The following pages provide information on the monitoring, assessment and performance measures for each of the projects included within this proposal. In accordance with the PSP, this attachment includes the following information:

- The metrics used to evaluate project performance
- The monitoring systems in place to verify project performance
- A description of the data collection process and how the data will be evaluated to ensure the goals and objectives of the IRWM Plan are being met
- A discussion of how the project is consistent with the Basin Plan
- A project performance measures table including
  - Project Goals
  - Desired Outcomes
  - Targets – measureable targets that are feasible to meet during the life of the project(s)
  - Performance indicators – measures to evaluate change that is a direct result of the project being built
  - Measurement Tools and Methods – to effectively track performance
Overview of Objectives and Key Performance Indicators

The 2005 Functionally Equivalent Integrated Regional Water Management (IRWM) Plan, and the updated Project List, include projects intended to provide multiple benefits to both the individual East County agencies and the Regional Water Management Group as a whole. Each project included in the Plan has been developed based on analysis of historic and projected data for the individual agencies and overall region, including water supply data, population information, water demand information, dry year supply reliability, water quality data, and cost information for potential water management alternatives. Analytical tools used to establish scientific basis for the projects included hydraulic models, water quality models, land use data, species and habitat maps and models, and watershed inventories.

For each project or program included in the approved Project List, specific project metrics have been developed, and appropriate monitoring approaches identified to assess plan performance on an ongoing basis. Data will be collected and managed in a manner intended to facilitate coordination with statewide data collection efforts, with spreadsheets and/or databases as potential tools. Water quality data will be formatted for integration with appropriate statewide data management systems.

There are five projects included in this implementation grant application:

- Project 1: Beacon West Arsenic Well and Tank Replacement Project
- Project 2: Rossmoor Well Replacement/Groundwater Monitoring Well System Expansion
- Project 3: Integrated Regional Flood Protection and Water Quality Improvement Borrow Area Project
- Project 4: Knightsen Wetland Restoration and Flood Protection Project, and
- Project 5: Recycled Water Salinity Reduction and Distribution System Expansion Project

These projects are briefly summarized in Table 1.
Table 6-1: Summary of Projects, Proponents and Descriptions

<table>
<thead>
<tr>
<th>Project</th>
<th>Project Proponent</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beacon West Arsenic Well and Tank Replacement Project</td>
<td>Diablo Water District</td>
<td>The project will replace a well located in the Beacon West community that has arsenic levels in excess of Primary Drinking Water Standards with a well drawing from a shallower aquifer zone shown to have arsenic levels below the Maximum Contaminant Level (MCL). The project will also replace two 1,500 gallon hydropneumatic pressure tanks that have corroded and jeopardize the community’s water supply. Beacon West is located on Bethel Island, a Census Designated Place qualifying as a disadvantaged community (DAC).</td>
</tr>
<tr>
<td>Rossmoor Well Replacement/ Groundwater Monitoring Well System Expansion</td>
<td>City of Pittsburg</td>
<td>The Rossmoor Well Replacement/Groundwater Monitoring Well System Expansion Project will replace an existing well that has suffered severe capacity impacts due to biofouling, with a new well to allow continued use of local groundwater supplies in lieu of additional Delta supplies. The project includes the following elements: (1) Installing a replacement well at the existing Rossmoor Well with variable frequency drive and resulting in a capacity increase from 600 gallons per minute (gpm) to 1400 gpm; (2) Installing 1,200 feet of larger supply line; and (3) Installing a multiport monitoring well to expand the groundwater monitoring system.</td>
</tr>
<tr>
<td>Integrated Regional Flood Protection and Water Quality Improvement Borrow Area Project</td>
<td>Contra Costa Water District and Contra Costa County Flood Control and Water Conservation District (FCD)</td>
<td>The Integrated Regional Flood Protection and Water Quality Improvement Borrow Area Project involves removing 75,000 cubic yards (cy) of stockpiled, surplus earthen material from the FCD’s Upper Sand Creek Basin (USCB) site, and reusing this material at the Contra Costa Water District’s Contra Costa Canal Levee Elimination and Flood Protection Project. This project will enable an additional 450 linear feet of Canal to be encased in a buried pipeline, replacing the Canal embankments along Segment 2 of the unlined Canal adjacent to the DWR Tidal Restoration Project in Oakley in California. In addition, by removing fill from USCB, it will increase basin capacity and accelerate attainment of full project flood protection benefits.</td>
</tr>
<tr>
<td>Project</td>
<td>Project Proponent</td>
<td>Abstract</td>
</tr>
<tr>
<td>----------------------------------------------</td>
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<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Knightsen Wetland Restoration and Flood Protection Project</td>
<td>East Contra Costa County Habitat Conservancy</td>
<td>This multi-objective project will acquire a 645-acre parcel and create a 30-acre stormwater detention and treatment wetland near the unincorporated town of Knightsen in an area currently used for irrigated agriculture. This project will provide environmental (habitat and species) benefits as well as substantial water quality benefits. By capitalizing on the immediate opportunity to integrate: a) long-standing interest in flood protection and stormwater treatment wetlands near Knightsen, b) the habitat and watershed protection and restoration goals of the adopted HCP/NCCP in East Contra Costa County, and c) opportunity to acquire a piece of property that is ideal for integrating these two objectives, the construction of the project provide long term multiple benefits to the region (flood control, drinking water quality protection, and habitat protection and restoration).</td>
</tr>
<tr>
<td>Recycled Water Salinity Reduction and Distribution System Expansion Project</td>
<td>Delta Diablo Sanitation District</td>
<td>The Recycled Water Salinity Reduction and Distribution System Expansion Project will improve recycled water quality, reduce pollutant loading to the Delta, offset use of Delta supplies, expand recycled water capacity, and provide operational benefits and cost savings by reducing total dissolved solids (TDS) concentration in recycled water produced at Delta Diablo Sanitation District (DDSD) and extending the existing distribution to connect new users. This project involves the installation of approximately 9,200 lineal feet of 6-inch high density polyethylene (HDPE) pipe and appurtenances to redirect a high TDS brine line from Dow to the DDSD wastewater treatment plant downstream of the recycled water facility. This will reduce recycled water TDS concentrations by 15% to 20%, which will improve industrial and irrigation uses. Reduced TDS concentration will allow increased cycling ratios for cooling purposes, thus freeing up recycled water capacity for other users. New recycled water service will be established for several use sites for landscape irrigation and for industrial purposes located in the City of Antioch and City of Pittsburg.</td>
</tr>
</tbody>
</table>

Objectives and key performance indicators for each proposed project are summarized below.

- The Diablo Water District’s **Beacon West Arsenic Well and Tank Replacement Project** will benefit the Beacon West community on Willow Road West on Bethel Island, a Census Designated Place that qualifies as a disadvantaged community (DAC); additionally, Beacon West is located in Census Tract 3010, also qualifying as a DAC. The project will benefit the Beacon West community by replacing a well that has high arsenic levels (in excess of the MCL) with a higher quality groundwater supply shown to have arsenic levels below the MCL. The location of the new well has already been determined and the District has received a Variance Permit from the Contra Costa Health Services Department given its location within the existing road right-of-way. In addition, the project will replace two 1,500 gallon hydropneumatic pressure tanks that have corroded and for which corrective maintenance is no longer effective. This project helps
achieve IRWM objectives related to water supply and water quality, including maximizing water supply reliability, maximizing use of local supplies, and maximizing public health protection. Success of the project will be determined primarily by measurements of arsenic in the new drinking water supply. Completion of the installation of the new pressure tanks is expected to reduce near term maintenance and add reliability to the water supply system.

- The City of Pittsburg’s **Rossmoor Well Replacement/Groundwater Monitoring Well System Expansion** will help meet IRWMP objectives related to water supply, water quality and groundwater management by installing a replacement Rossmoor Well that increases capacity from 600 gpm to 1400 gpm. The installation of a larger supply line will aid in minimizing hydraulic losses, making for a more efficient system, while the installation of a multiport monitoring well will expand the groundwater monitoring system. Objectives that can be achieved include maximizing water supply reliability, meeting future demands, maximizing use of local water supplies, maximizing public health protection, and providing valuable information for long-term management of the groundwater basin. Success of the project will be determined primarily by the capacity of the new well and ability to meet existing and future groundwater demands, preventing the purchase of additional Delta supplies.

- The **Integrated Regional Flood Protection and Water Quality Improvement Borrow Area Project** is a partner project between the Contra Costa Water District (CCWD) and Contra Costa County Flood Control and Water Conservation District (FCD). This project takes advantage of the synergies between two projects currently underway and supports the DWR Tidal Restoration Project adjacent to the Contra Costa Canal. Expansion of the FCD’s Upper Sand Creek Basin is currently underway, and the site provides stormwater attenuation, stormwater infiltration, trash capture, and environmental enhancement of Sand Creek. The 2013 expansion will yield significant surplus excavated soil material that must be retained on site given the high cost of hauling that material to a landfill. CCWD can reuse the stockpiled material for local reuse in the Canal Levee Elimination and Flood Protection Project. CCWD’s full, five-phase Contra Costa Flood Protection and Levee Elimination Project will replace 21,000 feet of the unlined Contra Costa Canal with a pipeline and install a Canal flood isolation structure that will allow CCWD to remotely isolate the Canal following a major earthquake or flood. Once the pipeline is installed in the place of the Canal, the site has a need for imported fill to bring up the grade to match the surrounding parcels. CCWD is currently implementing approximately 5,000 feet of canal encasement with a $10 M Proposition 1E funding award. By using fill from the USCB, CCWD will be able to construct an additional 450 feet of pipeline under the existing contract and budget. This project helps the CCWD and FCD meet their individual project goals related to water quality and flood control, and individually meets objectives associated with the IRWMP goals of ecosystem restoration/preservation and implementability, namely minimizing environmental impacts of development, maximizing regional coordination, maximizing cost-effectiveness, and maximizing benefits. As a measure of the project’s success in meeting desired outcomes, inspectors will test the placed fill to ensure that it is compacted to the level specified, and the borrow site will be surveyed to ensure positive drainage during rain events. The 75,000 cubic yards of fill is expected to raise the Segment 2 right-of-way adjacent to the Dutch Slough Tidal Restoration Project by approximately two (2) feet. The added fill placed within the right-of-way can be measured and described on final as-built drawings. The additional length of pipeline constructed using the cost savings generate by this project (450 feet) will also be confirmed.
• East Contra Costa County Habitat Conservancy’s Knightsen Wetland Restoration and Flood Protection Project will implement a 30-acre stormwater treatment wetland on an existing 645-acre parcel providing 17 acre-feet of stormwater management and treatment as well as creation of critical habitat. In addition to the immediate and local impacts to the area around Knightsen, improving the water quality of runoff in this area is particularly critical because contaminated storm water drains to Rock Slough and adjacent Delta waterways. Rock Slough is the location for the intake to the Contra Costa Canal, a primary source of drinking water for central and eastern Contra Costa County. This project’s primary objectives include those associated with flood control and ecosystem restoration/preservation, including protection against flooding and maximizing environmental benefits. The project also has ancillary benefits to water supply and will help achieve objectives associated with protecting and enhancing source water quality. Progress towards achieving these objectives will be measured by comparing effluent water quality from the wetlands to influent stormwater quality, confirming the stormwater treatment capacity of the constructed wetlands, and measuring and surveying the acres of habitat created.

• Delta Diablo Sanitation District’s (DDSD) Recycled Water Salinity Reduction and Distribution System Expansion Project will address elevated levels of TDS in the recycled water it produces by redirecting a high TDS brine line from Dow to the DDSD wastewater treatment plant downstream of the recycled water facility. Reduced TDS values will not only improve industrial and irrigation uses for recycled water, but will also allow increased cycling ratios for cooling purposes, thus freeing up recycled water capacity for other users. New recycled water service will also be established for landscape irrigation and industrial purposes within the Cities of Antioch and Pittsburg. This project will help achieve objectives associated with water supply, water quality, and wastewater by maximizing dry year supplies, maximizing water supply reliability, reducing dependence on imported supplies, protecting and enhancing source water quality, reducing pollutant discharges, and maximizing environmental sustainability. DDSD will measure and compare TDS levels in the recycled water before and after project implementation and track monthly and annual recycled water deliveries to new customers to measure success in achieving project objectives.

By implementing the tools and methods summarized in the Project Performance Measures Tables below, each project proponent will effectively track progress toward achieving project objectives. The information and data collected will be fed back into the project’s management structure to adapt the project to better meet its overall objectives. Only by consistent monitoring and analyzing project performance feedback data can projects successfully achieve the objectives set for the project. Monitoring will also provide a clear reporting mechanism for the public, decision makers, and regional planners to determine the planned versus actual value of the project.

Each project proponent will have the primary responsibility for developing a project-specific monitoring plan for their project, and for collecting the data and performing the monitoring activities described below. The project-specific monitoring plans will be prepared for each project following funding agreement execution, and will be submitted to DWR as part of the funding administration documentation. Each monitoring plan will have protocols and methodologies to ensure consistency and accountability by the designated party collecting the data and performing monitoring activities. Data generated from project implementation will be provided to the East Contra Costa County IRWM Region and applicable statewide databases and will be disseminated to stakeholders and the public consistent with the data management protocols laid out in the East County IRWM Plan.
The following table is the Project Performance Measures Tables for the five projects included in this proposal. The Project Performance Measures Table presents the following information:

- Project goals
- Desired outcomes
- Targets – measureable targets that are feasible to meet during the life of the project
- Performance indicators – measures to evaluate change that is a direct result of the project being built
- Measurement tools and methods – to effectively track performance

The information included in the Project Performance Measures Table will provide a basis for the project-specific monitoring plan to be developed should the project receive IRWM grant funding.

Performance Measures Tables

Beacon West Arsenic Well and Tank Replacement Project (Diablo Water District)

| Project Goals | Replace a well that has high arsenic levels with a well in compliance with the arsenic MCL of 10 micrograms per liter (ug/L)  
| | Replace two 1,500 gallon hydropneumatic pressure tanks that have corroded and jeopardize the Beacon West community’s water supply |
| Desired Outcomes | Improve water quality for the community  
| | Improve water supply reliability for the community |
| Targets | Arsenic levels below Primary MCL of 10 ug/L  
| | Extended tank life |
| Performance Indicators | Arsenic levels reduced from 29 ug/L to less than the primary MCL of 10 ug/L  
| | Two 1,500 gallon tanks replaced |
| Measure Tools and Methods | Routine water quality monitoring for arsenic (Standard Method 3113B)  
| | Confirmation of installation of new lined tanks |
## Rossmoor Well Replacement / Groundwater Monitoring Well System Expansion
### (City of Pittsburg)

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Goals</strong></td>
<td>• Installation of a replacement Rossmoor Well with variable frequency drive  &lt;br&gt;• Rossmoor Well capacity increase from 600 gpm to 1,400 gpm  &lt;br&gt;• Installation of 1,200 feet of larger supply line  &lt;br&gt;• Installation of multiport monitoring well to expand the groundwater monitoring system</td>
</tr>
<tr>
<td><strong>Desired Outcomes</strong></td>
<td>• Meet existing and future groundwater demands  &lt;br&gt;• Expand groundwater monitoring system  &lt;br&gt;• Reduce hydraulic loss by installing large supply line</td>
</tr>
<tr>
<td><strong>Targets</strong></td>
<td>• Replacement well delivers 1,400 gpm  &lt;br&gt;• 1,200 feet of larger supply line installed  &lt;br&gt;• Multiport monitoring well installed</td>
</tr>
<tr>
<td><strong>Performance Indicators</strong></td>
<td>• Groundwater reports confirm well capacity  &lt;br&gt;• Supply line installation construction closed out  &lt;br&gt;• Monitoring well in place generating data  &lt;br&gt;• No additional Delta supply purchased to meet exiting groundwater demands</td>
</tr>
<tr>
<td><strong>Measure Tools and Methods</strong></td>
<td>• Flow meter measurements at new well  &lt;br&gt;• Hydraulic loss measurements  &lt;br&gt;• Groundwater elevation and / or water quality measurements from monitoring well  &lt;br&gt;• Metering water supply to confirm contribution from groundwater versus Delta water</td>
</tr>
</tbody>
</table>
## Integrated Regional Flood Protection and Water Quality Improvement Borrow Area Project (Contra Costa Water District and Contra Costa County Flood Control and Water Conservation District)

| Project Goals | • Remove 60,000 cy of stockpiled, surplus earthen material from the FCD’s USCB site  
|               | • Reuse this material at the CCWD’s Contra Costa Canal Levee Elimination and Flood Protection Project  
|               | • Construct additional 450 feet of pipeline with cost savings from the proposed project |
| Desired Outcomes | • Reuse surplus material in a sustainable manner  
|                | • Improve water quality  
|                | • Improve supply reliability  
|                | • Provide enhanced flood protection benefits  
|                | • Reduce maintenance costs over time |
| Targets | • Reuse 75,000 cy of surplus material in a sustainable manner  
|         | • Install an additional 450 feet of pipeline with cost savings |
| Performance Indicators | • Reused material supports flood protection project performance  
|                          | • Additional pipeline is installed  
|                          | • Reduction in TDS at Rock Slough  
|                          | • Reduction in statistical supply limitations due to water quality constraints at Rock Slough |
| Measure Tools and Methods | • Test/measure placed fill to ensure that it is compacted to level specified via as-built drawings  
|                          | • After the borrow operation is complete, survey the borrow site to ensure positive drainage  
|                          | • Measure length of pipeline installed  
|                          | • Monitor TDS at Rock Slough  
|                          | • Track frequency and extent of supply limitations due to water quality constraints at Rock Slough |
**Knightsen Wetland Restoration and Flood Protection Project (East Contra Costa County Habitat Conservancy)**

| Project Goals | • Acquire a 645-acre parcel and construct a 30-acre wetland area capable of treating and managing contaminated stormwater near the unincorporated town of Knightsen  
| • Restore habitats on site, including but not limited to Delta freshwater marsh, freshwater wetland, alkali wetland, and tidally influenced sloughs |
|---|---|
| Desired Outcomes | • Flood control / stormwater management  
| • Wetland Habitat restoration/creation for listed threatened and endangered species  
| • Drinking water source protection (regional and local)  
| • Restoration/protection of rare dune habitat for listed threatened and endangered species  
| • Upland restoration (oak savanna) for listed threatened and endangered species  
| • Delta restoration/protection |
| Targets | • 17 acre-feet of stormwater treatment capacity  
| • 30-acre treatment wetland  
| • Reduced pollution from agricultural runoff |
| Performance Indicators | • Reduction in number of storm events that flood the community of Knightsen and surrounding agricultural lands  
| • Reduced nutrient, bacteria, sediment, and pesticide concentrations released into the Delta  
| • Wetland area created |
| Measure Tools and Methods | • Monitor ability to withstand storms without overtopping and treatment / retention capacity  
| • Monitor water quality entering and discharging from the wetlands to establish water quality improvements  
| • Measure and survey acres and type of habitat created and stormwater capacity |
## Recycled Water Salinity Reduction and Distribution System Expansion Project (Delta Diablo Sanitation District)

| Project Goals                                                                 | • Installation of approximately 9,200 lineal feet of 6-inch high density polyethylene (HDPE) pipe and appurtenances to redirect a high TDS brine line from Dow to the DDSD wastewater treatment plant downstream of the recycled water facility.  
|                                                                             | • Expand recycled water service for additional landscape irrigation and for industrial purposes located in the City of Antioch and City of Pittsburg. |
| Desired Outcomes                                                           | • Increase the use/delivery of recycled water within the service area  
|                                                                             | • Manage salinity in the watershed  
|                                                                             | • Reduce pollutant discharges into surface waters  
|                                                                             | • Reduce dependency on Delta water supplies  
|                                                                             | • Improve recycled water quality within the service area, providing operational benefits and costs savings |
| Targets                                                                    | • Installation of approximately 9,200 lineal feet of 6-inch HDPE pipe and appurtenances  
|                                                                             | • 15% to 20% reduction in recycled water TDS concentration  
|                                                                             | • 170 AFY increase in available recycled water supply  
|                                                                             | • Deliver 75.6 AFY to new customers |
| Performance Indicators                                                     | • Decrease in recycled water TDS  
|                                                                             | • Reduction in demand from industrial cooling customers  
|                                                                             | • Recycled water deliveries to new customers |
| Measure Tools and Methods                                                  | • Measure and compare pre and post-project TDS levels in the recycled water  
|                                                                             | • Track monthly and annual recycled water deliveries to industrial users  
|                                                                             | • Track monthly and annual recycled water deliveries to new customers |