



PROJECT SUMMARY

Developing and implementing a Sustainable Forest Management Plan for both the Lakes and Morice Timber Supply Areas is the central objective of the Morice and Lakes Innovative Forest Practices Agreement. The adaptive management cycle and public involvement are both important components of this planning process.

Ecosystem Management

Forest Productivity

Public Involvement

Adaptive Management

SFM Plan Resultant File Data Preparation and Delivery

Introduction

To support the development of Sustainable Forest Management (SFM) plans in the Morice & Lakes IFPA (M&L IFPA), a scenario planning process was initiated to identify resource values, indicators and management practices that would form the foundation for the first Timber Supply Area (TSA) – wide SFM plans in the Morice and Lakes TSAs. Hundreds of data layers were collected and processed in order to support the spatial modelling and analysis of a variety of scenarios as part of the planning process.

This activity summary describes the data collection, preparation, review and approval processes undertaken to support the preparation of SFM plans in each TSA. For more information on the scenario planning process, which was used to identify and capture the detailed management objectives, strategies and indicators required for SFM, please refer to the “Scenario Planning Technical Report” available from the Morice & Lakes IFPA Web site at www.moricelakes-ifpa.com.

- Update existing data (as required) to account for recent operational–related activities undertaken by M&L IFPA proponents to ensure that the data used in the analysis is up to date;
- Derive new data layers (as required) to support spatial analysis;
- Complete quality assurance checks on all data layers (existing or derived); and,
- Provide a delivery platform for all data layers for review, maintenance and update purposes.

Methods

The SFM system used for the M&L IFPA is based on the “McGregor Approach to Sustainable Forest Management.” This SFM system was originally developed by the McGregor Model Forest Association and is now being implemented by Tesera Systems Inc. The system is based on a generic adaptive management cycle (Figure 1). Additional features have been added to this cycle by Tesera to facilitate the development and implementation of SFM plans and systems. Figure 2 provides a schematic diagram of the steps of the scenario planning process; in particular those steps associated with resultant file data collection and preparation. The steps used to collect and prepare resultant file data are described below.

Objectives

Data preparation tasks were organized with the following objectives in mind:

- Collect and document all existing data necessary for spatial analysis of scenarios to support the SFM plans;
- **Data Collection and Preparation** — The scenario planning process relies heavily on data



Fraser Lake Sawmills



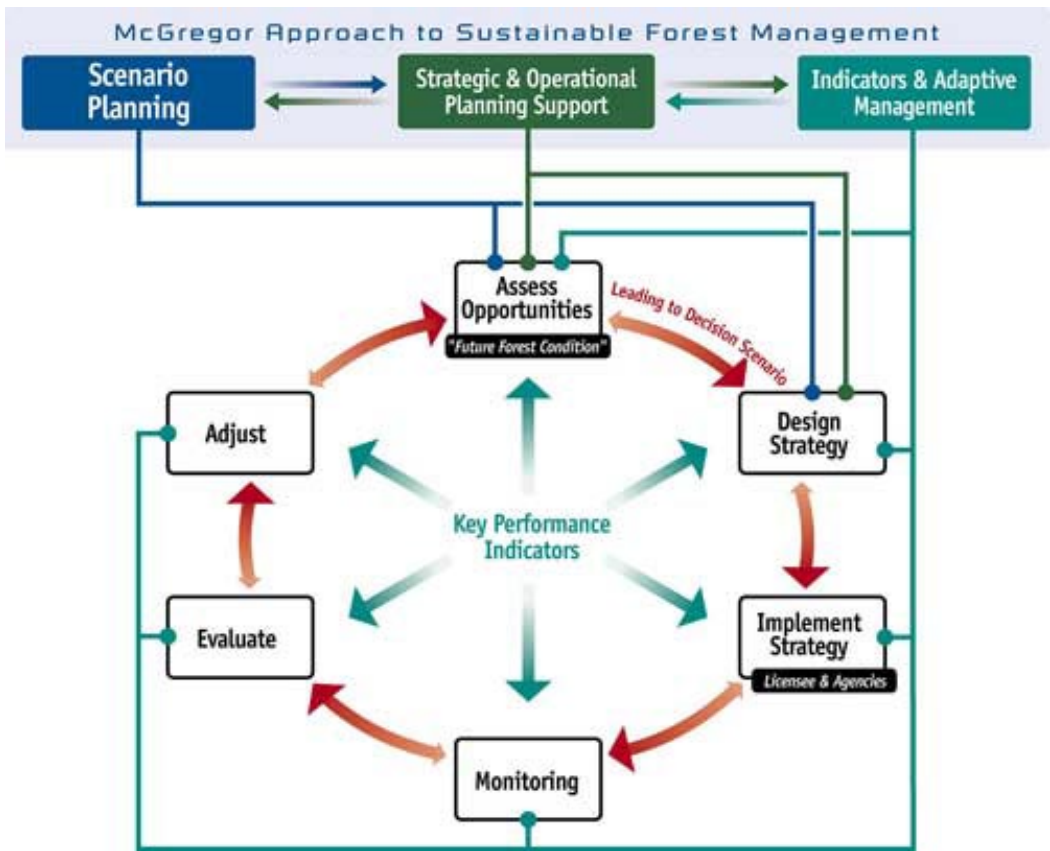


Figure 1. The McGregor Approach to Sustainable Forest Management.

to conduct comparative analysis of learning scenarios. For this reason, a preliminary assessment of data sources and data needs was conducted following the characterization of each learning scenario. One of the largest challenges was obtaining this data from custodians in a timely fashion. The data-gathering process was started in September of 1999. Over the ensuing time period, over 770 separate inventories were provided by 17 different organizations for inclusion into the analysis. Throughout the scenario planning exercises, review of data (i.e. improvements, modification, new information) was critical to ensure the quality of information for analysis of the learning scenarios. The data collection and preparation history for each data layer was maintained in a database to ensure a reliable history of decisions and actions related to each dataset.

- Updating Existing Data** - A number of key existing data layers required updating to account for recent operational activities undertaken by M&L IFPA proponents (e.g. forest cover, roads, riparian features). This involved interpreting and extracting the spatial and tabular information from proponent-specific databases (forest development plan, silviculture, roads, streams, lakes, wetlands). To ensure a comprehensive analysis, the data that was derived from this process included both standard attributes as well as non-standard information. A standard methodology was employed to bring required data layers up to date.

- Deriving New Data Layers** – Many new, derived data layers are required to support spatial analysis (buffers, treatment units, etc.). In all cases, standard methodologies were developed to direct the processes required to prepare these data layers using source information provided by the proponents. Given the complexity of the information required for the analysis, many derived data layers were combined into comprehensive coverages to facilitate easier tracking of modeling inputs and analysis results (e.g. comprehensive riparian, comprehensive roads). Figure 3 illustrates how overlapping stream buffers are addressed based on the order of importance of the stream classes. Figure 4 shows the detail of a derived treatment unit map based on input values such as slope, age, species composition, hydrology and extraction method. The completed treatment unit maps will be incorporated into the resultant files for each TSA. This value-added content will greatly enhance the ability of the analysts to use the spatially explicit scheduling model to produce operationally relevant results.

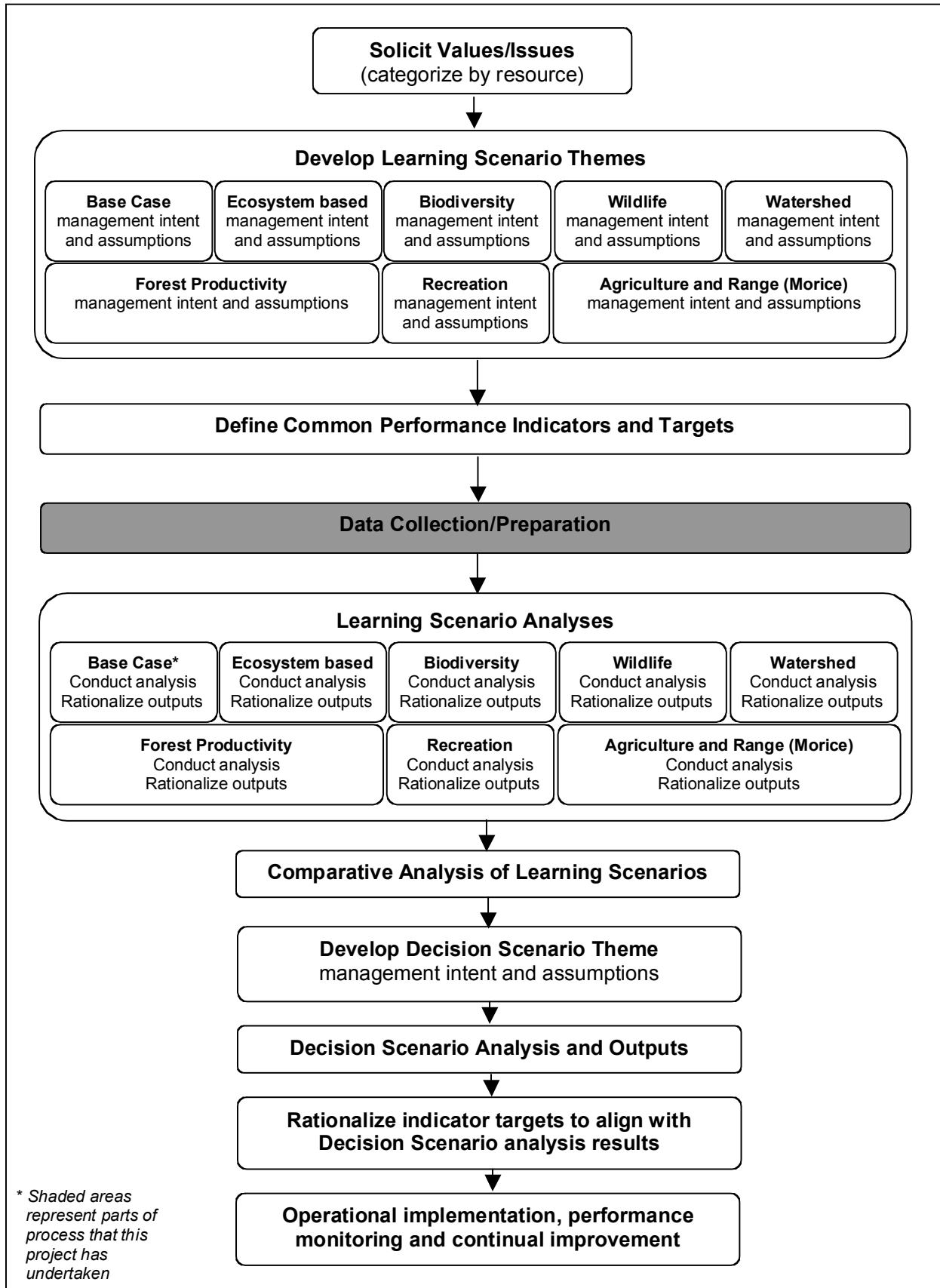


Figure 2. Steps in the M&L IFPA Scenario Planning Process.

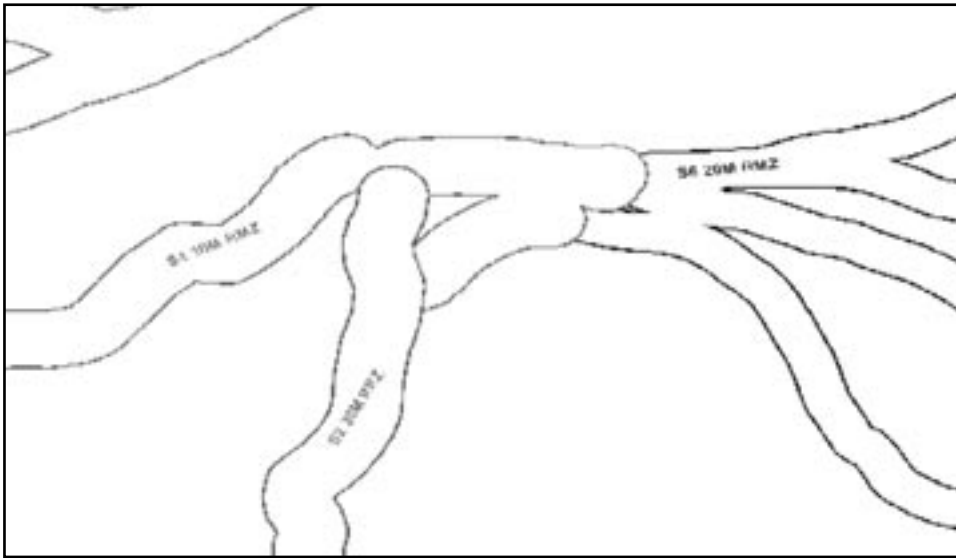


Figure 3. Examples of stream buffers after overlaps are removed.

- **Quality Assurance Checking of All Data Layers** — A robust procedure for quality assurance checking is completed on all data layers (existing or derived) prior to incorporation in the resultant data set. This procedure involves GIS specialists and resource analysts. Each group has specific items that they are required to check and approve prior to signing off on the quality of the data layer. In addition, external review and approval of certain data layers is required. Data layers that are externally reviewed are generally the data layers supplied by the M&L IFPA proponents themselves. In situations where their data has been updated with new information, the proponent has the last word on the quality of the information being used in the analysis. Domain experts also review some of the derived data layers to ensure proper feature coding.
- **Resultant File Data Delivery Using an Internet-based Map Server** — The data preparation phase of the M&L IFPA has produced hundreds of data layers. This information base is invaluable as a tool to support SFM in both Timber Supply Areas. The selection of a proper vehicle to deliver this information back to M&L IFPA proponents and the communities of interest is important. The data layers used to prepare the resultant files in each TSA are being delivered back to the IFPA through the implementation of an ArcIMS-enabled Web site. ArcIMS (Internet Map Server) is ESRI software for distributing geographic information systems data and map layers via the Internet. Two types of IMS viewers have been created through which map services can be viewed. One viewer is HTML-based and the other is Java-based. The M&L IFPA's IMS site is currently set up to be used with a Java viewer, which provides greater GIS functionality than the HTML-based viewer. The M&L IFPA Technical Committee currently has access to this website in order to review, approve and download M&L IFPA datasets. The HTML-based viewer will be accessible from a link on the M&L IFPA Web site at www.moricelakes-ifpa.com.



Figure 4. Detail of treatment unit mapping output.

Results

Over 770 datasets were catalogued in preparation for creating the resultant files for both TSAs. After extensive review by the Technical Committee and both Scenario Planning Teams (SPTs), 252 of these datasets were selected by data custodians and stakeholders for inclusion in the analysis. Of these, approximately 110 datasets will be used in the Lakes TSA analysis and approximately 150 datasets will be used in the Morice TSA analysis.

The ArcIMS Web site (Figure 5) will serve as the review and delivery vehicle for all data layers being used in the analysis phases of the SFM plan in each TSA. Data layers are catalogued by resource category. A reference manual is downloadable from the site and provides installation instructions and a functional description of the site and its use.

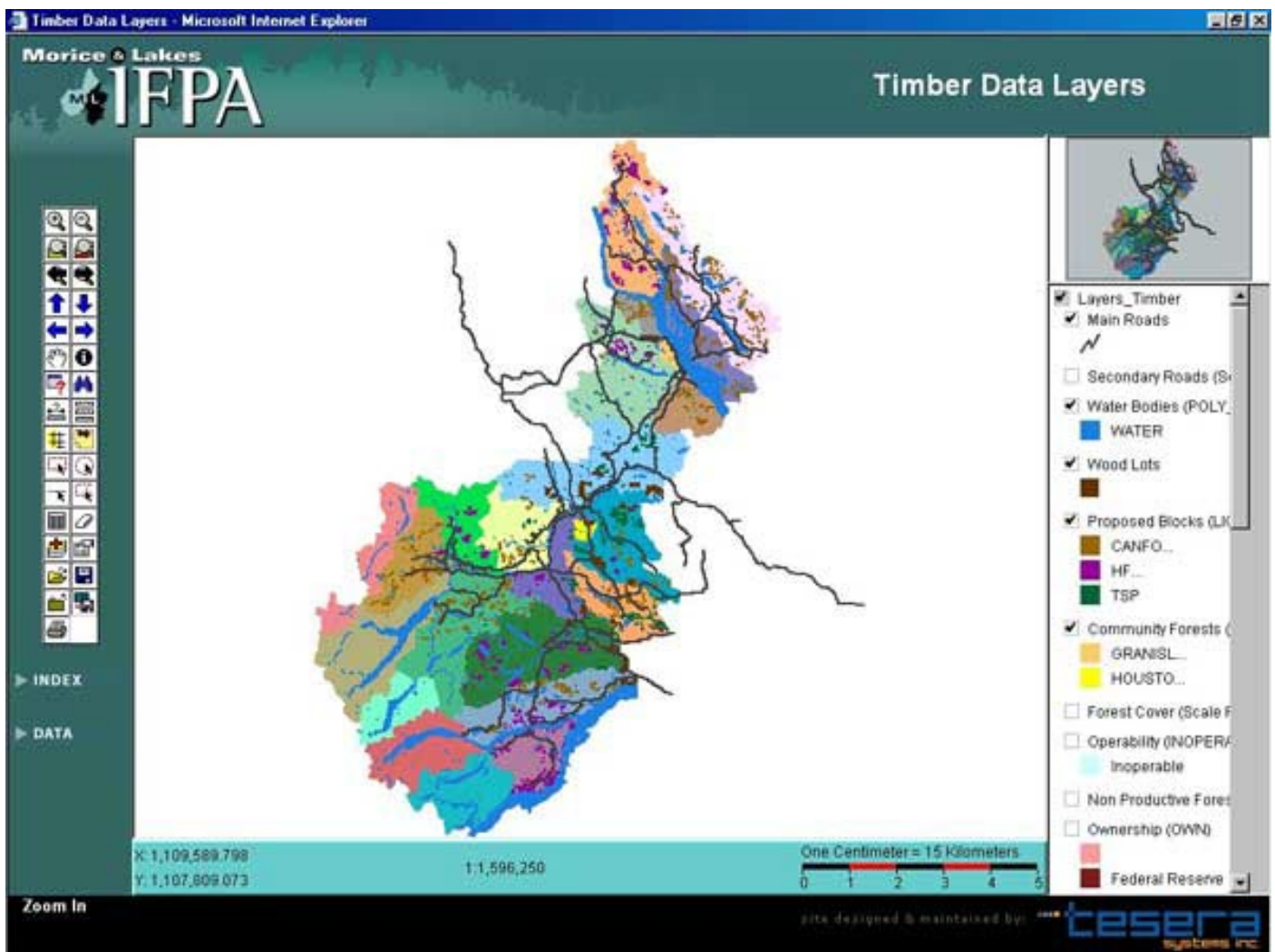


Figure 5. Screen shot of the timber data layers on the M&L IFPA data review site home page.

Discussion

Preparing resultant file data layers to support two TSA-level spatially explicit resource analyses is a daunting task. As a pilot project, the M&L IFPA SFM planning process has identified many data related issues that have not needed to be addressed in conventional forest management planning. As the project progressed and the Scenario Planning Teams delved deeper into describing resource values, management strategies and performance indicators, it became apparent that the data preparation requirements were increasing exponentially. Assessing the availability, condition and quality of inventories necessary to support the scope of this spatial analysis consumed a substantial amount of time and effort, not only with the consultants, but also the M&L IFPA proponents and SPT members. Because a spatially explicit analysis requires reconciling data layers to a finer level of detail than what is required for an aspatial analysis, many data quality issues developed that had previously gone undetected. Generally speaking, a major gap currently exists between the collective state of resource management information databases and the data requirements necessary for SFM implementation - especially if one is required to perform spatially explicit modeling and analysis. The data to support this type of detailed analysis isn't there, and in many cases, existing databases have to be upgraded, or new databases created.

Another factor contributing to the complexity of data preparation in this project was the scope creep and expectations around performance indicators. Although not addressed directly in this report, but elsewhere on the IFPA Web site, the complexity of the indicators needs to be considered during the ongoing management of the SFM plan. There needs to be more consideration of the balance between the operational requirements for SFM and the complexity of the indicator reporting. Subsequent planning activities will need to work harder at simplifying indicators statements so that less time is spent modelling indicators that may not become part of the ongoing performance monitoring of the SFM Plan.

Having made a substantial investment in data preparation, the Morice & Lakes IFPA is now well positioned to support continual improvement of the SFM planning process in each TSA. The M&L IFPA currently possesses a world-class database well suited to support ongoing strategic and operational planning initiatives. The consistent data formats, data quality and a state-of-the-art delivery vehicle also support the establishment of a spatial data sharing network within the M&L IFPA. These opportunities are now available due to the significant effort invested in the preparation of the resultant file datasets in each TSA.

Recommendations

As a result of the effort invested in resultant file data preparation and delivery on the Morice & Lakes IFPA, the following recommendations should be considered when developing SFM plans in the future.

- Ensure that the project organizers have consensus with the SPT regarding the scope of the data collection phase. Establishing a more rigid scope to the issues being addressed early in the process will help the SPT become more self-regulating regarding their expectations for process and deliverables.
- Ensure that the SPT works hard at simplifying indicators during scenario planning sessions in order to achieve a balance between the operational requirements for SFM and the complexity of the indicator reporting.
- Acknowledge up-front that there is a gap between the collective state of the information databases and the requirements for SFM implementation. Be proactive in a workplan to properly account for the extra effort required to upgrade key datasets.
- When organizing the data preparation activities make sure longer-term opportunities for the use of this information (beyond the SFM plan) are identified – such as the establishment of a spatial data-sharing network – and incorporate these opportunities into the workplan.

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**For More
Information...**



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