



FINAL

TOOLKIT FOR PREPARING FIVE-YEAR REVIEWS

DECEMBER 2013

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INTRODUCTION

Toolkit Tip ■ ■ ■

This toolkit consists of thirteen exhibits and each contains a “Toolkit Tip” to improve the quality and transparency of data presentation in a Five-Year Review.

This Toolkit provides Remedial Project Managers (RPMs) with a resource to help improve the transparency and clarity of Five-Year Reviews (FYRs) developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Toolkit presents the use of visual communication methods that can enhance the FYRs overall presentation and emphasize the data, analysis, and rationale used to ensure protection of human health and the environment.

The examples in this document (**Exhibits 1-13**) neither replace existing Navy policy and Environmental Protection Agency (EPA) guidance nor substitute statutory and regulatory requirements for a FYR. It is important during development of a FYR to include the level of detail recommended by EPA's *Comprehensive Five-Year Review Guidance* (OSWER 9355.7-03B-P) (June 2001) and consider the use of streamlining and visualization tools for better data presentation.

The FYR should be a stand-alone document that communicates the remedy's protectiveness in an appropriate level of detail. Sometimes, in attempts to be all inclusive and thorough, a FYR includes an excessive amount of detailed information from previous documents. Copying and pasting historical and extraneous information can make the FYR's key messages unclear. RPMs should summarize the key facts from the Administrative Record and relevant documents from the Site File (e.g., long-term monitoring reports, operation and management reports), then apply the recommendations described herein to enhance the FYRs presentation and provide a more concise and defensible protectiveness statement.

Each exhibit provides recommended tips that suggest how and where to consider including improved visualization tools in a FYR. The exhibits show how to better convey information graphically in embedded summary tables, figures, and conceptual site models. Some of these recommended tools may have previously been created during the development of site-specific documents [e.g., Records of Decision (ROD), Decision Documents, long-term monitoring reports]. Information or graphics from previous documents should be utilized when possible to limit duplicative efforts and provide cost avoidance. Most of the exhibits contain examples from Installation Restoration Program sites; however, many of them also apply to Military Munitions Response Program sites (e.g., land use controls).

This Toolkit is the companion to the ROD Toolkit and the Navy's Management and Monitoring Approach. The streamlining tools presented in these Toolkits and the Management and Monitoring Approach may be adapted to other CERCLA documents. An interactive version of this Toolkit, example FYRs, and other references and guidance are available on the Naval Facilities Engineering Command (NAVFAC) website: www.NAVFAC.navy.mil.

This Toolkit is designed to be viewed electronically. This format allows the reader to zoom into the detail presented in the color graphics. Please note that some reformatting may be required for printing.

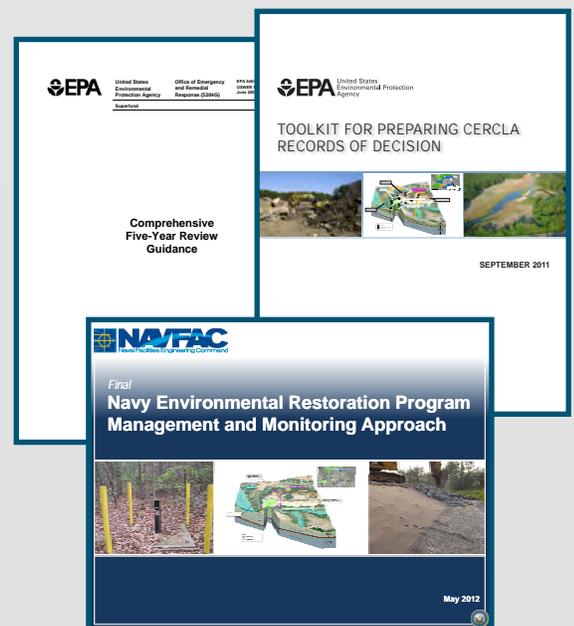


EXHIBIT LIST

Toolkit Tip ■ ■ ■

In an attempt to align with Environmental Protection Agency (EPA), the exhibits have been set up in the same order as EPA's *Comprehensive Five-Year Review Guidance*.

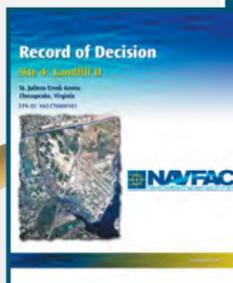
EXHIBIT 1	Pathway of the Five-Year Review
EXHIBIT 2	Five-Year Review Timeline
EXHIBIT 3	Site Chronology
EXHIBIT 4	Background
EXHIBIT 5	Remedial Actions
EXHIBIT 6	Progress Since Last Five-Year Review
EXHIBIT 7	Five-Year Review Process
EXHIBIT 8	Technical Assessment
EXHIBIT 9	Issues, Recommendations, and Follow-Up Actions
EXHIBIT 10	Protectiveness Statements
EXHIBIT 11	Community Involvement
EXHIBIT 12	Tracking Milestones
EXHIBIT 13	Executive Summary

EXHIBIT 1. PATHWAY OF THE FIVE-YEAR REVIEW

Toolkit Tip

This exhibit visually displays the key data and observations that support the evaluation and determination of protectiveness for the Five-Year Review (FYR). Following the hiking trail demonstrates how to evaluate whether the remedy components mitigate risk to achieve the remedial action objectives. The stops along the trail should assist the FYR author with evaluation of remedy performance, identifying any issues, developing clear recommendations, and determining if the remedy is or will be protective of human health and the environment in the long-term.

Required community involvement activities include notification that the FYR will be conducted, notification when the FYR is completed, and providing the results in the Information Repository.



Record of Decision/ Decision Document Signature:

Once the remedy is selected for a site or OU and hazardous substances, pollutants, contaminants, and/or munitions and explosives of concern remain at the site above levels that allow for unlimited use and unrestricted exposure, a FYR is required to determine if the remedy is or will be protective of human health and the environment.



Community Notification:

Notify all potentially interested parties that the FYR will be conducted.



Technical Assessment:

To determine whether the selected remedy is or will be protective of human health and the environment, consider and respond to the three technical assessment questions. Evaluate site-specific information regarding data collected and the remedy components that were previously developed in the ROD or DD to assess remedy performance. A summary table can be used or developed to evaluate how risk is being mitigated and the progress towards achieving the pre-established RAOs and cleanup levels.

Risk	Media	COC Requiring Action	Basis for Action	RAO	Remedy Component	Exit Strategy	Performance Metric/Cleanup Level	Expected Outcome
Human Health and Ecological	Waste and Soil	Inorganics and 1,4-trichlorobenzene	Non-cancer hazard index of 1.4 HI>1	Prevent or minimize direct contact of human and ecological receptors with landfill contents.	Soil Cover and LUCs	Maintain current land use	Inspect and maintain soil cover and LUCs	Maintain current land use (landfill)
Human Health	Groundwater	1,4-trichlorobenzene	Cancer risk >10 ⁻⁴	Prevent contact with and restore groundwater beyond the landfill boundaries to MCLs	LTM and LUCs	Conduct groundwater LTM and maintain LUCs until 1,4-trichlorobenzene is below MCL for four consecutive rounds	70 µg/L	Return aquifer to beneficial use (unlimited use/unrestricted exposure)

3.5 Technical Assessment

The technical assessment of a remedy is based on the following three questions, which provide a framework for organizing and evaluating data and information and ensure that all relevant issues are considered when determining the protectiveness of the remedy.

Question A: Is the remedy functioning as intended by the decision document?

Based on the review of documents, applicable or relevant and appropriate requirements, risk assessments, inspections, and voluntary groundwater performance monitoring results, the site remedy is functioning as intended by the ROD and DD. Assessment: Installation of the soil cover over the landfill waste and contaminated soil achieved the remedial objectives. Inspections conducted at the site have confirmed that the soil cover is intact, preventing or minimizing direct contact of human health and ecological receptors with landfill contents. The landfill survey confirmed that the minimum 2 percent slope, which was designed to reduce infiltration and resulting leachate of contaminants from the landfill into groundwater, was achieved. Additionally, the inspections, which did not identify any signs of erosion or sediment buildup within the spill, drainage ditches, and the as-built survey, have confirmed that overland flow entering the site is being prevented and surface water runoff and erosion are being controlled.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

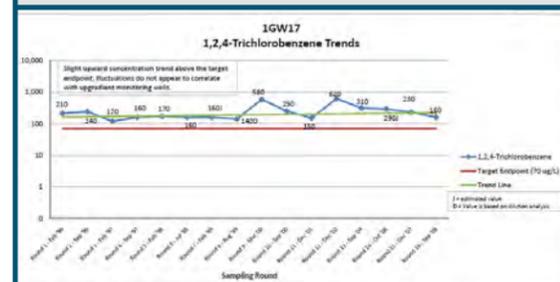
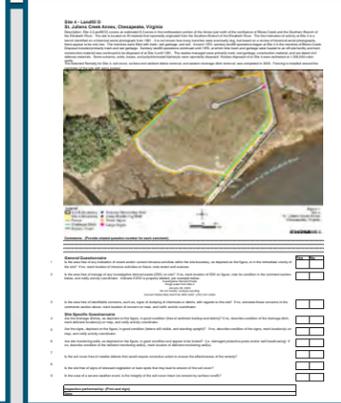
Changes in Exposure Pathway: No changes in the site conditions that would affect exposure pathways have been identified. No new contaminants, sources, or routes of exposure have been identified. There is no indication that hydrologic or hydrogeologic conditions have changed in a way that affect the protectiveness of the remedy.

Changes in Toxicity and Other Contaminant Characteristics: Although there have been some changes in toxicity values, regulatory levels, and risk characteristics of some constituents detected in Site 4, these changes would not affect the protectiveness of the selected remedy as it would not substantially change the results of the risk assessment.

Changes in Risk Assessment Methodologies: Although there have been some procedural changes to how risk assessments are conducted, none of these changes affect the protectiveness of the remedy. The elimination of risk from exposure to waste and COCs as soil occurred through the direct elimination of exposure pathways. Elimination of risk to ensure in sediment occurred through removal of the contaminated sediment by bagged berms. Therefore, risk assessment methodology changes would not change the cleanup level for mercury. No additional COCs have been identified and there is no clear increasing level of constituents analyzed as part of the voluntary groundwater performance monitoring.

Question C: Has any other information come to light that could question the protectiveness of the remedy?

No new risks were identified during the Five-Year Review. No weather-related events have affected the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.



Issues, Recommendations, Follow-Up Actions:

After responding to the technical assessment questions, identify any issues that effect the current or future protectiveness of the remedy and any follow-up actions needed.

Protectiveness Statement:

Develop a protectiveness statement for each site or OU using the EPA's FYR Guidance (June 2001) Exhibits 4-6 and 4-7.

4.5.1 How do I formulate protectiveness statements?

You should develop a protectiveness statement for each OU at which a remedial action has been initiated. For sites that have reached construction completion and have more than one OU, you should develop an additional comprehensive site-wide protectiveness statement covering all of the remedies at the site. You should not include this additional protectiveness statement until construction completion because, until then, all remedies at the site may not necessarily have been selected and constructed.

In order to promote consistency, you are strongly encouraged to model your protectiveness statements on the sample protectiveness statements provided in Exhibits 4-6 to 4-7. Your Five-Year Review report should present the protectiveness statements at the beginning of a discussion that should explain and provide the supporting rationale of the protectiveness determination.

Exhibit 4-6: Protectiveness Statements

If the remedial action at the OU is: then use this statement ...

under construction and...	protective or will be protective
protective	"The remedy at OU X is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled."
not protective	"The remedy at OU X is not protective because of the following issue(s) (describe each issue). The following actions need to be taken (describe the actions needed) to ensure protectiveness."
protectiveness deferred	"A protectiveness determination of the remedy at OU X cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions (describe the actions). It is expected that these actions will take approximately (insert time frame) to complete, at which time a protectiveness determination will be made."

Five-Year Review Signature



Community Notification:

Notify all potentially interested parties that the FYR has been completed and where it is available.

PUBLIC NOTICE

Completion of Five-Year Review of Remedial Actions at Marine Corps Base Camp Lejeune, North Carolina

The Navy, Marine Corps, US Environmental Protection Agency (EPA) Region 4, and North Carolina Department of Environment and Natural Resources (NCEM) completed a five-year review of ongoing remedial actions (environmental cleanup) at 16 Operable Units on Marine Corps Base Camp Lejeune. This is the Base's third five-year review.

The purpose of the five-year review is to ensure that remedial actions are providing adequate protection of human health and the environment. The findings of the five-year review were finalized in 2010. All ongoing remedial actions were determined to be protective of human health and the environment.

The Five-Year Review Report and a Fact Sheet are available for public review in the Navy's Administrative Record at the following website and location: <http://www.les.com/25>.

Onslow Public Library
58 Dors Avenue East
Jacksonville, NC 28540
(910) 455-7350

Members of the public who have questions regarding the five-year review are encouraged to contact the Navy Remedial Project Manager.

Jane Smith
jane.smith@internet.com
(919) 999-9999

The next five-year review for ongoing remedial actions at Marine Corps Base Camp Lejeune is scheduled for 2015.

3.6 Issues and Associated Recommendations, and Follow-up Actions

Based on this Five-Year Review, the following issues have been identified:

Issue	Recommendations and Follow-up Actions	Party Responsible	Milestone Date	Affects Protectiveness	
				Current	Future
State regulatory standards have been updated since the ROD	Update COCs and cleanup levels for LTM	Navy	Nov. 2012	No	Yes
LTM program was optimized and identified extraneous well locations	Evaluate LTM monitoring well networks and recommend wells for abandonment	Navy	Nov. 2014	No	No

3.7 Protectiveness Statement

The remedy at Site 4 is protective of human health and the environment. All threats at the site have been addressed through installation of a soil cover over the contaminated soil and waste and LTM is ongoing to monitor 1,4-trichlorobenzene in groundwater and potential migration. LUCs are in-place to prevent exposure to soil and waste within the landfill and prohibit groundwater intrusive activities and aquifer use until the MCLs is achieved.

3.8 Next Review

In accordance with Navy policy, the next Five-Year Review should be signed no later than five-years after the signature date of this report.

Exhibit 4-6: Protectiveness Statements

If the remedial action at the OU is: then use this statement ...

operating or completed and...	protective
protective	"The remedy at OU X is expected to be protective upon completion or is protective of human health and the environment, and in the interim, exposure pathways that could result in unacceptable risks are being controlled."
protective in the short-term	"The remedy at OU X currently protects human health and the environment because (describe the elements of the remedy that protect human health and the environment in the short term). However, in order for the remedy to be protective in the long-term, the following actions need to be taken (describe the actions needed) to ensure long-term protectiveness."
not protective	"The remedy at OU X is not protective because of the following issue(s) (describe each issue). The following actions need to be taken (describe the actions needed) to ensure protectiveness."
protectiveness deferred	"A protectiveness determination of the remedy at OU X cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions (describe the actions). It is expected that these actions will take approximately (insert time frame) to complete, at which time a protectiveness determination will be made."

Exhibit 4-7: Comprehensive Protectiveness Statements for Sites That Have Reached Construction Completion

If the remedy(ies) is/are: then use this statement:

protective	"Because the remedial actions at all OUs are protective, the site is protective of human health and the environment."
not protective	"The remedial actions at OUs X and Y are protective. However, because the remedial action at OU Z is not protective, the site is not protective of human health and the environment at this time. The remedial action at OU Z is not protective because of the following issue(s) (describe each issue). The following actions need to be taken (describe the actions needed) to ensure protectiveness."



Tracking Milestones:

After finalization of the FYR, track the progress and completion of recommendations and follow-up actions. A simple table can be used to ensure issues and recommendations are tracked, monitored, and implemented so that the milestones are achieved.

Issues	Recommendations and Follow-up Actions	Milestone Date	Current Status
State regulatory standards have been updated since the ROD	Update COCs and cleanup levels for LTM	Nov. 2012	Completed as part of FY2012 LTM
LTM program was optimized and identified extraneous well locations	Evaluate LTM monitoring well networks and recommend wells for abandonment	Nov. 2014	Will be completed as part of FY2013 UFP-SAP

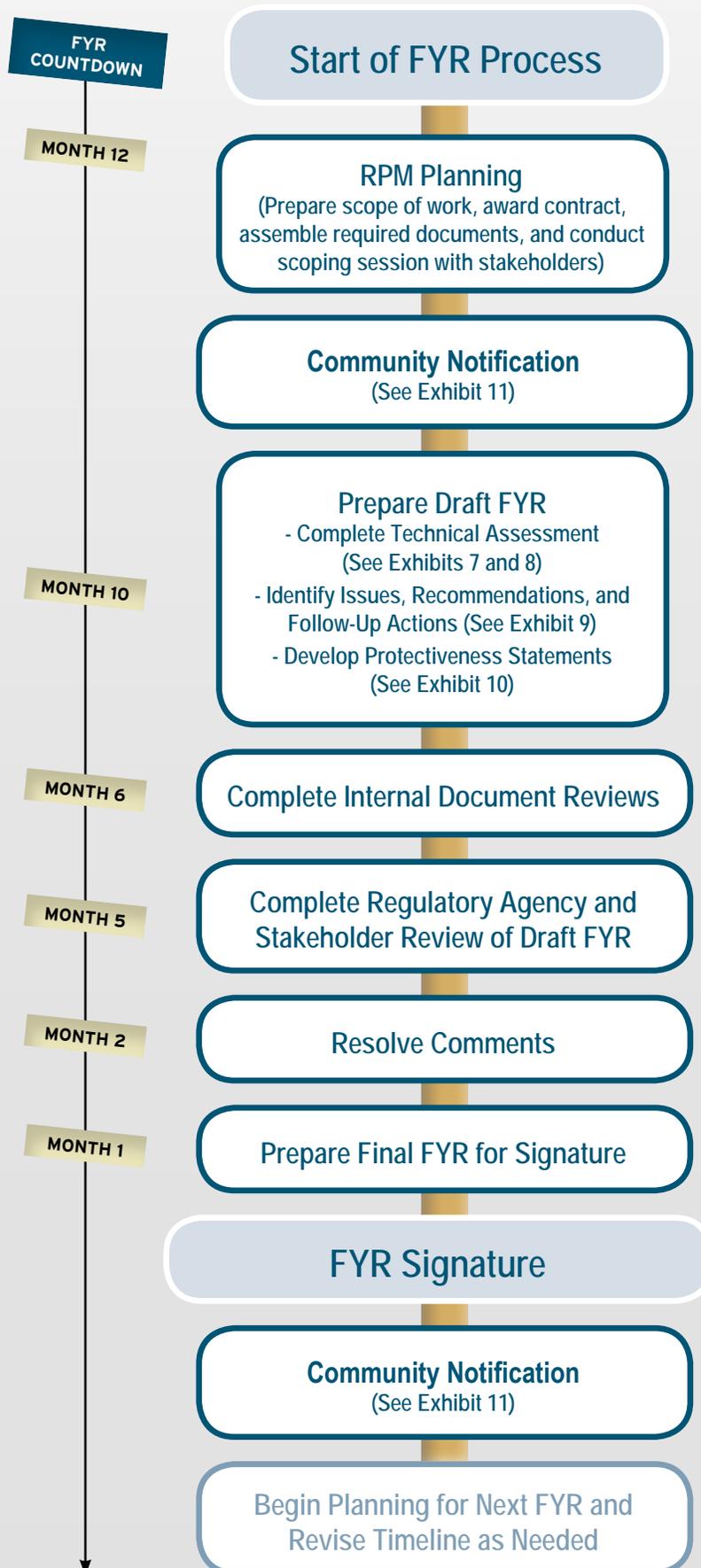
EXHIBIT 2. FIVE-YEAR REVIEW TIMELINE

Toolkit Tip ■ ■ ■

Constructing a timeline for your Five-Year Review (FYR) can aid Remedial Project Managers (RPMs) in completing and obtaining signatures within the required timeframe. Coordination with stakeholders is recommended to identify any additional activities and determine the signature process. By clearly developing the signature process early, missing the FYR deadline can be avoided. FYR signature is required within five years of the initial triggering action. Subsequent FYR signatures are required within five years of previous FYR signature dates.

To ensure the FYR schedule can be met, the FYR process should commence within a minimum of twelve months before the signature due date, as shown in this exhibit. When nearing the completion of the current FYR, begin planning for the next FYR and revise your timeline as needed based on how long the current FYR took and incorporate time for evaluation of any new sites added.

The Navy, as the lead agent is responsible for enforcing the FYR dates. NORM has a module that allows RPMs to track these dates.



NOTE For complex installations or installations with uncertainties, commencing the FYR process earlier (e.g., 14-16 months) is recommended.