expected signature date of the FYR Report. The lead federal project manager should ask state and EPA representatives if they would like to be present for the inspection.

You can use the site inspection checklist (in Appendix D of the FYR Guidance) or other agency- or site-specific checklists as a guide when conducting the site inspection. Since site inspections are conducted to visually confirm and document site conditions, taking photographs during the site inspection works well. The site inspection is also a good time to evaluate site ICs and LUCs. The site inspection form in the FYR Guidance includes an IC evaluation form. Many sites also have annual reviews of ICs. These reports and their inspections may substitute for this part of the site inspection.

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 3.5.3 and Appendix D, FYR Site Inspection Checklist

Community Engagement



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>

Images courtesy of DOE

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The lead federal agency project manager should work with the site community liaison on a communication strategy and notify the community about the FYR before it begins and when it finishes.

A public notice in a local newspaper is the most common way to notify the community that you are preparing to conduct a FYR at a nearby federal facility. You can also use your facility or installation's web page and local radio or TV stations to announce the FYR. If your site has an active community group, you should notify the public at its next meeting. In May 2015, EPA added language to the NCP to broaden the methods by which EPA can notify the public about certain Superfund activities.

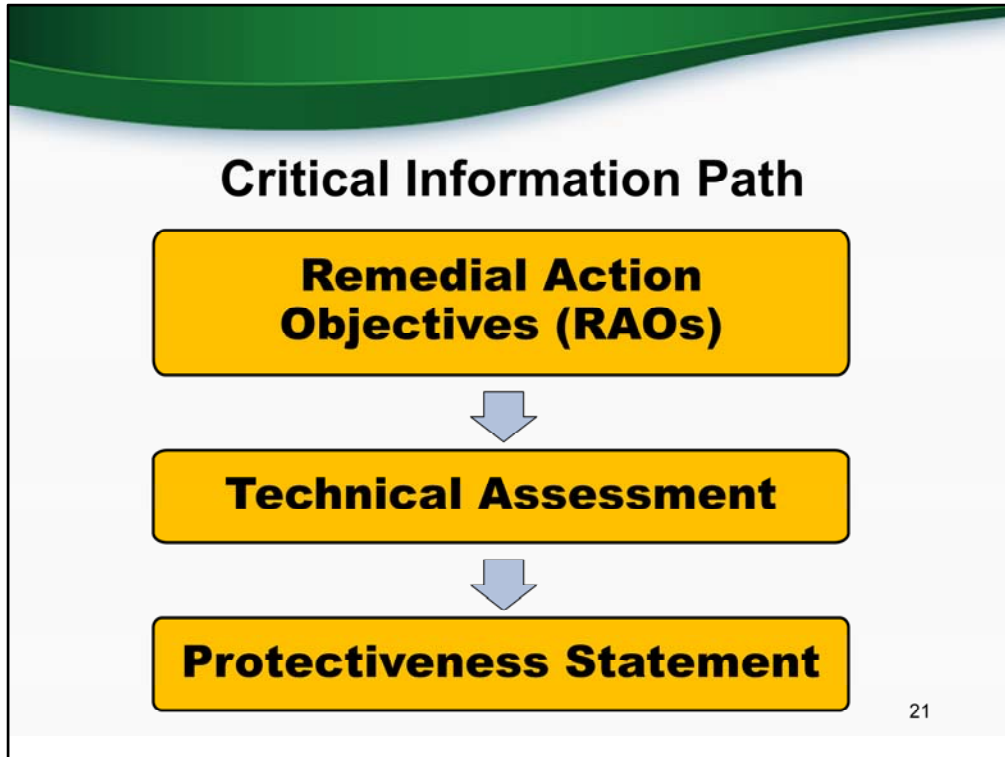
Community members may be interviewed as part of the FYR remedy assessment. Conduct community interviews with plenty of lead time; incorporate existing public opinions already provided on remedy performance issues from ongoing public outreach. Focus community input on assessing remedy protectiveness (not reopening the remedy decision). Because community members live near these sites, they can offer valuable input about the day-to-day realities at a site and play an important role in the long-term stewardship of federal facilities. Adjacent property owners or owners of off-site property that may be affected by contamination can be especially helpful to interview. Local government officials may need to be interviewed to determine if ICs are implemented properly.

The FYR Interagency Workgroup recently developed a set of FYR community tools to help site managers at federal facilities explain the purpose and findings of a FYR to surrounding communities. Community meetings are a great platform for sharing the short video and training module. Once you have completed the review, the new fact sheet template can help you organize and summarize the most important FYR findings and share them with the community. The factsheet can also be distributed at community meetings. These tools are available on the FFRRO FYR web page.

For more information: OSWER 2001 Comprehensive FYR Guidance, Appendix A



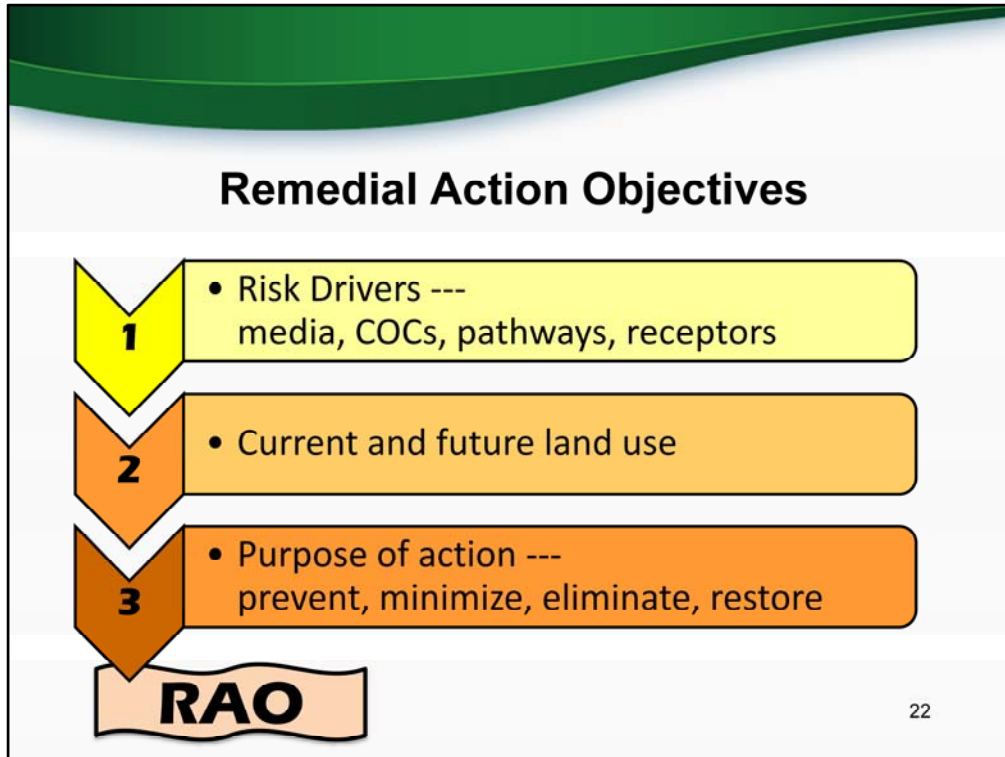
Assessing Protectiveness



Keep in mind that the purpose of the FYR is to determine the protectiveness of the remedy and ensure that the data and information supports the FYR's protectiveness statements.

The critical information path is a thread of thought emphasizing the protectiveness statement that should run through the FYR Report, from the RAOs through the technical assessment to the protectiveness statement. This is not specified in the FYR Guidance, but it helps focus the message. Without this focus, reports can wander and get too long and the protectiveness message may not stand out.

FYR report reviewers such as EPA and state project managers will look to see if the RAOs and technical assessment tell a complete story and ensure that the issues, recommendations and protectiveness statements are well supported.



RAOs are the first step of the critical information path.

The site's RAOs come from the decision document(s) and should already include risk drivers, land use and the purpose of the action. If the RAOs are not specific, it may be difficult to determine if the remedy remains protective. It is important to think about the RAOs as you answer technical evaluation questions A, B and C (see next slide).

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 4.0

The diagram is titled "Technical Evaluation" and is set against a green and white background. Below the title is a blue rounded rectangle containing the text "Think about the RAOs as you answer each question". Below this are three columns, each with a blue rounded rectangle containing a letter (A, B, or C) and a light green rounded rectangle containing a question. Column A: "A" above "Is the remedy working?". Column B: "B" above "Are exposure assumptions still valid?". Column C: "C" above "Is there anything else to consider?". The number "23" is in the bottom right corner of the diagram's frame.

Technical Evaluation

Think about the RAOs as you answer each question

A
Is the remedy working?

B
Are exposure assumptions still valid?

C
Is there anything else to consider?

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Question A asks if the remedy is functioning as intended by site decision documents. It is important to consider all RAOs when writing this section.

Question B asks if the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection are still valid. You will need to consider changes in toxicity values and land use to answer Question B.

You should consider:

- Using the regional screening levels website as a screening tool.
- Talking with your agency's toxicologist.
- Visiting FFRRO's web page for updates on new and emerging contaminants.
- Consulting IRIS to stay up to date on toxicity changes.
- Visiting the state agency web page regarding cleanup levels or involving the state regulator.

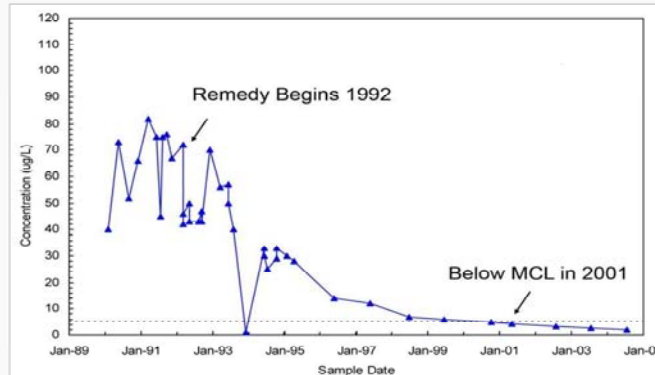
Again, changes in standards or land use should be viewed in light of a protectiveness determination and whether existing RAOs (if achieved) will be protective. A change, by itself, does not trigger a change in protectiveness – you must consider whether unacceptable risk, a new exposure pathway or other changed circumstances are present.

Question C asks if any other information has come to light that could call into question the protectiveness of the remedy. For example, a flood, earthquake or wildfire could potentially affect the protectiveness of the remedy.

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 4.0

Technical Evaluation: Supporting the Protectiveness Statement

If your RAO is “X” and your RA is “Y,” what will it take to support the protectiveness statement?



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The RAOs will determine the appropriate data needed to support a protectiveness statement. Think of it as a formula. If the RAO is “X” and the RA is “Y,” what data or documents will it take to support the protectiveness statement? As a reminder, a RAO may have several remedial actions associated with it. You may need to repeat the questions.

As an example, the evaluation of remedy performance metrics and monitoring data should indicate whether it is likely that the RAOs and cleanup levels can be achieved in a reasonable timeframe with existing systems. If contaminant concentrations are decreasing in a timely manner and other progress performance metrics are being achieved, it is likely that the remedial approach is functioning as intended and that the remedy is likely to achieve RAOs and cleanup levels in a reasonable timeframe as selected in the ROD; with “reasonable timeframe” as defined by EPA’s Groundwater Remedy Completion Strategy (OSWER 9200.2-144, pages 20 and 24): “EPA expects to return useable groundwater to their beneficial use whenever practicable, within a timeframe that is reasonable given the particular circumstances of the site ... If the remedy is not meeting or may not be able to meet the RAOs or performance metrics as expected, then this may indicate a need for optimization review and/or reevaluation of the existing remedy.”

For more information: OSWER 2001 Comprehensive FYR Guidance, Appendix G – Methods and Examples for Evaluating Changes in Standards and Toxicity

Technical Evaluation: Supporting the Protectiveness Statement



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The use of maps, graphs and tables is effective way to maintain focus on the protectiveness statement and tell the story of the technical evaluation. For example, if you are using ICs to prevent exposure to groundwater contamination that exceeds maximum contaminant levels (MCLs), a map showing the plume extent and the IC boundary to support the protectiveness statement ties these elements together with concise, focused text.

This image is from the Navy Toolkit for Preparing Five Year Reviews: (https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/f/navfac-ev-tkit-5yrrvw-20131219f.pdf) and demonstrates how graphics can illustrate remedy progress within IC boundaries.

Risk Assessment Considerations

- **Addressed in Question B:** Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection still valid?
- More stringent toxicity changes are not always significant enough to impact protectiveness

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The risk evaluations that support the selected remedy are based on exposure assumptions. Changes in site conditions, ARARs, toxicity values or risk assessment methodology will not always make the remedy not protective. Protectiveness may remain unchanged if a toxicity change results in risk within the acceptable risk range or if an exposure pathway remains incomplete.

Risk Assessment Considerations

- **New exposure pathways**
 - Physical site conditions
 - Land or resource use/ new receptors
 - New risk methodologies
- **Changes in toxicity or regulatory standards**
 - Cleanup goals not protective
 - New chemicals of concern
 - More stringent regulatory criteria

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A broad spectrum of changes in physical site conditions can impact protectiveness:

1. New buildings not previously evaluated may require vapor intrusion evaluation.
2. Zoning changes from commercial/industrial use to residential or mixed use may require risks to be revisited.
3. Contaminant migration may require additional risk analysis because contamination has reached a potable well.
4. Evidence may indicate that land use controls are not effectively preventing trespassing or recreational exposures.

Toxicity value changes that may impact protectiveness can include:

1. A chemical requires evaluation as a noncarcinogen when previously only cancer risk was evaluated (e.g., trichloroethylene (TCE), dioxin).
2. Toxicity values may become more stringent, requiring analysis to determine if the change would affect protectiveness and require revisions to the selected remedy (e.g., TCE, dioxin, dioxin-like polychlorinated biphenyls).
3. More stringent toxicity values or standards may now be available for chemicals that were previously not selected for remediation (arsenic) and for which evaluation may be needed to determine protectiveness.

Example 1: Toxicity Value Change

Site dioxin concentrations previously fell within the EPA cancer risk management range of 1 in a million to 1 in 10,000. However, new noncancer toxicity values may indicate that concentrations exceed the noncancer threshold of 1.0.

Example 2: MCL Change

Arsenic MCL has changed from 50 micrograms per liter ($\mu\text{g}/\text{L}$) to 10 $\mu\text{g}/\text{L}$. The selected remedy connected residents to potable supply if their well $> 50 \mu\text{g}/\text{L}$ – the remedy may need to be updated to address residents with wells $> 10 \mu\text{g}/\text{L}$.

For more information: OSWER 2001 Comprehensive FYR Guidance, Section 4.2.1 and Appendix G

Issues and Recommendations

Exhibit 4-3

OU	Issues	Affects Protectiveness (Y/N)	
		Current	Future
1	IC boundary does not include all of the area over the TCE plume	N	Y

Exhibit 4-4

OU	Recommendations	Responsible Party	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1	Expand IC boundary	DOD	EPA	06/30/2015	N	Y

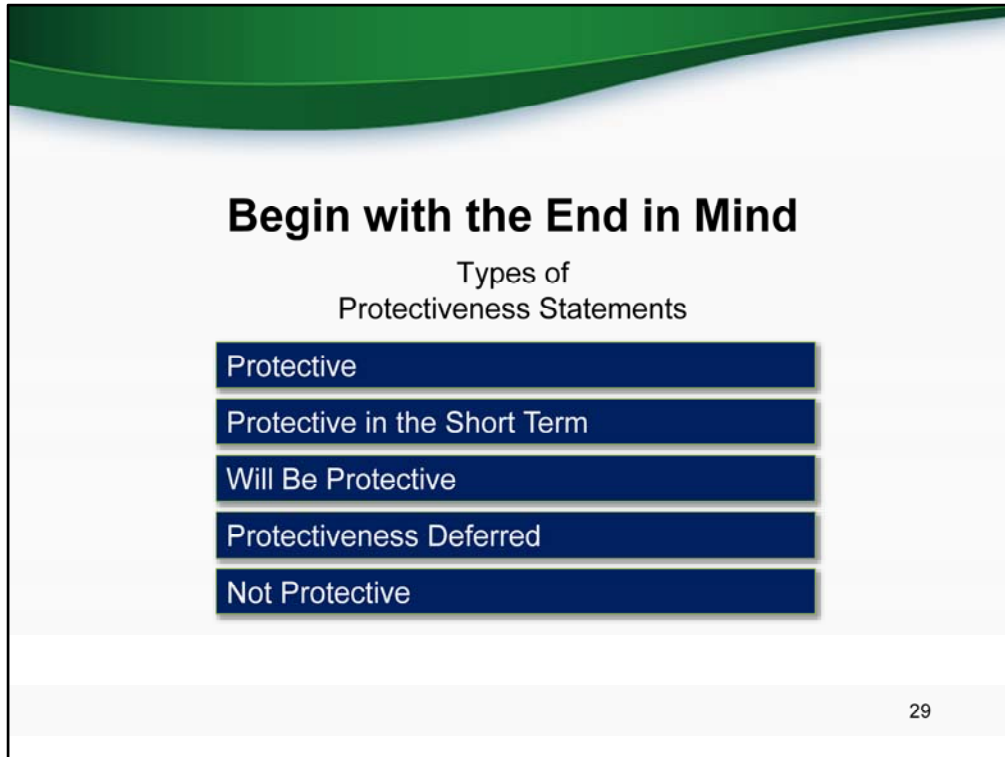
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The FYR Guidance asks for specific information for each issue and recommendation. It includes these two tables – Exhibits 4-3 and 4-4 – to present the information in the Issues, Recommendations and Follow-up Actions sections. EPA tracks this information and the EPA RPM will revisit this information with the lead agency between FYRs.

Use these tables to present the issues, recommendations and follow-up actions that affect current or future protectiveness. The example in this table indicates that while there are no current exposures and no domestic wells, future land use changes may lead to well installation. EPA is considering combining these tables into single table for each OU.

Organize issues and recommendations by OU and include a planned milestone date for recommendations. Each issue should be associated with a specific recommendation and each recommendation should be associated with a specific issue. Issues that do not affect current or future protectiveness can be mentioned in the body of the FYR Report. They should not be included in the table.

Answers must be “yes” or “no” and the format for the date must be month/day/year [MM/DD/YYYY]. Dates are tracked by EPA RPMs in SEMS using the month/day/year format.



EPA's 2001 Comprehensive FYR Guidance identified five protectiveness statement choices.

- **Protective:** used when the answers to Questions A, B and C provide sufficient data and documentation to conclude that the remedy is functioning as intended and all human and ecological risks are currently under control and are anticipated to be under control in the future.
- **Protective in the Short Term:** used when the answers to Questions A, B and C provide sufficient data and documentation to conclude that the human and ecological exposures are currently under control and no unacceptable risks are occurring. However, the data and/or documentation review also raise issues that could impact future protectiveness or remedy performance.
- **Will Be Protective:** used when the remedy is under construction and the answers to Questions A, B and C provide sufficient data and documentation to conclude that the human and ecological exposures are currently under control and no unacceptable risks are occurring in those areas. In addition, the answers to Questions A, B and C also indicate that the remedy under construction is anticipated to be protective upon completion and no remedy implementation or performance issues have been identified.
- **Protectiveness Deferred:** used when the information available to answer Questions A, B and C does not provide sufficient data and documentation to conclude that all human and ecological risks are currently under control and no unacceptable exposures are occurring. When a protectiveness deferred determination is made, the issues and recommendations and the protectiveness statement generally discuss the actions needed to collect the missing information and the timeframe anticipated to complete these actions. Once the actions have been completed, a FYR Addendum is filed. A template for the addendum is available on EPA's FYR website.
- **Not Protective:** used when the answers to Questions A, B and C provide adequate data and documentation to conclude that the human and/or ecological risks are not currently under control and follow-up actions are required.

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.”



Protectiveness statements should be included in the FYR Report’s Executive Summary and body text. EPA issued guidance in September 2012 clarifying the use of all protectiveness statements and the language to be used when drafting a protectiveness statement. The reviewer will check that the protectiveness statement follows the wording in the September 2012 guidance. Following a standard format helps to promote consistency across FYRs.

A protectiveness statement has several parts, as shown by the different colors on this slide. It begins by specifying an OU and using the language from the guidance for remedies that are protective in the short term (black). Then it states what is occurring or has occurred to make the remedy protective (blue). The last sentence states what must happen for the remedy to be considered fully protective (red).

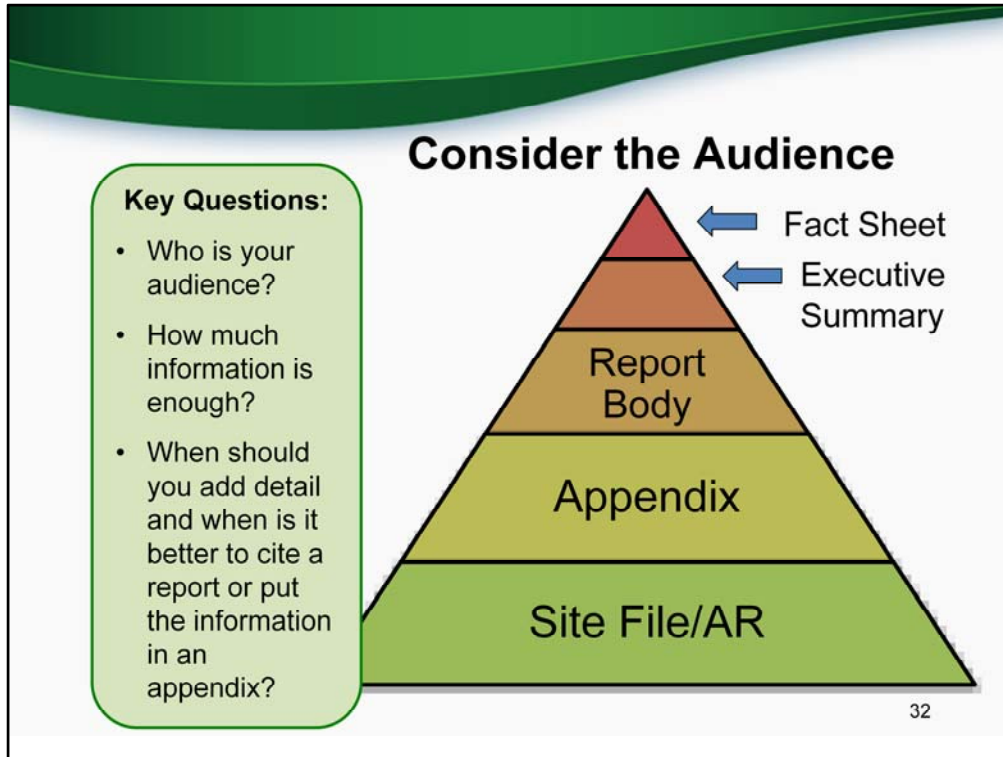
In this example, the remedy is protective in the short term because land use controls prevent people from drinking the contaminated groundwater. However, the report recommends that the IC boundary be extended to ensure long-term protectiveness.

Remedies may be protective even though a cleanup goal has not yet been met.

For more information: EPA’s September 2012 Memorandum (OSWER 9200.2-111, “Clarifying the Use of Protectiveness Determination for CERCLA Five-Year Reviews”)



Now let's discuss some tips for writing the FYR Report once you have conducted the review for your site. This section suggests ways to streamline FYR reports and also highlights specific points that reviewers look for when reviewing reports. Applying these tips will help you to write focused and easily-reviewed reports.



When writing the FYR Report, keep this “information pyramid” in mind. Each level of the pyramid should contain less detail than the level below it. The report can speak to a broader audience if the more technical reports it is based on are distilled into plain language relating to RAOs and protectiveness.

The FYR Report should be a logical summary of the documents, data and information in the report appendix and the existing site file/administrative record (AR). In a moment, we will discuss ways to streamline the report.

Executive summaries and fact sheets are not required. However, they are highly recommended for FYR reports that are long or complicated or that have an audience that would benefit from a distillation of the information. The executive summary and the fact sheet should summarize the FYR Report’s most important findings. Remember that the audience for the executive summary and fact sheet will be broad, so adjust your writing style as needed and limit the use of acronyms or technical terminology.

We will discuss tips for writing a successful executive summary later in the training.

Synthesize Information and Streamline the Report

- Use hyperlinks
- Exclude unessential information and information unrelated to protectiveness
- Use tables, graphs, maps and diagrams



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Ways to focus and streamline reports include:

- Using hyperlinks that link to information and data in other sections of the report or to external resources.
- Avoid including information that does not affect protectiveness and can obscure key messages about protectiveness. Instead of repeating detailed information from an O&M Report or an LTM Report, distill the messages as they relate to the RAOs and protectiveness. Summarize the main points in the FYR Report and then cite and link to supporting resources.
- Including tables, graphs, maps and diagrams to share key information and then using text to connect these visual elements.

The goal is to make sure the protectiveness statements in your reports are focused, accurate and well positioned for review.

Framing the Issues

1. When do you have an issue?
2. How do you properly frame an issue?
3. What aspects of O&M are not issues?

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- 1) If the OU will not meet RAOs, then there may be issues that need to be addressed.
- 2) When is an issue not framed well? An issue should be solvable in the relatively short term (one to three years) by implementing a recommendation. Continued monitoring is not a good recommendation. Specialized monitoring might be a better recommendation.
- 3) Remember that O&M and LTM plans can be considered part of the remedy. For example, if signs are missing and fences are in disrepair during a site inspection, there may not be an issue unless the O&M or LTM plan is not keeping the remedy protective or is not being followed. The O&M or LTM plan may need updating or enforcing.

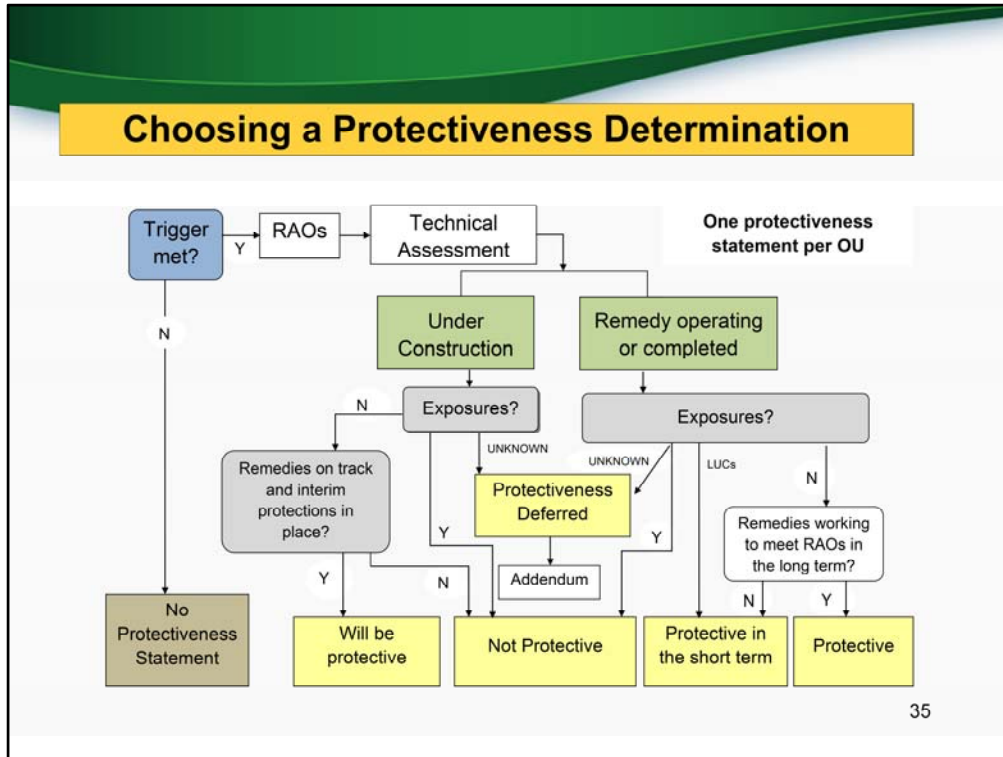


Exhibit 4-6 in the 2001 Comprehensive FYR Guidance and this protectiveness flowchart can help you choose the correct protectiveness statement based on your answers to questions A, B and C in the technical assessment. Be sure to answer the flowchart decision questions in the technical evaluation section of the report. Also refer to EPA's 2012 Clarifying Memorandum on the Use of Protectiveness Determination of Five-Year Reviews and this flowchart are helpful for you to choose the correct protectiveness statement.

Trigger Questions (blue box)

- Do you have a ROD?
- For a statutory review, has the first remedial action begun? For policy reviews (rarely done at federal facility sites), is construction completed?
- Is the OU suitable for UU/UE? Only issue a protectiveness statement the first time the OU reaches UU/UE, if the OU was not UU/UE at the time of the ROD.

Other Important Questions

- Is the remedy under construction or is the remedy operating or completed (green box)? This question generally applies to the engineering controls, not the ICs.
- Is there enough information to support a protectiveness statement and confirm there are no exposures, or must additional data be gathered?
 - Example: If vapor intrusion testing has not been performed above a TCE plume, and there are no exposures, the writer may choose short-term protectiveness. If there is not enough information to confirm whether or not there are any exposures, the writer may choose protectiveness deferred.
 - Example: If ICs are not yet fully implemented and there are no exposures, then the remedy could be short term protective.

What does the reviewer 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

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There are a few points that reviewers focus on when evaluating protectiveness statements.

The reviewer will look to see:

1. Is there one protectiveness statement per OU?
2. Did the writer select the appropriate protectiveness statement?
3. Does the technical assessment sufficiently support the protectiveness statement?
4. Is the protectiveness statement for each OU, and if applicable, the sitewide protectiveness statement, consistent with the issues and recommendations in the body of the FYR?
5. If the protectiveness statement considers site RAOs. For example, does it evaluate protectiveness in light of the stated remedial objective such as to contain, cover or remove contaminants of concern?
6. Does the protectiveness statement follow the format in the 2001 Comprehensive FYR Guidance and the 2012 Policy Memorandum on Clarifying the Use of Protectiveness Determinations for CERCLA FYRs?
7. Is a sitewide protectiveness statement included in the FYR if a site is Construction Complete?

Writing the Executive Summary

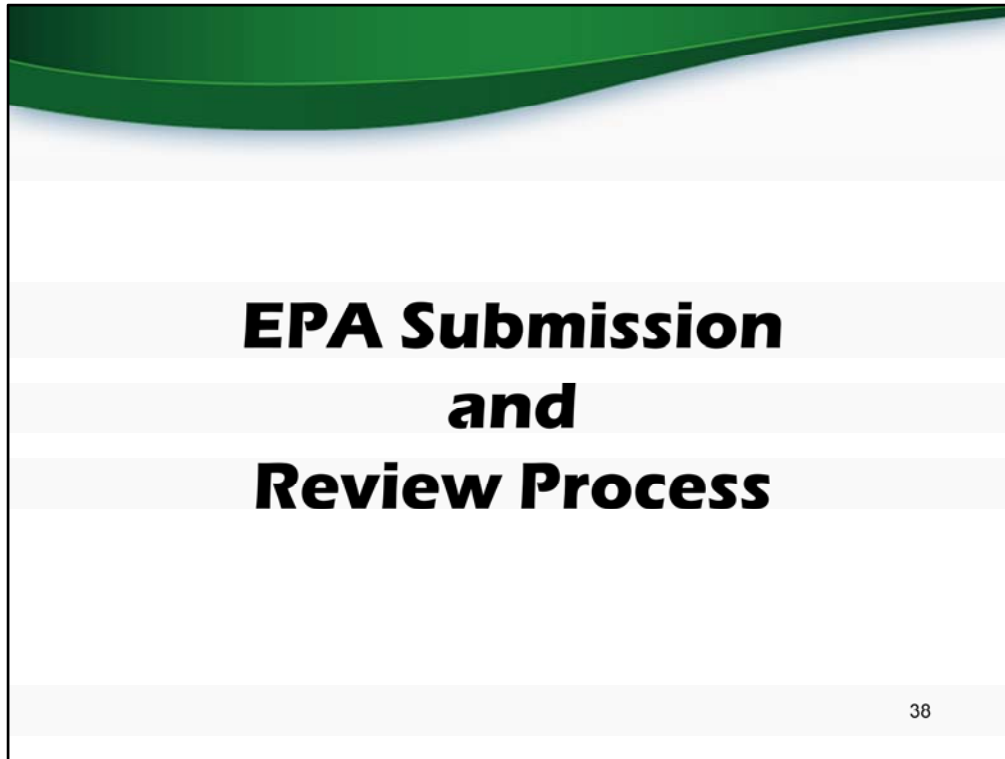
- Summarize FYR results and clearly list protectiveness statements
- Acknowledge any issues with a remedy that supports protectiveness statement(s)
- Write for a diverse audience
- Use plain language – avoid acronyms and complex terminology
- Use the FYR Executive Summary Form

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The purpose of the executive summary is to summarize the FYR's most important findings. Its main focus should be on the protectiveness determinations and any known remedy issues or uncertainties that may affect protectiveness.

FYR readers look to summary documents – such as the executive summary or a FYR fact sheet – for a quick synopsis of key facts from the full report. When writing the executive summary, avoid reiterating complex statements made in the main report. Instead, succinctly inform readers of FYR results and clearly list protectiveness statements. One way to make the information accessible to a broad audience is to use plain language and avoid using acronyms and complex technical terminology. FYR readers may include a broad audience.

Use the new FYR Executive Summary Template and the Community FYR Fact Sheet Template as a starting point to help you organize and summarize your full report into succinct, easy-to-understand documents for the public.



Now let's discuss what happens to the FYR Report after you have written it. In this section, we will walk through the steps that EPA reviewers take after the lead agency has submitted the report.

2011 EPA Program Priority Memo **Guidance for EPA RPMs**

- Concur or not on protectiveness determination(s) by due date
- Write a concurrence/non-concurrence letter to the other federal agency
- Track and update issues and recommendations affecting protectiveness
- Specify next FYR due date

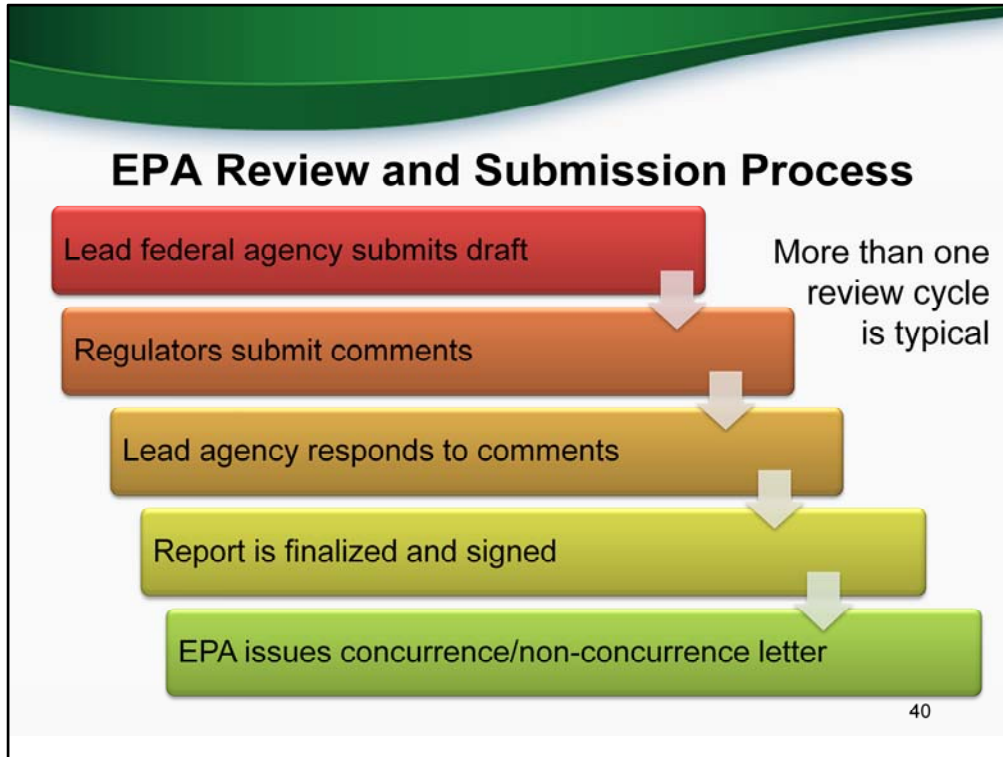
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EPA issued the Program Priorities Memorandum for Federal Facility FYRs in August 2011 to help EPA RPMs improve the timeliness of the FYR review process and follow-through on issues at federal facility sites. Being aware of this policy can help you understand EPA RPMs' process as they review and submit comments on FYR reports.

The policy provides guidance to EPA RPMs to:

- Concur or not on protectiveness determination(s) of facility OUs by the statutory due date. The RPM is encouraged to do this whether or not the report is signed and completed by the other federal agency.
- Write a concurrence or non-concurrence letter to the other federal agency following the completion of the FYR.
- Track and update the issues and recommendations affecting protectiveness.
- Identify the next FYR due date and generate due dates for all future FYRs based on the statutory review timeframe. This guarantees that FYRs are completed at least once every five years.

For more information: August 2011 Program Priorities Memorandum for Federal Facility FYRs



First, the lead federal agency submits a draft FYR Report to the regulatory agencies for comment. The amount of review time is usually based on the site's FFA. Generally, regulatory agencies will have 60 days to review and submit comments. Another 45 to 60 days is generally allowed for the final review, depending on the terms of document review under the FFA.

During this review time, the EPA RPM will solicit comments from technical, legal and Headquarters staff. These comments will be consolidated and sent to the lead federal agency. The lead agency will usually respond to and incorporate the comments.

The EPA RPM will review the final draft and submit any comments to the lead federal agency. Once all comments are addressed, the document will be finalized by the lead federal agency and circulated at the lead agency for signature. Depending on the signatory authority, EPA may need to sign the report and/or write a concurrence letter regarding the protectiveness determinations.

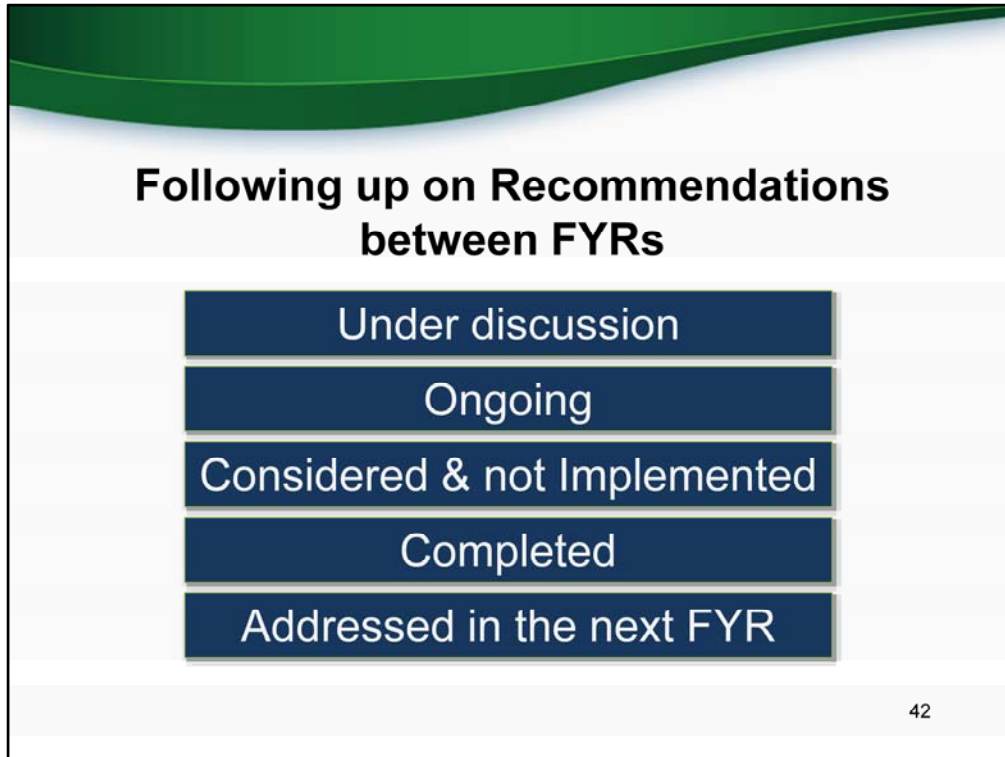
In the concurrence letter, EPA will concur or nonconcur on the protectiveness statement for each OU, identify the issues tracked in SEMS, and state the due date for the next review, based on the statutory requirement of a FYR due no less than once every five years. If the federal agency and EPA cannot agree on the protectiveness of the remedy, EPA may issue an independent assessment of the protectiveness of the remedy.

For complex sites with multiple OUs, obtaining signatures may take many months. A schedule agreement created and agreed to by reviewers (e.g., EPA, state, tribes) during the planning stage may ensure that draft reports are keyed into the final FYR Report deadline.



After the EPA Region signs the concurrence or non-concurrence letter, the EPA RPM has five days to submit the data to EPA's tracking system (SEMS). The RPM then sends an electronic copy of the FYR Report to Headquarters, where it will be posted on the EPA website.

EPA submits an Annual Report to Congress that includes the protectiveness statements for each site due that fiscal year. EPA also reports on whether the Agency made an independent assessment of the protectiveness of the remedy.



EPA monitors progress being made on recommendations between FYRs. EPA updates the Superfund database, SEMS, periodically and when milestones are met.

There are five possible status statements in SEMS for updating each recommendation between FYRs:

- Under discussion (actual work not yet begun)
- Ongoing (actual work in progress)
- Considered and not implemented
- Completed
- Addressed in the next FYR (this is an option only for the last update, during the following FYR)

Documentation should be included in the site file to support each update. For example, a copy of a local ordinance, a completion report or email correspondence can document that an issue has been resolved. The material should provide some evidence of the date of completion. This information will also be reported in the Progress Since the Last FYR section of the next FYR.

Issues and recommendations from the reports can also be discussed in the site's annual work plan and/or site management plan.

Conclusions

1. Focus
2. Identify OUs for evaluation early
3. Evaluate protectiveness OU by OU
4. Some OUs may not get a protectiveness statement
5. Distill the messages from other reports to focus on protectiveness
6. Use RAOs as a yardstick for technical evaluation
7. Use the flow chart for consistent protectiveness statements
8. Show how the remedy performs relative to the RAOs with maps and graphs
9. Use standard format for writing protectiveness statements
10. Add the issues to your next annual work plan

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The workgroup products augment the 2001 Comprehensive FYR Guidance and provide a basis for writing clearer and more concise FYR Reports.

- 1) Make sure all information in the report supports and relates directly to the protectiveness determination.
- 2) Identify OUs that will be evaluated in the early planning stages of the FYR and the RAOs and RAs associated with each.
- 3) Evaluate protectiveness OU by OU.
- 4) Issue a protectiveness statement for each OU that meets trigger criteria.
- 5) Distill messages from LTM, O&M, optimization and other reports that relate to protectiveness. Do not paste lengthy text sections verbatim into the report.
- 6) Use RAOs as the yardstick for technical evaluation.
- 7) Use the flow chart for decision logic to consistently choose the appropriate type of protectiveness statement.
- 8) Support the protectiveness statements with maps, graphs and other information that show how the remedy performance relates to the RAOs.
- 9) Follow the format in the 2001 Comprehensive FYR Guidance (and 2012 OSWER Memorandum) for writing protectiveness statements.
- 10) Add issues and recommendations to your next annual work plan.

For More Information

Websites

- [FFRRO FYRs](#)
- [Superfund FYRs](#)
- [IRIS](#)
- [Assessing Protectiveness at Sites for Vapor Intrusion \(2012\)](#)
- [Recommended Evaluation of ICs \(2011\)](#)
- [Addressing Asbestos at Superfund Sites \(2009\)](#)

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FFRRO FYRs

- <https://www.epa.gov/fedfac/five-year-review-federal-facility-cleanups>

Superfund FYRs

- <https://www.epa.gov/superfund/superfund-five-year-reviews>

IRIS

- <https://www.epa.gov/iris>

Assessing Protectiveness at Sites for Vapor Intrusion (2012)

- <http://semspub.epa.gov/src/document/HQ/176385>

Recommended Evaluation of ICs (2011)

- <http://semspub.epa.gov/src/document/HQ/175441>

Addressing Asbestos at Superfund Sites (2009)

- <http://semspub.epa.gov/src/document/HQ/174475>

Thank You!

The Five-Year Review Workgroup developed this training as part of an interagency collaboration between the U.S. Environmental Protection Agency, the U.S. Department of Defense, the U.S. Department of Energy and the U.S. Department of the Interior



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We hope this presentation will help you as you conduct the review and write the next FYR Report for your site.

The Federal Five-Year Review Workgroup developed this training module as part of an interagency collaboration between the U.S. Environmental Protection Agency, the U.S. Department of Defense, the U.S. Department of Energy and the U.S. Department of the Interior.

Thank you!

List of Acronyms

ACE	Army Corps of Engineers	IRIS	Integrated Risk Information System
AR	Administrative Record	LTM	Long-Term Monitoring
ARAR	Applicable or Relevant and Appropriate Requirements	LUC	Land Use Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	MCL	Maximum Contaminant Level
CFR	Code of Federal Regulations	MNA	Monitored Natural Attenuation
CIP	Community Involvement Plan	NPL	National Priorities Listing
COC	Contaminant of Concern	NCP	National Contingency Plan
DD	Decision Document	O&M	Operations and Maintenance
DOE	Department of Energy	OU	Operable Unit
EPA	Environmental Protection Agency	OSWER	Office of Solid Waste and Emergency Response
ESD	Explanation of Significant Differences	OLEM	Office of Land and Emergency Response
FFA	Federal Facility Agreement	RA	Remedial Action
FFRRO	Federal Facilities Restoration and Reuse Office	RAO	Remedial Action Objective
FYR	Five-Year Review	RCRA	Resource Conservation and Recovery Act
GW	Groundwater	ROD	Record of Decision
HI	Hazard Index	RPM	Remedial Project Manager
IC	Institutional Control	SEMS	Superfund Enterprise Management System
		TCE	Trichloroethylene
		UU/UE	Unlimited Use/Unrestricted Exposure