

8.0 REPORTING FRAMEWORK & TIMELINES

The Technical Assessment Reporting Framework (reporting framework) outlines reports and report sequencing designed to ensure that the synthesis, analysis, and assessment of monitoring data are conducted in a scientifically sound manner and provide a means to assess system responses to CERP projects.

8.1 Purpose and Strategy

In contrast with monitoring programs that often focus on data acquisition alone, with minimum attention to the analysis, synthesis and interpretation the reporting framework (Figure 8-1), MAP places considerable emphasis on the annual analysis, synthesis, and interpretation of the monitoring and research data in a comprehensive, systematic, and logical manner. The monitoring database is appended each year to include the previous year of data, thereby providing a cumulative database for timely synthesis of all the available data. This framework assures the early identification of potentially unexpected results as well as for assessments of the magnitude and direction of changes in ecosystem responses.

The reporting framework provides the process for assessing CERP restoration goals including Interim Goal indicators, and meeting RECOVER reporting obligations to the NRC, Congress, and the public. The annual PI, Module Groups, and AT and the five-year RECOVER Technical Report are the reporting components of the framework that provide feedback to the monitoring and research component (Figure 8-1).

The MAP reporting framework is built on two principles: (1) the importance of annual assessments of all relevant monitoring and experimental data and (2) reliance on the PI and Module Group as the technical foundation for the MAP. The reporting framework described here focuses on the minimum requirements for assessing changes in the status and trends of ecosystem components potentially affected by CERP projects.

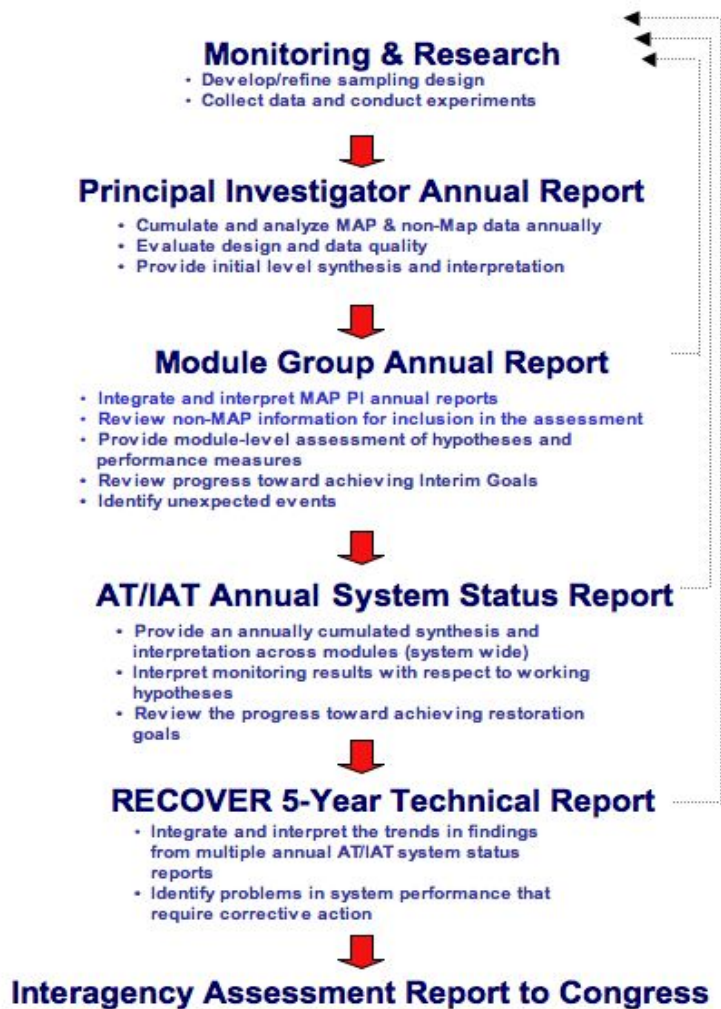


Figure 8-1: MAP Technical Assessment Reporting Framework

8.2 MAP Technical Assessment Reporting Framework

The reporting framework developed for this technical assessment guidance identifies three reporting cycles: annual, bi-annual, and five-year cycles. While this is an ambitious schedule, the AT recognizes the need for cumulative compilation and analysis of data on an annual schedule to allow the detection of any unexpected deviations from the CERP goals.

The annual reports provide the technical foundation for assessing status and trends in goals and PMs and, most importantly, for evaluating the status of restoration hypotheses at local, module, and system level spatial scales. Importantly, the framework recognizes that water quality and hydrologic assessments may be reported on different, often shorter,

time scales and addresses these differences. Following completion of several reporting cycles, the reporting framework timeline will be evaluated based on its ability to: (1) assess the efficacy of the sampling designs; (2) capture trends in system responses; (3) detect unexpected responses; (4) assess progress toward achieving Interim Goals; and (5) determine whether problems in the system require corrective actions.

8.2.1 Annual Reporting Cycle

The Technical Assessment Reporting Framework includes three types of annual reports: the MAP PI Annual Report; the MAP Module Group Annual Report; and the Annual AT System Status Report. The PI Annual Report is the first level of the MAP and non-MAP data analysis and interpretation that will be required annually. The MAP PI Annual Report will cumulate data on an annual basis to provide a cumulative assessment of the hypotheses and performance measures at the MAP component and module level. Data used in these reports must comply with QASR, including applicable data validation and standardization.

The Annual Module Report, prepared by the Module Groups, will be a compilation of the annual PI reports with the addition of an integration and interpretation chapter that will qualitatively assess the success of the module relative to associated hypotheses, PMs, and interim goals. As data are accumulated over several years, the application of more sophisticated analysis of the data (e.g. trends, etc.) is anticipated. The objectives of this report are to integrate and interpret the information in the PI reports, review non-MAP data for its inclusion in the assessment and provide a module-level status of the hypotheses, interim goals and PMs based on a multi-year analysis of trends. Finally, the integration of all module data will afford the opportunity to identify unexpected or episodic events.

The Annual AT System Status Report provides a synthesis of current and previously collected hydrological, water quality, and ecological data across modules. It is a compilation of the Module Group Annual Reports with a synthesis and interpretative chapter that provides a quantitative assessment of the system-level hypotheses and PMs, and the progress made toward achieving system-wide Interim Goals. Each year the AT Annual System Status Report will be updated with another year of information from the Module Group Annual Reports, resulting in an annually updated assessment and report. This report also identifies those changes from the previous year(s) that are inconsistent with the goals and hypotheses and system performance for which corrective action may be required. The Annual AT System Status Report, therefore, provides the technical foundation for the RECOVER Technical Report that will be prepared at least every five years.

8.2.2 Bi-Annual Reporting Cycle

The Annual AT System Status Reports are the foundation for a variety of RECOVER reporting milestones, including the NRC report, the CERP Report Card, the Interim Goal Report, the RECOVER Technical Report, and linkages to AM (Figure 2). These

RECOVER obligations require multiple reporting cycles on different time frames. For example, the NRC Report and CERP Report Card are on a bi-annual cycle and therefore require reporting every two years. However, this does not mean conducting additional analyses or creating a new report. Rather, the most recent Annual AT System Status Report, which will include the most current analysis and integration of cumulated multiple years of data, will be used to satisfy these reporting requirements. However, this report may be subject to RECOVER Leadership Group (RLG) review before it is submitted by the Corps and SFWMD to the NRC or it is to be used to prepare a CERP Report Card (Figure 8-2)

8.2.3 Five Year RECOVER Technical Report

The RECOVER Technical Report is a synthesis of the technical findings derived from the Annual AT System Status Reports accumulated (e.g., rolled up), and reported at least every five years. This Technical Report provides an assessment of progress toward achieving restoration goals and an interpretation of monitoring results with respect to the system-wide restoration hypotheses. It is important to note that the AT contribution to the RECOVER Technical Report is simply the most recent Annual AT System Status Report that includes an analysis and interpretation of multiple years of cumulated data.

The report will also include an assessment of whether the Interim Goals are being achieved or likely to be achieved and will evaluate whether corrective actions should be considered based on scientific findings of system-wide or regional ecological needs. This report will also provide the technical and interpretive summaries that are the links to AM. Pursuant to the Pro Regs [Section 385.31(b) (4)] this report will be prepared at least every five years. However, preparation of RECOVER Technical Reports within the five-year window may be triggered more frequently depending on cumulative findings documented in the Annual Module Group and AT System Status Annual Reports (Figure 8-2).

8.3 Minimum Technical Assessment Process Reporting

The following is a discussion of the minimum reporting guidance for PIs, Module Groups, and the AT that parallels the assessment process (Figure 2-1). This minimum reporting guidance applies specifically to the natural system and can be modified, as necessary, to address water supply and flood protection.

A. Evaluate Ability to Detect Change - Principal Investigator Level

- Describe and discuss the results of the power analysis for the sampling design.
- Determine the minimum detectable difference of the power analysis and its associated confidence and uncertainty.
- Describe any recommended changes in the MAP sampling design and its implications for the power analysis and the minimum detectable difference.

B. Establish Reference Condition – Principal Investigator Level

- Describe non-MAP monitoring and research data sources used in the assessment.
- Determine if non-MAP data used in the assessment meet the criteria outlined in this guidance? If non-MAP data were used and did not meet the guidance criteria, provide a rationale to justify the inclusion of the data.
- Describe how representative the data are in space and time.
- Describe the approaches used to address measuring variability.
- Enter the data into a system-wide data management system.

C. Measure Change from Reference Condition – Principal Investigator Level

- Describe the methods used to estimate the direction and magnitude of change in performance measures from the reference state both annually and cumulatively for multiple years.
- Compare current status of the performance measure with its desired trend or target.
- Evaluate consistency of monitoring results with the MAP hypotheses.
- Determine if there are indications of unanticipated events; describe the probable causes and how they may be affecting the desired outcome.
- External peer review will consist primarily of drafted journal articles that relate to completed studies and other research associated with CERP activities.

D. Integrate Performance Measures to Evaluate Module Hypotheses - Module Group Level

- Integrate multiple performance measures to provide an assessment of module-level hypotheses.
- Describe the direction and magnitude of change in the integrated performance measures and determine if the changes are consistent with expected responses described in the CERP hypotheses.
- Provide a plausible rationale or explanation for the findings, if trends do not correspond to expected responses,
- Evaluate progress toward achieving module-level Interim Goals.

E. System-Wide Performance Evaluation – AT/IAT Level

- Synthesize findings across modules and across years to provide a holistic description of the status of the system.
- Evaluate the results in relationship to supporting system-level hypotheses and achieving system-wide Interim Goals.
- Summarize those changes that are consistent with goals and hypotheses and those that are not.
- Discuss reasons the goals and hypotheses are not being achieved.
- Discuss issues relevant to adaptive management.

- Because this system status report will be incorporated into a five-year peer-reviewed RECOVER Technical Report, data and analysis contained in the annual report will be subject to peer review that is consistent with CERP guidance (e.g., CERP Guidance Memorandum 27.00; RECOVER 2003).

8.4 Technical Assessment Guidance Reporting Timelines

The reporting timeline provides guidance for the production of annual reports by MAP PIs, Module Groups, and the AT (Figure 8-2). This guidance does not identify fixed reporting dates because of variations in starting times for different MAP PI contracts. However, over time, we anticipate that reporting timelines at the MAP PI Reports will become more synchronized. At such time, the reporting timelines should follow the sequence specified for each block (Figure 8-2). The following discusses how this reporting timeline will function.

At the MAP PI level, data will be collected and processed on an annual basis. After each 12-month data collection/processing period, the PIs will prepare an analysis and interpretation of each year's new data plus previous year's data (MAP PI Annual Report). This analysis should be complete within nine months from the end of the 12-month data collection period. This analysis phase will include incorporation of physical (e.g., hydrology, geomorphology, etc.) and chemical (e.g., water quality, contaminants, etc.) data where appropriate. Encompassed within the nine-month analysis period is a 6-month time lag in availability of physical and chemical data because of QA/QC and data management requirements. As of April 2004, the time lags in accessing some data sets do not allow us to meet the reporting milestones established in this guidance. In these cases, time lags must be shortened to no more than 6 months in order to meet reporting milestones. Additionally, multi-agency physical and chemical data have inherent issues such as consistent reporting mechanisms, data formatting and data availability. These issues create constraints on incorporation of physical and chemical data for the MAP analysis that must be resolved to complete the assessments required for the 2010 RECOVER Technical Report.

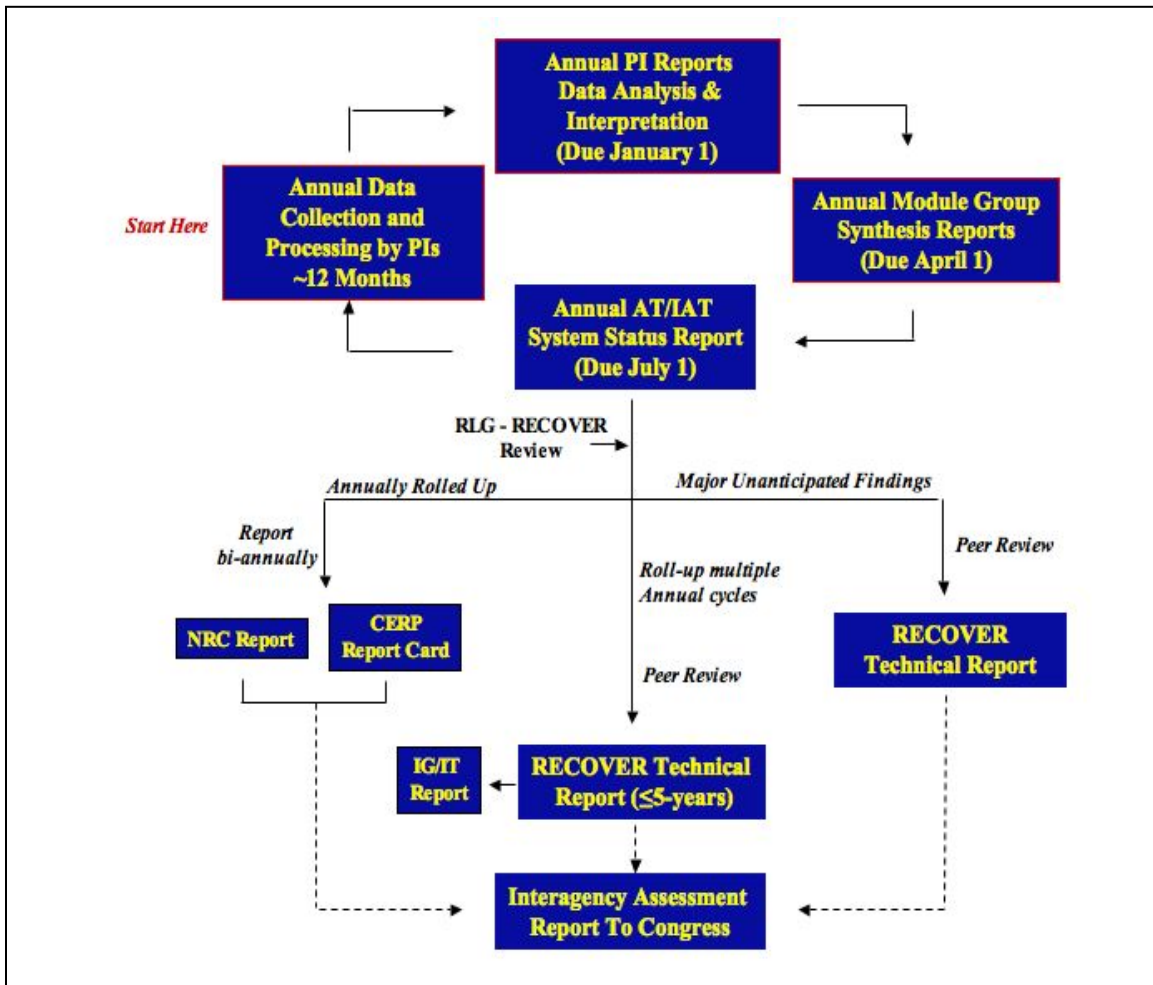


Figure 8-2: Assessment Reporting Timeline

The individual MAP PI Annual Reports, which will eventually include several years of accumulated data that are analyzed annually, are then synthesized at the Module Group level to address the module hypotheses, relevant PMs, and interim goals. A three month preparation period following the receipt of the PI Annual Reports is anticipated for the Module Group Annual Reports, which will include a compilation of the individual PI Annual Reports and presents the synthesis, assessment, and interpretation of the status of the relevant module hypotheses and Interim Goals. The annual analysis of hydrology and water quality status and trends is anticipated to be cumulative, integrating historical (pre-MAP) databases and the annually acquired MAP databases, and providing the interpretative context for assessing the status of Module level hypotheses.

Each year the Module Group Annual Reports will be summarized and combined with previous years' reports (e.g., rolled up) to create an Annual AT System Status Report that will address the overall status of the system relative to system level hypotheses, PMs and restoration goals. This report will be prepared by the AT within three months of receipt of the Module Group Annual Reports.

It is evident from Figure 8-2 that the Annual AT System Status Report provides the technical interface between the scientific foundation of the restoration (e.g., PI and Module Group Reports), the reporting requirements of RECOVER. Though not included in Figure 8-2, the RECOVER Technical Report provides an important interface with the Adaptive Management process.

The Annual AT System Status Reports have three functions. First, at least every two years, the Annual AT System Status Report will be used to provide information to the NRC and for the CERP Report Card. There are no new analyses involved in this activity; rather it is a simple “packaging” of the existing report with an appropriate interpretive cover letter to the NRC. However, it is anticipated that this report will be required to follow RLG guidelines and procedures including RLG approval which is anticipated to take ~ 1 month and would make the report available to the NRC by August 1st (Figure 8-2). This schedule would be helpful to the public as well as the CERP Independent Science Review Panel.

Second, at least every five years, the current cumulative AT Annual System Status Report, which represents multiple years of data “rolled up” into one report, will be peer-reviewed before being used as one of the major components of the RECOVER Technical Report which is mandated by the Pro Regs to provide an assessment of the Interim Goals. In addition, this Report will provide the following: 1) a synthesis of findings across modules and across years to provide a holistic description of the status of the system; 2) an evaluation of the results in relationship to supporting system-level hypotheses and achieving system-wide Interim Goals; 3) a summary of those changes that are consistent with goals and hypotheses and those that are not; 4) a discussion of why the goals and hypotheses are not being achieved; and 5) identify those issues relevant to AM.

The third function of the Annual AT System Status Report is the identification and reporting of major unanticipated findings that have been identified and “flagged” by the Module Group Annual Reports and may require correction. The Module Groups would identify these “red flags” as they synthesize the PI reports and prepare the Module Group Annual Reports. If an unexpected and undesirable response, with respect to the goals of CERP or the hypotheses, is detected at the module or system scale, a technical report can be generated immediately.

The Annual AT System Status Report must address two factors; a clear description of the problem and an analysis and interpretation that indicates the potential causes of the problem. This information would be essential information provided to the AM Team responsible for formulating options to address unforeseen problems that arise during implementation. Reporting of this information will require the PIs and Module Leaders to re-evaluate the CEMs, the stressor – effects pathways, associated PMs in order to provide a plausible explanation for the observed results. In this case, the Annual AT System Status Report goes to both the RLG and RECOVER for review prior to becoming a RECOVER Technical Report.

This category of RECOVER Technical Report would trigger an AM response that explores alternative analysis to reformulate CERP to address the “red flags”/unexpected responses. This alternative analysis/option selection is not the responsibility of the AT but rather that of the AM teams who will develop and rank technical options for addressing the performance problem (Figure 7-2; Box 3). The resulting AM Assessment Report, which identifies a range of solutions for a performance problem, links to policy where decision makers would then choose the preferable option.

It is important to emphasize that the schedules proposed in Figure 8-2 are not intended to be prescriptive, rather they are intended to provide guidance for the PIs, Module Leaders and the IAT to facilitate meeting RECOVER reporting requirements. The assessment process is intended to document responses and then understand and interpret them at appropriate spatial and temporal scales on an annual basis. The annual reporting concept is intended to facilitate the addition of new data and the detection of unexpected results.

8.5 Peer Review of Assessment Process

Peer review provides a process for enhancing the scientific credibility of assessment documents by providing a means for independent experts to offer constructive criticism and scientific and technical advice. Peer review of RECOVER documents is discussed at length in CERP Guidance Memorandum 27.00 dated December 18 2003 and provides an example of guidance for this Guidance Memorandum. Although the Pro Regs for CERP only specify the necessity of external peer review for the draft assessment report produced by the Corps and the SFWMD [Section 385.31(b)(4)(ii)], other assessment documents and processes may also benefit from external peer review.

The assessment process is divided into logical progression levels (See Figures 1 and 2). Peer review should be considered at several of these levels as described below.

Principal Investigator Level. This level of external peer review would consist primarily of drafted journal articles that relate to completed studies and other research associated with CERP activities. These activities will be identified in individual scopes of work for individual MAP components.

Annual AT System-Status Report Level. External peer review at this level should occur on a case by case basis as deemed appropriate by the AT. These may include situations such as when the annual AT system status report indicates that: 1) changes in MAP components (e.g., CEMs, PMs or MAP hypotheses) are warranted; 2) there are unresolved and significant technical disputes; or 3) there are significant new findings that are relevant to ecosystem responses. Because this system status report will be incorporated into a five-year RECOVER Technical Report which will be peer reviewed (see below), data and analysis contained in the annual report will be subject to peer review at that time.

RECOVER Technical Report. This RECOVER report will contain scientific information and interpretations and potentially present scientifically and technically

controversial issues and findings. The process leading to the report involves a large, long-term investment and multiple projects. Therefore, peer review at this level should be consistent with the guidance in CERP Guidance Memorandum 27.00.

Once completed, the comments, feedback and other information (constructive criticism and scientific and technical advice) from peer review must be incorporated and documented. This information should be included as an attachment or appendix to the final version of the report. The report should also include a section addressing how the peer review comments were incorporated, including an explanation and rationale for not incorporating specific suggested changes if this is the case, as well as making any recommendations for inclusion or consideration in following report iterations. The peer reviewers should be included in the distribution list for the report to allow them to see how their comments or input were addressed.