

The background of the slide is a photograph of the Golden Gate Bridge in San Francisco, California. The bridge's iconic red-orange towers and suspension cables are visible against a blue sky with scattered white clouds. In the foreground, the bridge's deck and support structure are seen from a low angle, with waves crashing against large, dark rocks on a sandy beach below.

SECTION J

Data Management





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Acronyms Appearing in this Section

ABAG	Association of Bay Area Governments
Bay	San Francisco Bay
BMPs	Best Management Practices
CEDEN	California Environmental Data Exchange Network
CERES	California Environmental Resources Evaluation System
CNDDB	California Natural Diversity Database
DFG	California Department of Fish and Game
DWR	California Department of Water Resources
FEMA	Federal Emergency Management Agency
FP-SM	Flood Protection and Stormwater Management
GAMA	Groundwater Ambient Monitoring and Assessment Program
GIS	geographical information system
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
LOMU	Letter of Mutual Understandings
RWQCB	Regional Water Quality Control Board
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TCC	Technical Coordinating Committee
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WEMAP	Western Pilot Environmental Monitoring and Assessment Program
WM-HP&R	Watershed Management and Habitat Protection & Restoration
WS-WQ	Water Supply and Water Quality
WW-RW	Wastewater and Recycled Water
Zone 7	Zone 7 Water Agency



Section J Data Management

IRWMP Appendix A Guidelines

Section J: Data Management

- *Include mechanisms by which data will be managed and disseminated to stakeholders and the public and include discussion of how data collection will support statewide data needs.*
- *Assess the state of existing monitoring efforts for water quantity and water quality, and identify data gaps where additional monitoring is needed.*
- *Include a discussion of the integration of data into the SWRCB's Surface Water Ambient Monitoring Program and Groundwater Ambient Monitoring and Assessment Program.*

As part of IRWMP implementation, data will be collected to support assessment of project and Plan performance. As described in Section I: *Technical Analysis and Plan Performance*, data will be gathered at the project level to assess the performance of projects in meeting their objectives, and at the Functional Area level to gauge the region's progress toward achieving its goals. In addition, this data will be aggregated at the IRWMP level to assess the cumulative benefits of plan implementation.

In addition to project-specific data generated through project implementation, data collected as part of region-wide monitoring programs will be compiled to support IRWMP assessment at the Plan level. Various local and regional monitoring programs are currently underway throughout the region. Several of these programs are described in Table I-3. As future work is completed, the IRWMP CC may compile relevant information from these sources to assess progress toward achieving the regional goals.

Through this process, a large quantity and wide range of data will be both collected and compiled. The process for managing and disseminating this information to stakeholders is discussed below. In addition, data gaps have been identified, and a process for integrating collected information into statewide programs is provided.

J.1 Approach to Data Management and Dissemination

As described in Section G: *Implementation*, a variety of steps will be required for IRWMP implementation, including adoption by LOMU signatories, implementation of priority projects, and implementation of an adaptive management framework. Successful completion of each of these steps will require effective data management and dissemination, as described below.

As described in Section I: *Technical Analysis and Plan Performance*, information will be collected and compiled at three levels: the project level, the functional area level, and the IRWMP level. At each of these levels, effective data management and dissemination is critical to successful IRWMP implementation. Table J-1 identifies the types of activities that will be undertaken as part of IRWMP implementation. The level of effort for each activity may vary depending on its need and upon the amount of funding and resources available.

**Table J-1: IRWMP Data Management Responsibilities^a**

Responsible Party	Data Management and Dissemination Task	Frequency
Project Proponents	<ul style="list-style-type: none"> ▪ Compile and maintain project implementation information through monitoring program implementation ▪ Disseminate project implementation to Functional Area TCC ▪ Disseminate project implementation as necessary to meet applicable reporting requirements 	<ul style="list-style-type: none"> ▪ Quarterly Basis
WS-WQ Functional Area TCC	<ul style="list-style-type: none"> ▪ Compile and maintain project performance information collected by proponents of WS-WQ projects ▪ Compile and maintain regional water use and population information ▪ Disseminate compiled information to IRWMP CC 	<ul style="list-style-type: none"> ▪ Annual Basis
WW-RW Functional Area TCC	<ul style="list-style-type: none"> ▪ Compile and maintain project performance information collected by proponents of WW-RW projects ▪ Compile and maintain data on recycled water use throughout the region ▪ Disseminate compiled information to IRWMP CC 	<ul style="list-style-type: none"> ▪ Annual Basis
FP-SM Functional Area TCC	<ul style="list-style-type: none"> ▪ Compile and maintain project performance information collected by proponents of FP-SM projects ▪ Compile and maintain information on the number of acres within FEMA flood zone and number of floods and reported damages throughout region ▪ Disseminate compiled information to IRWMP CC 	<ul style="list-style-type: none"> ▪ Annual Basis
HP-WM&R Functional Area TCC	<ul style="list-style-type: none"> ▪ Compile and maintain project performance information collected by proponents of HP-WM&R projects ▪ Disseminate compiled information to IRWMP CC 	<ul style="list-style-type: none"> ▪ Annual Basis
IRWMP CC	<ul style="list-style-type: none"> ▪ Compile information prepared by Functional Areas into regional outlook ▪ Disseminate regional outlook to stakeholders 	<ul style="list-style-type: none"> ▪ Periodically

a. Tasks, frequency, and responsible parties assume adequate funding and resources are available.

Compiling this information at a regional scale will enable IRWMP CC to effectively communicate the effectiveness of IRWMP projects in contributing to achieving the regions' goals, objectives, and vision.

The type, level, and frequency of data management and dissemination activities, and the parties responsible for implementing those activities, may change as the IRWMP CC conducts its periodic review of the effectiveness of the on-going institutional structure.

J.2 Data Management and Dissemination

A large quantity of information will be developed and collected as part of IRWMP implementation and performance assessment. This information will range from water supply and demand information, to recycled water usage, water quality data, flood frequency and intensity information, stormwater runoff quality and quantity, and habitat mapping information, among others.

As shown in Table J-1, data will be compiled, managed, and disseminated at three levels: the project level, the Functional Area level, and the IRWMP level. The data management and dissemination responsibilities at each level are described below.



J.2.1 Project Level Data Management and Dissemination

At the project level, project proponents will be responsible for collected information on project implementation status, as well as evaluating project performance with respect to the performance measures identified in Section I: *Technical Analysis and Plan Performance*. For funded projects, it is assumed that quarterly reporting will be required. Proponents of other implemented projects are similarly encouraged to track this information on a quarterly basis. The project implementation status and assessment information will be compiled and managed by the project proponents, and will be disseminated to the appropriate reporting agency (as necessary) as well as the appropriate Functional Area TCC.

J.2.2 Functional Area Level Data Management and Dissemination

As described in Section I: *Technical Analysis and Plan performance*, assuming sufficient funding and resources are available, the Functional Area TCCs will each collect regional data to be used in assessing progress toward achievement of the Functional Area's goals and objectives on an annual basis. The Functional Area TCCs will each track the following information:

- WS-WQ Functional Area TCC: regional water use and population throughout the region
- WW-RW Functional Area TCC: recycled water use throughout the region
- FP-SM Functional Area TCC: number of acres within FEMA flood zone and number of floods and reported damages throughout region
- HP-WM&R Functional Area TCC: To be determined

This data will be compiled and managed by the Functional Area TCCs, and will be disseminated to the Bay Area IRWMP CC to support its periodic IRWMP information update and assessment process. In addition, this data will be used in conjunction with the project-level data compiled and managed by the project proponents, to assess the region's progress toward achieving its goals in each Functional Area.

J.2.3 Plan-Level Data Management and Dissemination

As described in previous sections, and assuming sufficient funding and resources are available, future work will be guided by the Bay Area IRWMP CC. As part of this process, the IRWMP CC will collect the information gathered by the Functional Area TCCs to assess IRWMP performance in contributing to regional goals, objectives, and IRWMP vision. The IRWMP CC will compile and manage this information, and will ultimately disseminate the data to the public.

As future work is completed, compiled data will be provided by the Functional Area TCCs to the Bay Area IRWMP CC in electronic format. Existing regional data collection sources (such as those identified in Table I-3) may also be reviewed for their applicability in assessing Plan performance, as resources and funds permit. This data will then be maintained, along with the project-specific data and information compiled by the Functional Area TCCs, in an online data library.

The IRWMP data library will be publicly accessible from the IRWMP web portal. While every effort will be made to ensure open, public access to data used in the Plan performance assessment, confidentiality agreements may be required to obtain a portion of the data used to support Plan assessment. In these cases, data availability will be managed in a manner consistent with the terms of the individual confidentiality agreements.



IRWMP stakeholders and the general public will be informed of the process and online data availability through email announcements and physical mailings to the stakeholder database. Local press will also be informed as future work is completed and data becomes available online. In addition, it is anticipated that future work will include extensive public outreach processes aimed at encouraging stakeholder participation. This process will be used as a forum for generating public awareness and disseminating the information contained in the data library. For additional information on anticipated stakeholder involvement during Plan implementation, please refer to Section N: *Stakeholder Involvement*.

J.3 Existing Data Collection and Monitoring Efforts

Within the Bay Area, several regional, local, and state sponsored monitoring programs currently exist that monitor conditions of the four functional areas of the Plan. Table I-3 of Section I: *Technical Analysis and Plan Performance* describes several existing monitoring programs that may be leveraged to support the Plan performance assessment. This table also indicates sponsoring agency, monitoring program content, and monitoring frequency.

Despite the fairly extensive ongoing water resources monitoring within the region, opportunities exist for additional data gathering to close the region's remaining water resources information gaps. Specific data gaps that have been identified for the Bay Area are shown in Table J-2.



Table J-2: Regional Data Gaps

Data Gap	Program Type	Potential Implementing Agency	Program Description	Potential Responsible Agency
Water Supply-Water Quality				
Regional Groundwater Information	Regional Groundwater Monitoring Program	DWR	Initiate a regional groundwater monitoring program, which compiles local groundwater monitoring efforts into a comprehensive assessment of groundwater quantity and quality for basins within the region. Regional groundwater assessments should be conducted every 5 years.	RWQCB
Emerging Contaminants Monitoring	Regional Monitoring of Emerging Contaminants	SWRCB	Conduct regional monitoring of emerging contaminants, such as endocrine disrupting compounds, in water, sediment, and aquatic species. Expand upon the existing Regional Monitoring Program for Trace Substances to include emerging contaminants. Extend the Regional Monitoring Program (RMP) to include monitoring of the quality of urban creeks in addition to sites within the San Francisco Bay.	SWRCB
Wastewater and Recycled Water				
Compilation of Regional Recycled Water Information	Regional Recycled Water Reporting	RWQCB	Regional compilation of quantity and quality of recycled water produced and used within the region. This system would track and encourage utilization of recycled water to conserve potable supplies. Information is already provided to RWQCB.	RWQCB
Flood Protection and Stormwater Management				
Compilation of Regional Impervious Surface Information	Regional Monitoring of Impervious Surfaces	RWQCB	Regional monitoring of trends in urbanization through tracking the extent of impervious surfaces and undeveloped lands with the use of GIS mapping. This information can be utilized when designing restoration efforts and to examine the effects of altered hydrology on streams and habitats. Additionally, this information will be useful for stormwater and flood control management agencies to assess application of appropriate BMPs and management measures according to the extent of imperviousness in the region.	ABAG, Bay Area Open Space Council, municipalities and flood control jurisdictions
Compilation of Regional Storm Drainage Information	Regional Storm Drainage Mapping	RWQCB	Collaborative effort to develop a regional map showing locations of creeks, underground culverts, storm drains, and flood control channels. Use the Oakland Museum Creek Maps as an example for a region-wide effort to map storm drainage networks. This information will improve regional efforts for habitat restoration, flood control, and water quality monitoring.	ABAG, stormwater associations, municipalities
Floodplain Management Information	Regional Monitoring of Floodplains	Regional Flood Agencies Forum	Regional mapping and monitoring of floodplains, including acreage protected, connectivity, and management techniques. Monitoring information would facilitate planning, design, and execution of flood-protection projects.	Regional Flood Agencies Forum



Data Gap	Program Type	Potential Implementing Agency	Program Description	Potential Responsible Agency
Non Point Source Pollution Data	Nonpoint Source Pollution Control Program	SWRCB	The State Water Resources Control Board is developing the Nonpoint Source Pollution Control Program to track and monitor nonpoint source pollution in the Bay Area, but it is not yet effective. The Program could be expanded to collect both runoff quantity and quality information.	RWQCB
Watershed Management, Habitat Protection and Restoration				
Regional Stream Channel Maps	Regional Monitoring of Stream Channel Functioning	DFG	Regional mapping and monitoring of channel bed and bank conditions, including extent of functioning riparian corridors. Regional mapping and monitoring of sediment source, transport, and depositional areas. This information will be useful to monitor the success of creek restoration projects, assess the need for future restoration efforts, and track habitat conditions for wildlife and aquatic habitat. Due to the extent of urbanization in the region, these data should be gathered in conjunction with local flood control and stormwater management agencies.	DFG, flood control jurisdictions, stormwater associations and municipalities
Regional In-Stream Habitat Information	Regional Monitoring of In-Stream Habitat Conditions	USEPA-Office of Research and Development, DFG	Expand upon the Western Pilot Environmental Monitoring and Assessment Program program (WEMAP) to implement standardized monitoring of in-stream habitat conditions (water quality, fish populations, benthic populations) within the region. Establish protocols and baseline data to assess urbanized habitat conditions.	USEPA-Office of Research and Development, DFG
Regional Wildlife Corridor, Population, and Biodiversity Information	Regional Monitoring of Wildlife Corridors, Populations, and Biodiversity	DFG	Establish a regional monitoring system for wildlife corridors, populations, and species richness (for amphibians, birds, and mammals). This could expand upon the CNDDDB, focusing solely on population monitoring within the region.	DFG, Point Reyes Bird Observatory
Regional Invasive Species Information	Regional Monitoring of Invasive Species	DFG, USFWS	Regional monitoring program for presence and absence of invasive plant species (beyond Spartina). The program would provide information to target eradication and restoration activities.	DFG, USFWS
Regional At-Risk Native Species Monitoring	Regional Monitoring of Native At-Risk and Special Status Species	DFG, USFWS	Regional program to track presence and absence of-risk native and special status species in the Bay Area.	DFG, USFWS



In general, there are few ongoing efforts that collect and compile data continuously at the regional level. Establishment of regional data collection and management programs would provide deeper understanding of the challenges facing the region as it strives to achieve the goals of the IRWMP.

While such a regional data integration approach may be valuable, it is important to consider the costs and administrative/management commitments of such an effort. Table I-1 lists potential implementing agencies for each program. The potential implementing agencies were identified based on their wide jurisdiction and accessibility to the data needed to develop the recommended compilations and reports. Implementation of these monitoring and reporting programs would require resources beyond those of the Bay Area IRWMP CC. Whether the recommended monitoring and reporting programs are implemented or not, this process will provide a first step in compiling data at the regional level to assess progress made toward achievement of the IRWMP regional goals.

J.4 Supporting Statewide Data Needs

As described above, there is a limited number and extent of programs which compile water resources data for the Bay Area and present it as a regional assessment. As future work is completed, the Bay Area CC will develop a data library for relevant water resources information and data throughout the region. As such, the process represents an important first step toward developing a regional perspective for water resources management information. The data and conclusions developed through the Bay Area IRWMP assessment process may be used by state agencies for developing regional fact sheets and determining regional funding priorities. In addition, DWR may use information developed through future work to support updates to the California Water Plan. The California State Water Plan is updated on 5-year cycle. Periodic information updates could be coordinated with the State Water Plan update. Another opportunity for data coordination may be found with the San Francisco Bay RWQCB. The RWQCBs are currently reviewing new data standardization and data provision requirements to accompany 401-certification permits. If this program becomes formalized, additional opportunities for regional data integration may arise. Such requirements and standards would provide data at the project-scale that could then be aggregated for a regional interpretation. Coordination with the San Francisco Bay RWQCB will continue with the implementation of the Bay Area IRWMP Plan.

In addition to serving as a repository for regional compilation of water resources data and information, the Bay Area IRWMP will support statewide data activities by requiring that data collected to support project performance assessment is collected in a manner consistent with continuing statewide data collection programs. Consistency with Statewide monitoring programs is critical to ensuring that regional projects contribute to efficient, uniform, and comprehensive study design and data collection. Data collected as part of IRWMP project implementation will be required to be comparable with applicable statewide data collection programs such as the Surface Water Ambient Monitoring Program (SWAMP) and the Groundwater Ambient Monitoring and Assessment (GAMA) programs. Upon completion of the IRWMP performance assessment, the project-specific data collected, along with its associated quality assurance/quality control information, would be provided to the state in a format which could be easily integrated into statewide data collection and tracking programs. As appropriate, the TCC will also encourage project proponents to contribute data to the following statewide data programs:

- California Environmental Resources Evaluation System (CERES), an information system developed by the California Resources Agency to facilitate access to natural resource data
- California Environmental Data Exchange Network (CEDEN), a website developed by the State for coordinated data sharing