# Section I. Technical Analysis and Plan Performance

***IRWM Plan Standard:***
*"Include a discussion of data, technical methods, and analyses used in development of the Plan. Include a discussion of measures that will be used to evaluate Project/Plan performance, monitoring systems that will be used to gather performance data, and mechanisms to adapt project operations and Plan implementation based in performance data collected."*

This section is organized by program and describes technical analysis and measurement of plan performance. Plan implementation would be affected if projects or programs were unable to meet expected performance criteria as determined through the monitoring measures described below. In such cases, changes in project sequencing or priority or substitution of alternate projects may be necessary as described previously in Section F – Regional Priorities.

## I1. Water Quality Program

### I1.1 Data, Technical Methods and Analyses

The Water Quality Program is designed to protect and improve water quality for beneficial uses consistent with regional interests and the Basin Plan in cooperation with local and state agencies and regional stakeholders without unfairly burdening communities, neighborhoods or individuals. The Water Quality Program goals, objectives, and projects were developed from numerous storm water management plans, SWRCB NPDES Storm Water General Permits, watershed management plans, water quality reports, watershed sanitary surveys, and state plans, policies and programs as listed in Table I1.1. These plans document water quality needs and solutions available to the San Luis Obispo region and include the data, technical methods, and analyses used in the development of the water supply program.

The data, technical methods, and analyses used in development of the seven high ranking water quality projects are listed in Table I1.2.

**Table I1.1 Water Quality Plans**

| **Storm Water Management Plans and NPDES Storm Water General Permits** |
|---|
| County of San Luis Obispo Storm Water Management Plan |
| City of Paso Robles Storm Water Management Program, Feb. 2003 |
| City of San Luis Obispo Storm Water Management Program |
| City of Atascadero Storm Water Management Program August 2003 |
| City of Morro Bay Storm Water Management Program, Draft August 2003 |
| City of Arroyo Grande Storm Water Management Program |
| City of Pismo Beach Storm Water Management Program |
| Los Osos CSD Storm Water Management Program, March 2003 |
| SWRCB Water Quality Order No. 2003-0005-DWQ, NPDES General Permit No. CA S000004, Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Small MS4 General Permit) |
| SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ |
| SWRCB General Permit for Storm Water Discharges Associated with Construction Activity from Small Linear Underground/Overhead Projects, Order #2003-0007 DWQ (Small LUP General Permit |
| SWRCB Water Quality Order 97-03-DWQ, NPDES General Permit No. CA S000001 (General Permit) Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities |
| **Watershed Management Plans** |
| Morro Bay National Estuary Program Comprehensive Conservation Management Plan for Morro Bay |
| Monterey Bay National Marine Sanctuary Program Action Plan IV: Agriculture and Rural Lands |
| Monterey Bay National Marine Sanctuary Program Action Plan I: Implementing Solutions to Urban Runoff |
| Monterey Bay National Marine Sanctuary Program Water Quality Protection Program Implementation Action Plan |
| Agriculture Water Quality Alliance: Land-Sea Partnerships to Protect the Waters and Watersheds of the Monterey Bay National Marine Sanctuary, Summary Report of the MBNMS Agriculture and Rural Lands Plan Implementation, October 1999-October 2004 |
| San Luis Obispo Creek Waterway Management Plan |
| Arroyo Grande Creek Watershed Management Plan, Central Coast Salmon Enhancement, Draft |
| Salinas River Watershed Management Action Plan, October 1999 |
| Pismo Lake Plan, Coastal San Luis RCD, March 2004 |
| **Water Quality Reports and Watershed Sanitary Surveys** |
| City of San Luis Obispo 2004 Annual Water Quality Report |
| City of Morro Bay 2004 Water Quality Report |
| City of Paso Roles 2004 Water Quality Report |
| 2004 Water Quality Report CSA 10/10A - Cayucos |
| 2004 Water Quality Report Zone 3 - Lopez Project |
| 2004 Water Quality Report CSA #23 - Santa Margarita |
| 2004 Water Quality Report CSA #16 - Shandon |

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| Cambria CSD Annual Water Quality Report |
| Templeton CSD 2004 Annual Water Quality Report |
| Cal Cities Water – Los Osos, 2003 Annual Water Quality Report |
| Cal Cities – Nipomo, 2004 Annual Water Quality Report |
| Cal Cities – Edna Road, 2004 Annual Water Quality Report |
| City of Arroyo Grande 2004 Annual Water Quality Report |
| Cayucos Wells Watershed Sanitary Survey, Cayucos Area Water Organization, Sept. 2002 |
| San Luis Obispo County Flood Control and Water Conservation District, Lopez Lake and Terminal Reservoir Sanitary Survey, Final Report, Dec. 1995 |
| Lopez Lake and Terminal Reservoir Sanitary Survey Update, Jan. 2001 |
| Upper Salinas Watershed Sanitary Survey Update, City of San Luis Obispo, March 2001 |
| Whale Rock Watershed Sanitary Survey, April 2001 |
| Watershed Sanitary Survey for Lake Nacimiento, Heritage Ranch CSD, 1995 |
| Lopez Water Treatment Plant Audit |
| Paso Robles Water Quality Strategy Report, March 2003 |
| City of El Paso de Robles Salt Management Study, Feb. 2001 |
| **RWQCB Plans, Programs, Policies and Priorities Documents** |
| Basin Plan |
| Water Quality Priorities and Targeted Projects 2004-2005 |
| Draft 2005 Basin Plan Triennial Review Priority List |
| Final 2001 Basin Plan Triennial Review Priority List |
| RWQCB 3 303(d) Investigations and TMDL Projects |
| Central Coast RWQCB 2002 CWA 303(d) List of Impaired Waterbodies |
| RWQCB 3 Agriculture Waiver |
| RWQCB Central Coast Ambient Monitoring Program (CCAMP) |
| **SWRCB Plans, Programs, and Policy Documents** |
| Porter-Cologne Water Quality Control Act, Jan. 1, 2005 |
| State of California NPS Program Five Year Implementation Plan, July 2003 – June 2008 |
| California Rangeland Water Quality Management Plan, July 1995 |
| SWRCB Surface Water Ambient Monitoring Program (SWAMP) |
| SWRCB Groundwater Ambient Monitoring and Assessment (GAMA) Program |
| SWRCB Geotracker Database |
| SWRCB Sanitary Sewer Overflows (SSO) Program |

**Table I1.2 Data, Technical Methods and Analyses of High Ranking Water Quality Projects**

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Los Osos Community Wastewater Project | Los Osos CSD Wastewater Facilities Project, Final Project Report, March 2001<br><br>Los Osos CSD Storm Water Management Program, March 2003<br><br>Los Osos Habitat Conservation Plan, Draft, February 2005<br><br>Los Osos Ground Water Basin Management Plan, July 2002<br><br>Geologic Structure of the Los Osos Valley Ground Water Basin, November 2003<br><br>Cal Cities Water – Los Osos, 2003 Annual Water Quality Report<br><br>Los Osos CSD Urban Water Management Plan, Dec. 2000 | Evaluation of groundwater quality data<br><br>Source water analyses<br><br>Los Osos Creek flow and water quality analyses<br><br>Facility capacity requirements<br><br>Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities.<br><br>Evaluation of groundwater basin characteristics, yields and transfer legal requirements.<br><br>Evaluation of reclaimed water regulatory requirements and costs.<br><br>Aquifer water quality characterizations<br><br>Sea water intrusion and lower aquifer source investigations<br><br>Historic architectural resources inventory and evaluation<br><br>Lateral study-biological resources and mitigation<br><br>Comprehensive comparative analyses of wastewater treatment plans for Los Osos |
| Morro Bay Wastewater Treatment Facility Upgrade | City of Morro Bay Storm Water Management Program, Draft August 2003 | Facility influent and effluent characteristics<br><br>Source water analyses |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | Morro Bay National Estuary Program Comprehensive Conservation Management Plan for Morro Bay<br><br>City of Morro Bay Storm Water Management Program, Draft August 2003<br><br>City of Morro Bay 2004 Water Quality Report<br><br>Cayucos Wells Watershed Sanitary Survey, Cayucos Area Water Organization, Sept. 2002<br><br>2004 Water Quality Report CSA 10/10A - Cayucos | Morro Creek flow and water quality analyses<br><br>Facility capacity analysis<br><br>Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities.<br><br>Evaluation of groundwater basin characteristics, yields and transfer legal requirements. |
| Southland Wastewater Treatment Facility Upgrade | Cal Cities – Nipomo, 2004 Annual Water Quality Report<br><br>Southland Wastewater Treatment Facility Master Plan, February 2007<br><br>Arroyo Grande Creek HCP for the Protection of Steelhead and California Red-Legged Frogs, Final Draft, February 2004<br><br>Oceano Specific Plan, April 2002<br><br>City of Arroyo Grande General Plan<br><br>City of Grover Beach General Plan, Housing Element, 2003 | Facility influent and effluent characteristics<br><br>Source water analyses<br><br>Nipomo Creek flow and water quality analyses<br><br>Facility capacity analysis<br><br>Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities.<br><br>Evaluation of groundwater basin characteristics, yields and legal requirements. |
| South San Luis Obispo County Sanitation District Facility Upgrade | Arroyo Grande Creek Watershed Management Plan, Central Coast Salmon Enhancement, Draft<br><br>City of Arroyo Grande 2004 Annual Water Quality Report<br><br>City of Arroyo Grande Water System Master Plan, July 1999 | Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities. |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | City of Arroyo Grande Water Supply Alternatives Study, August 2004<br><br>City of Grover Beach 2000 Urban Water Management Plan<br><br>City of Arroyo Grande Urban Water Management Plan Year 2000, May 2001<br><br>City of Grover Beach Conservation Program<br><br>City of Arroyo Grande Water Conservation Program | |
| Nipomo CSD Salt Management Program | Water Resources Evaluation Nipomo Mesa Management Area, Draft May 28, 2003<br><br>Nipomo Mesa Area Water Supply - Resource Capacity Study<br><br>Water Resources of the Arroyo Grande-Nipomo Mesa Area, DWR, 2002<br><br>Engineering Considerations of Groundwater Yields and Rights on the Nipomo Mesa Sub-Area, October 20, 1993<br><br>Cal Cities – Nipomo, 2004 Annual Water Quality Report | Groundwater levels and water quality analyses<br><br>Evaluation of current and future water demand<br><br>Analyses of groundwater well distribution and pumping frequency |
| San Simeon Wastewater Treatment Facility Upgrade | San Simeon Wastewater Master Plan | Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities. |
| Morro Bay NPDES Illicit Discharge Detection and Elimination Ordinance | SWRCB Water Quality Order No. 2003-0005-DWQ, NPDES General Permit No. CA S000004, Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Small MS4 General Permit) | Point source analyses and water quality modeling<br><br>Hydrogeologic conditions analyses<br><br>Hydrologic modeling |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ<br><br>SWRCB General Permit for Storm Water Discharges Associated with Construction Activity from Small Linear Underground / Overhead Projects, Order #2003-0007 DWQ (Small LUP General Permit<br><br>SWRCB Water Quality Order 97-03-DWQ, NPDES General Permit No. CA S000001 (General Permit) Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities<br><br>Morro Bay National Estuary Program Comprehensive Conservation Management Plan for Morro Bay | |

## I1.2 Measures and Monitoring for Program Evaluation

The performance of the Water Quality Program will be evaluated based on its ability to meet the primary objectives of the program:

- Protect and improve source water quality.
- Meet all federal and state drinking water standards.
- Support the development and implementation of TMDLs.
- Implement NPDES Phase II Storm Water Management Programs.
- Implement the California NPS Plan and the RWQCB Conditional Agricultural Waiver Program for irrigated agriculture.
- Comply with new waste discharge requirements.

Water quality and water quality violation monitoring will be used to evaluate the program progress. The monitoring will be implemented by individual agencies or in cooperative efforts with multiple agencies using tools such as the Revised Universal Soil Loss Equation, EPA developed STEPL Model and land use and pollutant load models. Specific targets for the program are outlined in the Project Assessment and Evaluation (PAEP) Table I1.3.

**Table I1.3: Water Quality Program PAEP Table**

| Program Goal | Desired Outcomes | Output Indicators | Outcome Indicators | Targets |
|---|---|---|---|---|
| Protect and improve water quality for beneficial uses | Implement NPDES, NPS and TMDL water quality improvement projects | Water quality data from stream monitoring and TMDL monitoring<br><br>Reduced regional water quality violations | Percent reduction in contaminant levels.<br><br>Number reduction of violations, | Reduce water quality contaminant levels by 10% each year.<br><br>Reduce water quality violations by 10% each year. |

### I1.3 Adapting Water Quality Project Operations and Program Implementation

Water Quality Program operations will be modified periodically through an adaptive management process that will involve analysis of monitoring and assessment data for all measures and comparison to the proscribed targets for the water quality management program. Project adaptation within the Water Quality Program could involve:

- Identification of new or expanded wastewater treatment facility upgrades;
- Enhancement of NPDES and TMDL programs;
- Adjustments to BMP placement, sizing and design parameters;
- Gathering of additional or alternative performance data; and
- Reconsideration of medium and low ranking water quality projects for elevation to high ranking status.

## I2. Water Supply Program

### I2.1 Data, Technical Methods and Analyses

The Water Supply Program is designed to improve regional water supply reliability and security, reduce dependence on imported water, reduce water rights disputes and protect watershed communities from drought with a focus on interagency conjunctive use of regional water resources without unfairly burdening communities, neighborhoods or individuals. The Water Supply Program goals, objectives, and projects were developed from numerous water and wastewater master plans, water supply alternatives studies, and water conservation programs as listed in Table I2.1. These plans document water supply needs and solutions available to the San Luis Obispo region and include the data, technical methods, and analyses used in the development of the water supply program.

The data, technical methods, and analyses used in development of the seven high ranking water supply projects are listed in Table I2.2.

**Table I2.1 Water and Wastewater Master Plans and Water Supply Alternatives**

| **Water and Wastewater Master Plans and Water Supply Alternatives Studies** |
|---|
| San Luis Obispo County Master Water Plan Update, Phase 1 Compilation Report, August 1998 |
| City of Arroyo Grande Water System Master Plan, July 1999 |
| Cayucos Area Water Organization, 2003 Water Management Plan, Nov. 2004 |
| CSA 10A Cayucos Water System Master Plan, Jan. 2003 |
| Santa Margarita CSA 23 Water System Master Plan |
| Los Osos Water Master Plan, August 2002 |
| Atascadero Mutual Water Company 1993 Water System Master Plan Final Report, Oct. 1993 |
| City of Paso Robles 1993 Water Master Plan April 1995 Update |
| City of Pismo Beach Water Master Plan, May 2004 |
| City of Pismo Beach Collection System Master Plan, Feb. 2000 |
| City of Pismo Beach Wastewater Treatment Plant Master Plan, Feb. 2000 |
| Water Uses and Alternatives for San Luis Obispo County, City and Regional Planning Department, California Polytechnic State University, 1988 |
| Final Report, Assessment of Long-Term Water Supply Alternatives, Cambria CSD, March 2004, |
| Final Report, Baseline Water Supply Analysis Cambria CSD, Dec. 2000 |
| City of Arroyo Grande Water Supply Alternatives Study, August 2004 |
| Projected Water Supply and Demand Atascadero Mutual Water Company, Dec. 2003 |
| City of Morro Bay Water Management Plan Status Report 2002 |
| Los Osos CSD Wastewater Facilities Project, Final Project Report, March 2001 |
| **Urban Water Management Plans** |
| City of Arroyo Grande Urban Water Management Plan Year 2000, May 2001 |
| City of Paso Robles UWMP, November 2000 |
| City of Grover Beach 2000 Urban Water Management Plan |
| City of Morro Bay 2002 Urban Water Management Plan, Executive Summary |
| City of Pismo Beach Urban Water Management Plan, Nov. 2002 |
| City of San Luis Obispo Urban Water Management Plan, April 2001 |
| County of San Luis Obispo Flood Control and Water Conservation, Zone 3, Urban Water Management Update 2000 |
| Los Osos CSD Urban Water Management Plan, Dec. 2000 |
| **Water Conservation Programs** |
| City Paso Robles Water Conservation |
| City of Arroyo Grande Water Conservation Program |
| California Urban Water Conservation Council, Memorandum of Understanding Regarding Urban Water Conservation in California, March 2005 |
| City of San Luis Obispo Water Conservation Program |
| Cambria CSD Water Conservation Program |
| City of Grover Beach Conservation Program |

| DWR Plans, Programs, and Policy Documents |
|---|
| California Water Plan |
| Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan, Jan. 2005 |
| **DHS Plans, Programs, and Policy Documents** |
| California Drinking Water Source Assessment and Protection (DWSAP) Program |
| Drinking Water Source Assessment and Protection Program, Source Water Assessments – Public Access |
| DHS Drinking Water Program |

**Table I2.2 Data, Technical Methods and Analyses of High Ranking Water Supply Projects**

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Master Water Plan | San Luis Obispo County Master Water Plan Update, Phase 1 Compilation Report<br><br>Water Master Plans from regional agencies | County Planning Department's Resource Management System to monitor municipal, industrial, agricultural, recreational, and environmental demand<br><br>GIS application identifying major land uses and quantifying water demands based on acreage, land use, and consumptive use statistics |
| Desalination Study | Project was identified as a data gap needed to meet the IRWMP desalination objective. | Evaluation of existing desalination projects and regional opportunities |
| Paso Robles Reclamation and Recharge Program | City of Paso Robles 1993 Water Master Plan<br><br>City of Paso Robles Water Master Plan April 1995 Update<br><br>City of Paso Robles Urban Water Management Plan, November 2000<br><br>Paso Robles Recycled Water Plan Update, September 2006<br><br>Paso Robles Groundwater Basin Study 2002 | Evaluation of land use data, growth projections, water demand projections, wastewater flow projections, and recycled water use opportunities.<br><br>Evaluation of groundwater basin characteristics and recharge capacity. |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | City of Paso Robles 2004 Water Quality Report<br><br>City of Paso Robles Water Conservation | |
| San Luis Obispo Reclamation Facility Upgrade | Water Uses and Alternatives for San Luis Obispo County, City and Regional Planning Department, California Polytechnic State University, 1988<br><br>City of San Luis Obispo Urban Water Management Plan, April 2001<br><br>City of San Luis Obispo 2004 Annual Water Quality Report<br><br>City of San Luis Obispo Water Conservation Program | Evaluation of land use data, growth projections, water demand projections, wastewater flow projections, and recycled water use opportunities. |
| Morro Bay Desalination Facility Upgrade | City of Morro Bay Water Management Plan Status Report 2002<br><br>City of Morro Bay 2002 Urban Water Management Plan, Executive Summary<br><br>City of Morro Bay 2004 Water Quality Report | Evaluation of land use data, growth projections, water demand projections, and desalinated water use opportunities. |
| Nipomo CSD Supplemental Water Project | Water Resources Evaluation Nipomo Mesa Management Area, Draft May 28, 2003<br><br>Nipomo Mesa Area Water Supply – Resource Capacity Study<br><br>Engineering Considerations of Groundwater Yields and Rights on the Nipomo Mesa Sub-Area, October 1993<br><br>Cal Cities – Nipomo, 2004 Annual Water Quality Report | Evaluation of land use data, growth projections, water demand projections, and supplemental water transfer opportunities.<br><br>Evaluation of groundwater basin characteristics, yields and transfer legal requirements. |
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| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Nacimiento Water Project | San Luis Obispo County Master Water Plan Update, Phase 1 Compilation Report<br><br>Nacimiento Water Project Environmental Impact Report, Final, December 2003 | Evaluation of capacity, yield, and operational alternatives.<br><br>Evaluation of environmental impacts consistent with CEQA requirements. |

### I2.2 Measures and Monitoring for Program Evaluation

The performance of the Water Supply Program will be evaluated based on its ability to meet the primary objectives of the program:

- Implement inter-agency projects including emergency inter-ties between systems, jointly developed facilities, water exchanges, and other methods of enhancing reliability through cooperative efforts over the development of new supplies.
- Maximize water conservation for both M&I and agricultural uses.
- Expand desalination water opportunities by 2010.
- Expand reclaimed water use to make up 5% of total water use by 2010 and 10% of total water use by 2020.

The measures used to evaluate the program progress will include comparisons of the current water supply portfolios against corresponding water supply portfolios following implementation of the program, and comparisons of the water supply portfolios after implementation with water demand projections. Specific targets for the program are outlined in the Project Assessment and Evaluation (PAEP) Table I2.3.

**Table I2.3: Water Supply Program PAEP Table**

| Program Goal | Desired Outcomes | Output Indicators | Outcome Indicators | Targets |
|---|---|---|---|---|
| Improve regional water supply reliability and security with a focus on interagency conjunctive use | Optimize the use of locally available supplies and existing facilities<br><br>Maximize water conservation, recycled water use, and desalinate water use | Diversified water supply portfolios<br><br>Interagency water transfer, banking, and shared facility agreements<br><br>New supplies to the region | Increase in new supplies to the region (acre-feet)<br><br>Number of water supply portfolios<br><br>Proportion of supplies that are imported versus local<br><br>Percent increase in recycled water use<br><br>Percent increase in desalinated water use | Maintain at least 3 different water supplies in each of the agencies' portfolios<br><br>Develop uses for local water sources that have not yet been captured |

The monitoring system necessary for this program will be an annual water supply program assessment comparing water portfolio changes. No additional hard infrastructure/monitoring equipment is necessary to measure program performance.

## I2.3 Adapting Water Supply Project Operations and Program Implementation

Water Supply Program operations will be modified periodically through an adaptive management process that will involve analysis of monitoring and assessment data for all measures and comparison to the proscribed targets for the water management program. Project adaptation within the Water Supply Program could involve:

- Identification of additional water transfer, banking, and shared facility options to improve system water supply reliability;
- Identification of new or expanded recycled water treatment opportunities including modification of treatment parameters such as filter and/or membrane loading, media composition, plant sizing and consideration of alternate treatment processes;
- Evaluation of additional Morro Bay Desalination Facility Upgrades to increase capacity and yield;
- Gathering of additional or alternative performance data; and
- Reconsideration of medium and low ranking water supply projects for elevation to high ranking status.

# I3. Ecosystem Program

## I3.1 Data, Technical Methods and Analyses

The Ecosystem Program is designed to protect, enhance and restore the region's natural resources including open spaces; fish, wildlife and migratory bird habitat; special status and native plants; wetlands; estuarine, marine, and coastal ecosystems; streams, lakes, and reservoirs; forests; and agricultural lands without unfairly burdening communities, neighborhoods or individuals. The Ecosystem Program goals, objectives, and projects were developed from numerous watershed management plans (Table I1.1), land use planning documents, agricultural reports and plans, environmental documents, and state plans, programs and policies as listed in Table I3.1. These plans document ecosystem conditions, needs and solutions available to the San Luis Obispo region and include the data, technical methods, and analyses used in the development of the ecosystem program.

The data, technical methods, and analyses used in development of the six high ranking ecosystem projects are listed in Table I3.2.

**Table I3.1 Ecosystem Plans**

| **Land Use Planning Documents** |
|---|
| County of San Luis Obispo 2004 Annual Resource Summary Report |
| County of San Luis Obispo Growth Management Ordinance |
| County of SLO General Plan - Inland |
| Adelaida LUE Area Plan |
| Huasna/Lopez LUE Area Plan |
| El Pomar-Estrella LUE Area Plan |
| Las Pilitas LUE Area Plan |
| Los Padres LUE Area Plan |
| Nacimiento LUE Area Plan |
| South County LUE Area Plan (Inland Portion) |
| County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003 |
| County Land Use Ordinance, Title 22 |
| County Coastal Zone Land Use Ordinance, Title 23 |
| Oceano Specific Plan, April 2002 |
| Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974 |
| City of San Luis Obispo General Plan Digest, December 2004 |
| City of Pismo Beach General Plan and Local Coastal Plan, 1992 |
| City of Paso Robles, General Plan, 2003 |
| City of Atascadero General Plan, June 2002 |
| City of Arroyo Grande General Plan |
| City of Morro Bay General Plan and Local Coastal Plan |
| City of Grover Beach General Plan, Housing Element, 2003 |
| City of SLO Water and Waste Water Management Element 2004 |

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|---|
| City of SLO Water Resources Status Report |
| County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003 |
| **Agricultural Reports and Plans** |
| Agricultural Resources Program Planning Advisory Committee 2003 Report |
| UCCE Rangeland Watershed Program Factsheets |
| Estimated Agricultural Water Needs in the Nipomo Area, April 1998 |
| **Environmental Documents: HCPs, Initial Studies, and EIRs** |
| Arroyo Grande Creek HCP for the Protection of Steelhead and California Red-Legged Frogs, Final Draft, February 2004 |
| Los Osos Habitat Conservation Plan, Draft, Feb. 2005 |
| Nacimiento Water Project Environmental Impact Report, Final, Dec. 2003 |
| Final Environmental Impact Report for the Los Osos CSD Wastewater Facilities Project, Certified March 1, 2001 |
| Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project, June 2001, Monterey County Water Resources Agency |
| Initial Study Cambria Water Master Plan, Cambria CSD, June 2004 |
| **RWQCB Plans, Programs, Policies and Priorities Documents** |
| Basin Plan |
| Watershed Management Initiative, January 2002 |
| Draft 2005 Basin Plan Triennial Review Priority List |
| Final 2001 Basin Plan Triennial Review Priority List |
| Inactive Metal Mines in Four San Luis Obispo County Watersheds, June 1999 |
| **SWRCB Plans, Programs, and Policy Documents** |
| California Ocean Plan |

**Table I3.2 Data, Technical Methods and Analyses of High Ranking Ecosystem Projects**

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Morro Bay Estuary Comprehensive Conservation and Management Plan | Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974<br><br>RWQCB Basin Plan<br><br>RWQCB Watershed Management Initiative, January 2002 | GIS application identifying spatial data on eelgrass, elevations, restoration and monitoring sites, wetlands, and other sensitive status species<br><br>Creek flow and water quality analyses |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | SWRCB California Ocean Plan<br><br>Monterey Bay National Marine Sanctuary Program Action Plan IV: Agriculture and Rural Lands<br><br>Monterey Bay National Marine Sanctuary Program Action Plan I: Implementing Solutions to Urban Runoff<br><br>Monterey Bay National Marine Sanctuary Program Water Quality Protection Program Implementation Action Plan<br><br>Agriculture Water Quality Alliance: Land-Sea Partnerships to Protect the Waters and Watersheds of the Monterey Bay National Marine Sanctuary, Summary Report of the MBNMS Agriculture and Rural Lands Plan Implementation, October 1999-October 2004<br><br>Chorro Creek Ecological Reserve – Restoration Plan | Storm water outfall analyses & monitoring<br><br>Sediment control & capture analyses<br><br>Analysis of distribution and abundance of environmental indicators<br><br>Fish sampling & water quality analysis |
| Agriculture and Open Space Element | Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974<br><br>Inactive Metal Mines in Four San Luis Obispo County Watersheds, June 1999<br><br>Agricultural Resources Program Planning Advisory Committee 2003 Report<br><br>UCCE Rangeland Watershed Program Factsheets<br><br>County of San Luis Obispo 2004 Annual Resource Summary Report | Land use relationships, compatibilities, and conflicts evaluation<br><br>Mapping of land use, agricultural preserves, land capability, open space resources, and public ownership<br><br>Water quantity and quality analyses |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | County of San Luis Obispo Growth Management Ordinance<br><br>County of SLO General Plan – Inland<br><br>County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003<br><br>County Land Use Ordinance, Title 22<br><br>County Coastal Zone Land Use Ordinance, Title 23 | |
| Conservation Element | Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974<br><br>Inactive Metal Mines in Four San Luis Obispo County Watersheds, June 1999<br><br>Agricultural Resources Program Planning Advisory Committee 2003 Report<br><br>UCCE Rangeland Watershed Program Factsheets<br><br>County of San Luis Obispo 2004 Annual Resource Summary Report<br><br>County of San Luis Obispo Growth Management Ordinance<br><br>County of SLO General Plan – Inland<br><br>County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003 | Natural resource supply analysis<br><br>Air quality analyses<br><br>Land condition trend analysis<br><br>Natural resource inventory<br><br>Evaluation of water resources availability<br><br>Biological assessments<br><br>Determination of cultural resources<br><br>Archaeological investigations |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | County Land Use Ordinance, Title 22<br><br>County Coastal Zone Land Use Ordinance, Title 23<br><br>County of San Luis Obispo General Plan Conservation Element, 1974<br><br>County of San Luis Obispo General Plan Historic Element, 1974<br><br>County of San Luis Obispo General Plan Esthetic Element, 1974<br><br>County of San Luis Obispo General Plan Energy Element, 1994<br><br>County of San Luis Obispo General Plan Off-Shore Energy Element, 1993<br><br>County of San Luis Obispo General Plan Agricultural and Open Space Element, 1998 | |
| Low Impact Development Program | County of San Luis Obispo 2004 Annual Resource Summary Report<br><br>County of San Luis Obispo Growth Management Ordinance<br><br>County of SLO General Plan – Inland<br><br>County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003<br><br>County Land Use Ordinance, Title 22 | Hydrologic Analyses<br><br>Precipitation and runoff analyses |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | County Coastal Zone Land Use Ordinance, Title 23 | |
| Wetland and Vernal Pool Mapping | County of San Luis Obispo 2004 Annual Resource Summary Report<br><br>Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974<br><br>Arroyo Grande Creek HCP for the Protection of Steelhead and California Red-Legged Frogs, Final Draft, February 2004<br><br>Los Osos Habitat Conservation Plan, Draft, Feb. 2005<br><br>Nacimiento Water Project Environmental Impact Report, Final, Dec. 2003<br><br>Final Environmental Impact Report for the Los Osos CSD Wastewater Facilities Project, Certified March 1, 2001<br><br>Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project, June 2001, Monterey County Water Resources Agency<br><br>Initial Study Cambria Water Master Plan, Cambria CSD, June 2004 | GIS based delineation and classification of wetland and vernal pool lands<br><br>Natural resource inventory<br><br>Evaluation of water resources availability<br><br>Biological assessments |
| Morro Bay Harborwalk | County of San Luis Obispo General Plan Parks and Recreation Element, Draft Nov. 2003<br><br>Environment Plan, San Luis Obispo County General Plan (Conservation Element), Nov. 1974 | Storm water infiltration study<br><br>Storm water management analyses<br><br>Traffic analyses and predictions |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | City of Morro Bay General Plan and Local Coastal Plan | |

### I3.2 Measures and Monitoring for Program Evaluation

The performance of the Ecosystem Program will be evaluated based on its ability to meet the primary objectives of the program:

- Purchase and conserve through easements, preserve, enhance, and restore land in ecologically sensitive ecosystems.
- Manage public access to encourage public involvement and stewardship.
- Manage stream flows to fish bearing streams, support a region-wide fish passage barrier prevention, circumvention and removal program, and implement fish friendly stream and river corridor restoration projects.
- Reduce the effects of invasive plant species, manage public properties to re-establish rare and special status native plant populations, and promote native drought tolerant plantings in municipal and residential landscaping.
- Implement the San Luis Obispo County Native Tree Management Guidelines and promote the voluntary guidelines in the San Luis Obispo County Native Tree Resolution for tree protection and restoration programs, urban forest management, and wild lands fire management.
- Reuse reclaimed mine lands for beneficial purposes.
- Conserve natural resources.

Ecosystem monitoring will be used to evaluate the program progress. The monitoring will be developed from the guidelines and recommendations established in or by the California Watershed Assessment Manual, EPA Watershed Training Academy, California Rapid Assessment Method for Wetlands and Riparian Habitats (CRAMP), SWAMP Biological and Physical Habitat Assessment of Wadeable Streams, California Stream Bioassessment, and Riparian Mapping. Specific targets for the program are outlined in the Project Assessment and Evaluation (PAEP) Table I3.3.

**Table I3.3: Ecosystem Program PAEP Table**

| Program Goal | Desired Outcomes | Output Indicators | Outcome Indicators | Targets |
|---|---|---|---|---|
| Protect, restore and enhance the region's natural resources | Native habitat protected and in balance with regions land use | Habitat acreage<br><br>Acreage of invasive species<br><br>Biometric scores | Percent increase in native habitat<br><br>Percent decrease in invasive species cover<br><br>Improvement in habitat condition or other biometric scores | Increase native habitat acreage by 10% each year. |

### I3.3 Adapting Ecosystem Project Operations and Program Implementation

Ecosystem Program operations will be modified periodically through an adaptive management process that will involve analysis of monitoring and assessment data for all measures and comparison to the proscribed targets for the ecosystem program. Project adaptation within the Ecosystem Program could involve:

- Implementation of projects developed through the Morro Bay Estuary Comprehensive Conservation and Management Plan, Agriculture and Open Space Element, and Conservation Element;
- Cities' adoption of the County Low Impact Development Program;
- Enhancement of NPDES and TMDL programs;
- Gathering of additional or alternative performance data; and
- Reconsideration of medium and low ranking water quality projects for elevation to high ranking status.

## I4. Groundwater Program

### I4.1 Data, Technical Methods and Analyses

The Groundwater Program is designed to monitor, protect, and improve the regions groundwater through a collaborative approach designed to reduce conflicts without unfairly burdening communities, neighborhoods or individuals. The Groundwater Program goals, objectives, and projects were developed from numerous groundwater studies and plans as listed in Table I4.1. These plans document groundwater conditions, needs and solutions available to the San Luis Obispo region and include the data, technical methods, and analyses used in the development of the groundwater program.

The data, technical methods, and analyses used in development of the four high ranking groundwater projects are listed in Table I4.2.

**Table I4.1 Groundwater Plans**

| Groundwater Studies and Plans |
|---|
| City of San Luis Obispo Groundwater Basin Evaluation |
| Paso Robles Groundwater Basin Study |
| Water Resources Evaluation Nipomo Mesa Management Area, Draft May 28, 2003 |
| Nipomo Mesa Area Water Supply - Resource Capacity Study |
| Water Resources of the Arroyo Grande-Nipomo Mesa Area, DWR, 2002 |
| Engineering Considerations of Groundwater Yields and Rights on the Nipomo Mesa Sub-Area, October 20, 1993 |
| The Hydrology of the 1987-1992 California Drought |
| Long-Term Viability of Water Supply, City of Atascadero |
| Cambria CSD, Water Supply and Availability Report |
| Los Osos Ground Water Basin Management Plan, July 2002 |
| Geologic Structure of the Los Osos Valley Ground Water Basin, Nov. 2003 |
| Final Report Water Supply Evaluation for Atascadero Mutual Water Company, Aug. 2000 |
| Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, USGS Report 98-4061, 1998 |
| Groundwater Resources of CSA-23, Santa Margarita, Technical Memorandum, Oct. 2004 |

**Table I4.2 Data, Technical Methods and Analyses of High Ranking Groundwater Projects**

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Chorro and Morro Groundwater Basin Management Plans | City of Morro Bay Water Management Plan Status Report 2002<br><br>The Hydrology of the 1987-1992 California Drought<br><br>City of Morro Bay General Plan and Local Coastal Plan<br><br>Morro Bay National Estuary Program Comprehensive Conservation Management Plan for Morro Bay | Groundwater level and water quality analyses<br><br>Watershed basin analysis<br><br>Analysis of alluvial soils<br><br>Evaluations of groundwater recharge |
| Groundwater Recharge Optimization Program | All of the available groundwater evaluations listed in Table I-10 will be considered | Precipitation and flood frequency analysis<br><br>Hydrologic conductivity |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | | Soil characterization |
| Groundwater Management Ordinance Study | Groundwater management ordinances from other regions including the Santa Cruz, Monterey and Santa Barbara Counties | Hydrogeologic conditions analyses<br><br>Precipitation analyses<br><br>GIS based land use inventory |
| Edna Valley Groundwater Basin Study | San Luis Obispo LUE Area Plan, 2007 | Groundwater monitoring data analyses |

## I4.2 Measures and Monitoring for Program Evaluation

The performance of the Groundwater Program will be evaluated based on its ability to meet the primary objectives of the program:

- Develop monitoring and reporting programs for groundwater basins in the region.
- Evaluate and consider Groundwater Banking Programs.
- Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclide, geothermal contamination; and seawater intrusion and salts.
- Conduct public education and outreach about ground water protection.
- Identify areas of known or expected conflicts and target stakeholders on specific actions that they should take to help protect groundwater basin quality and supply.
- Recharge ground water with high quality water.

Groundwater monitoring programs will be used to evaluate the program progress. There are existing groundwater monitoring and modeling programs in place throughout the region consistent with DWR guidelines. Specific targets for the program are outlined in the Project Assessment and Evaluation (PAEP) Table I4.3.

**Table I4.3: Groundwater Program PAEP Table**

| Program Goal | Desired Outcomes | Output Indicators | Outcome Indicators | Targets |
|---|---|---|---|---|
| Monitor, protect, and improve the region's groundwater resources | Optimized use of groundwater resources consistent with safe basin yields | Groundwater level data<br><br>Groundwater quality data<br><br>Groundwater modeling results | Percent change in groundwater elevation<br><br>Percent decrease in groundwater contaminants | Balance groundwater extractions with groundwater recharge |

### I4.3 Adapting Groundwater Project Operations and Program Implementation

Groundwater Program operations will be modified periodically through an adaptive management process that will involve analysis of monitoring and assessment data for all measures and comparison to the proscribed targets for the groundwater program. Project adaptation within the Groundwater Program could involve:

- Implementation of projects developed through the Chorro and Morro Basin Groundwater Management Plan, Groundwater Recharge Optimization Program, and the Edna Valley Groundwater Basin Study;
- Cities' adoption of the County Groundwater Management Ordinance;
- Increases or decreases in estimated safe basin yields and resulting operational changes;
- Gathering of additional or alternative performance data; and
- Reconsideration of medium and low ranking water quality projects for elevation to high ranking status.

## I5. Flood Management Program

### I5.1 Data, Technical Methods and Analyses

The Flood Management Program is designed to develop, fund, and implement an integrated, watershed approach to flood management through a collaborative and community supported process without unfairly burdening communities, neighborhoods or individuals. The Flood Management Program goals, objectives, and projects were developed from numerous flood management and drainage studies and plans as listed in Table I5.1. These plans document flood and drainage conditions, needs and solutions available to the San Luis Obispo region and include the data, technical methods, and analyses used in the development of the flood management program.

The data, technical methods, and analyses used in development of the three high ranking flood management projects are listed in Table I5.2.

**Table I5.1 Flood Management Plans**

| Flood / Drainage Studies and Plans |
|---|
| Cambria Drainage and Flood Control Study, Feb. 2004 |
| Cayucos Drainage and Flood Control Study, Jan. 2004 |
| Oceano Drainage and Flood Control Study, Feb. 2004 |
| Nipomo Drainage and Flood Control Study, Feb. 2004 |
| San Miguel Drainage and Flood Control Study, Dec. 2003 |
| Santa Margarita Drainage and Flood Control Study, Feb. 2004 |
| Los Osos Drainage Study |
| City of Pismo Beach Drainage Master Plan, Draft August 2002 |

**Table I5.2 Data, Technical Methods and Analyses of High Ranking Flood Projects**

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| Flood Management Plan | County of San Luis Obispo Storm Water Management Plan<br><br>All of the available drainage and flood control studies listed in Table I-13 will be considered | Drainage and Flood Control Analyses for 6 communities (Oceano, Nipomo, San Miguel, Santa Margarita, Cambria, and Cayucos)<br><br>Regional rainfall and flood frequency analysis<br><br>Flood risk analysis<br><br>Evaluation of land use data |
| Flood Control Zone 1/1A Waterway Management Program | County of San Luis Obispo Storm Water Management Plan<br><br>Oceano Drainage and Flood Control Study, Feb. 2004<br><br>Oceano Specific Plan, April 2002<br><br>City of Arroyo Grande General Plan<br><br>City of Arroyo Grande Storm Water Management Program<br><br>Arroyo Grande Creek Watershed Management Plan, Central Coast Salmon Enhancement, Draft | Drainage and Flood Control Analysis for the community of Oceano<br><br>Hydrologic Analysis (HEC-HMS Model) for all areas of Arroyo Grande Creek Watershed downstream of Lopez Reservoir<br><br>Detailed Topographic Surveys for the flood control portion of Arroyo Grande and Los Berros Creeks and adjacent areas<br><br>Sediment Budget/Sediment Source Assessment for all areas of the Arroyo Grande Creek |

| Project | Technical Reports | Technical Analyses |
|---|---|---|
| | Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study, January 2006 | Watershed downstream of Lopez Reservoir<br><br>Sediment Transport Analysis: Estimates of sediment flux, transport, and deposition for the flood control portions of Arroyo Grande and Los Berros Creeks<br><br>Quantitative precipitation forecasting |
| Flood Control Zone 9 Waterway Management Program | County of San Luis Obispo Storm Water Management Plan<br><br>City of San Luis Obispo Storm Water Management Program<br><br>San Luis Obispo Creek Waterway Management Plan | Hydrologic Analysis & Modeling (HEC-RAS) for all areas of San Luis Obispo Creek Watershed<br><br>Detailed Topographic Surveys for the flood control portion of San Luis Obispo Creek<br><br>Stream stage-discharge analyses<br><br>Flood frequency analysis |

### I5.2 Measures and Monitoring for Program Evaluation

The performance of the Flood Management Program will be evaluated based on its ability to meet the primary objectives of the program:

- Distinguish the root cause of flooding problems stemming from new development, existing development, and mandatory regulation.
- Integrate ecosystem enhancement, drainage control, and natural recharge into development projects.
- Develop financial programs for drainage and flood control projects.
- Evaluate and minimize the risk of dam and levee failures.
- Develop and implement public education, outreach, and advocacy.

Flood and drainage monitoring programs will be used to evaluate the program progress. The measures will include flow and water level monitoring, damage reports after flooding events and stakeholder feedback after events. Specific targets for the program are outlined in the Project Assessment and Evaluation (PAEP) Table I5.3.

The monitoring protocol would include provisions for measuring sediment deposition and erosion, vegetation growth or loss, and levee wear along the waterways. Other

monitoring measures would include the amount of damage claims and overtopping sightings experienced during wet weather events.

**Table I5.3: Flood Management Program PAEP Table**

| Program Goal | Desired Outcomes | Output Indicators | Outcome Indicators | Targets |
|---|---|---|---|---|
| Implement watershed based flood management programs | Protect region from 100-year flood events | Percent increase in protected floodplain acreage<br><br>Number of miles of improved waterways<br><br>Percent increase in BMP area acreage | Number of floodplain acres protected<br><br>Miles of connected drainage reduced<br><br>Number of flood attenuation BMPs implemented<br><br>Number of cities with state-of-the-art building codes and land use ordinances with flood attenuation requirements | Protect region from 100-year flood events by the year 2020 |

## I5.3 Adapting Flood Management Project Operations and Program Implementation

Flood Management Program operations will be modified periodically through an adaptive management process that will involve analysis of monitoring and assessment data for all measures and comparison to the proscribed targets for the flood program. Project adaptation within the Flood Management Program could involve:

- Modifications of flood channel maintenance techniques for vegetation thinning, sediment removal and sandbar breaching;
- Use of improved methods for environmentally friendly sediment removal methods;
- Modifications to allow improved recreational and habitat function in conjunction with flood protection projects;
- Improvements in communications methods and avenues to urban residents, landowners and recreational interests;
- Gathering of additional or alternative performance data; and
- Reconsideration of medium and low ranking water quality projects for elevation to high ranking status.

## I6. Performance Measures and Monitoring to Evaluate the IRWMP

In addition to the IRWMP Program monitoring described in proceeding subsections, a scorecard on the District's IRWM efforts overall is included in the 5-year implementation work plan.

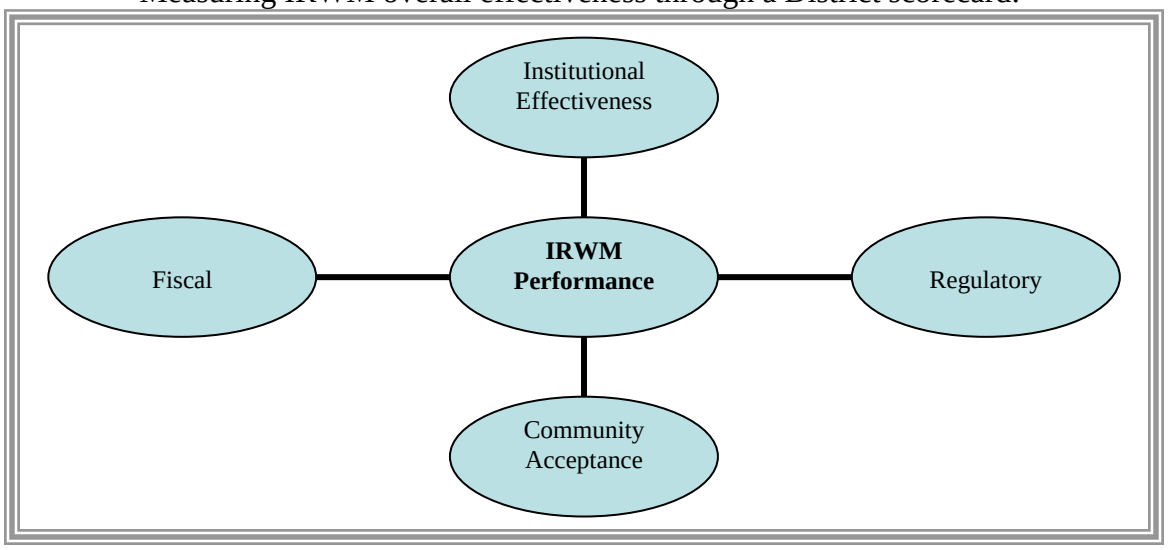
**Scorecard**

The purpose of the scorecard is not "project specific," but rather, it is programmatic in nature. Its intent is to identify global reasons for successes and shortcomings. By reviewing the performance on specific projects, common causes for successes and shortcomings can be identified, helping to determine whether the results of project efforts are unique to the project or whether they identify other challenges, such as:

- Institutional
  - Will monitoring performance identify institutional weaknesses?
- Fiscal
  - Will monitoring performance identify fiscal constraints that are common to certain types of IRWM efforts?
- Regulatory
  - Will monitoring performance identify regulatory practices or policies that hamper IRWM efforts?
- Stakeholders/Social/Political
  - Will monitoring performance identify IRWM efforts that are ultimately not supported by the constituents and locally elected officials?

The four cornerstones to the region's scorecard for monitoring the effectiveness of overall IRWM efforts are illustrated below:

Measuring IRWM overall effectiveness through a District scorecard:




The iterative process of evaluating performance, both on a project level and at the programmatic level, combined with adaptive management, will ultimately be critical to the long-term success of integrated water resource management. Since this Plan is a "first generation" plan, significant modifications, refinements and other changes may be expected as stakeholders become more engaged – especially as they search for more opportunities to integrate goals, objectives and strategies. Consequently, the performance monitoring and adaptive management approaches included in this plan are of equal benefit to water resource management as they are to well governed communities.

**Ecosystem Restoration, Regulatory Practices, and Funding**

As an example of existing conditions that the San Luis Region will be monitoring while evaluating plan performance on a programmatic level, the following is a summary on potential obstacles that could be faces for some integration strategies.

While the need to analyze ecosystem and environmental impacts and mitigation efforts is required by the California Environmental Quality Act (CEQA) - and for some projects the National Environmental Policy Act (NEPA) - during consideration of specific projects, understanding and integrating overall water resource management efforts should enhance the efficiency and effectiveness of existing efforts – and potentially improve the use of public expenditures over the long-term horizon, but may also face some difficult challenges.

Mitigation requirements directly attributable to projects and other public programs are currently typically included in those project and program budgets. Other ecosystem

restoration and protection efforts are sometimes more difficult to fund – relying more heavily on grant revenues or other aid that can be unpredictable. As part of the implementation of this IRWM Plan, the development of a "regional scorecard" identifying actual successes and shortcomings in comparison to goals and objectives will help identify whether ecosystem and environmental goals and objectives are being met and reasons for actual results.

If lower priority ecosystem and environmental goals are being attained due to coincidental availability of funding while higher priority items are unfulfilled due to lack of funding, then future consideration to adapting funding mechanisms, and perhaps regulatory practices, or institutional structures may be considered in support of higher-priority ecosystem and environmental needs. Development of a scorecard tracking environmental successes and shortcomings will be important because those goals and objectives that are more difficult to attain can become subject to more focused integration efforts while those that are finding success under existing independent efforts may well be suited for continued independent efforts.

***Developing a regional scorecard on future IRWM successes and shortcoming will help in monitoring those goals and objectives that rely more heavily on integration.*** In seeking integration with ecosystem and environmental goals and objectives, evaluating their scorecard may be especially helpful. Environmental funding typically requires mitigation or grant funding, and integration strategies may, over time, help identify strategies to adapt regulatory practices and/or local, state and federal institutional structures to promote efficient and effective methods of meeting ecosystem and environmental needs.

## I7. Adaptive Management

Adaptive management is a process for implementing policy decisions as an ongoing activity based on an iterative process of data monitoring and evaluation. Adaptive management applies scientific principles and methods to improve resource management incrementally as resource managers learn from experience and as new scientific findings and social changes come to light. A commitment to adaptive management means learning by doing, rather than reacting to changes long after the fact.

Karen Johnson and Jeff Loux in their pioneering book, Water and Land Use: Planning Wisely for California's Future, define adaptive management in terms of water resource management as a planning and implementation framework that allows ongoing monitoring data to be used to change course, modify policies and direction, and adaptively manage to optimize the value of the resource. For this IRWM Plan, adaptive management primarily occurs through WRAC in the following ways:

**Goal Setting**

Each year in February, the WRAC reviews existing programs (including this IRWM Plan) and recommends priorities for the following fiscal year. The status of each task identified as a priority is reviewed by WRAC and District staff on a regular basis.

**Budget**

Each year in May, as a part of the annual budgeting process, the WRAC reviews the budget for the District. Recommendations are made to the Board of Supervisors that ensure funding for the goals and priorities.

**Resource Management System (RMS)**

The Resource Management System was adopted by the County of San Luis Obispo in 1980 as land use planning tool to ensure that proposed development does not outpace available resources. Resources that are re-evaluated each year primarily focus on water sources and water system capacity, but also include traffic capacity, sewage capacity, air quality, and schools. These resources are evaluated for each planning area and for each community. The RMS is maintained by the County Planning and Building Department and is reviewed by the WRAC on an annual basis before being brought to the Board of Supervisors.

**Board Advice**

All water resource issues that require action by the Board of Supervisors are brought to the WRAC first. These issues are reviewed in light of other on going water resource issues. Each issue is also evaluated for consistency with the District's goals and policies.

## I8. Data Gaps Identified in Plan Development

During the development of this Plan, several gaps were identified as potential barriers to achieving some of the objectives. Other data gaps are also described in Section J4, "Monitoring Data Gaps". The following data gaps are also mentioned here for plan continuity:

**Groundwater Banking**

It is understood that the Paso Robles groundwater basin presents a potentially desirable location for banking. Two stream gages formerly maintained by the USGS, but since abandoned, could provide valuable data for predicting basin recharge. It is anticipated that these two gages will be restored by the District or replaced.

**Environmental Demand**

Generally, the types of species and habitat locations are fairly well understood for the waterways throughout the Region. However, the quantity of water needed to protect those species or maintain the habitat has not been adequately studied. This is further complicated by the fact that environmental demand in a healthy ecosystem varies from season to season and from year to year. It is intended that each of the significant creeks affected by development will be evaluated over time. A Habitat Conservation Plan (HCP) has been prepared by the District for Arroyo Grande Creek as part of operating the Lopez Dam. This HCP is currently under review by several resource and regulatory

agencies. Once adopted, this HCP may be used as a model to evaluate other waterways within the Region.

**Flood/Ecosystem Management**

Historically, there has been conflict between flood management objectives and ecosystem preservation and restoration objectives. Often, the result has been marginal success in meeting any of the objectives. It is anticipated that integrating these objectives into an IRWM Plan will promote cooperation and help achieve greater success in meeting both ecosystem preservation and restoration and flood management objectives. It is also anticipated that, as each creek is studied according to the environmental demand gap described above, property owners will be educated on acceptable means for managing vegetation and sediment in creeks and on other management measures and practices for riparian corridor protection.