ATTACHMENT 6

MONITORING, ASSESSMENT, AND PERFORMANCE MEASURES

I. Introduction –Project Performance Measures Table

The Santa Margarita Water District ("SMWD"), in partnership with Ranch Mission Viejo, LLC ("RMV"), and the County of Orange, is proposing to construct the Ortega Reservoir ("Project") in the South Orange County Watershed Management Area ("WMA").

The Project is to construct a 5,300 acre-foot ("af") recycled water storage reservoir which will provide seasonal storage for the SMWD existing and proposed recycled water system within the southerly portion of the District. Importantly, the Project will also efficiently divert flood and drainage waters and pump them into the Reservoir. The Project would involve a 156-foot-high main dam, proposed west of the Reservoir, and a saddle dam, proposed to the north. Both would be zonal earthfill dams, and materials for the dams will come from the Project site. The Project will also receive tertiary treated sewage water acceptable for landscape irrigation. As such, the Project will be providing flood control and water supply benefits to the region, as required by the Proposition 1E Stormwater Flood Management Grant Program

The Project presented in this Proposal includes Monitoring, Assessment, and Performance Measures to document and track how the Project will effectively contribute to meeting objectives and beneficial uses for the San Juan Watershed within the San Juan Hydrologic Unit ("SJHU").

Performance measures that will be used to quantify and verify Project performance are shown in the following table:

Project Performance Measures Table – Ortega Reservoir – Santa Margarita Water District

Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets (Implementation by 2015)
1. Attenuation of storm flows (flood control).	Reduction in peak storm flow rates in the region.	Assessment of the downstream flow rate.	Assessment of downstream flow rate.	Comparison of the downstream flow to design storm flow rates. Photo documentation.	Massive reduction in storm flows during 25, 50, and 100 year storm events.
2. Reduce urban runoff to San Juan Creek.	Diversion of non-storm urban runoff flows to the Reservoir for wetlands treatment and collection for re-use.	Urban runoff flow quantity reduction in storm and dry-weather periods.	Measurement of flow to Chiquita Water Reclamation Plant ("CWRP") to determine reduction in urban run-off to the San Juan Creek.	Implementation of the stream monitoring plan.	Collection of all non-storm flows generated upstream of Ortega Reservoir.
3. Capture and reuse of surface water and storm flows with potential infiltration into groundwater basin.	Collection of urban runoff for irrigation purposes.	Amount of water collected for irrigation; anticipate approximately 2,900-4,900 Acre-feet of water. Groundwater monitoring wells.	Measurement of flow to CWRP to determine reduction in urban run-off to the San Juan Creek.	Installation of water meter and collection of data from meter and existing groundwater monitoring wells.	Water recycling and harvesting of 2,900-4,900 Acre-feet per year.

The following sections describe how the Project is consistent regional plans and provides information supporting the Project Performance Measures Table.

II. Introduction - Region 9 Basin Plan Consistency

The Project is located in the South Orange County Watershed Management Area ("WMA"), which includes the area that encompasses the San Juan Hydrologic Unit ("SJHU") in South Orange County, California, as defined in the Water Quality Control Plan of the San Diego Basin ("Basin Plan"). The SJHU is a collection of coastal watersheds that covers 496 square miles in San Diego, Orange, and Riverside counties. Although a small portion (7.2%) of the SJHU is developed, most of this development is concentrated within the north-western portion of the SJHU. The undeveloped portion, the southern and interior portions, occupies 91.8% of the SJHU. Agricultural land use occupies less than 1% of the land. A very large and mostly undeveloped portion of the watershed is encompassed by the Camp Pendleton Marine Corps Base in northern San Diego County. Other large areas of open space are found within the Cleveland National Forest. Rancho Mission Viejo, the County of Orange, and Caltrans/Foothill/Eastern Transportation Corridor Agencies are other significant landowners,

The SJHU is naturally divided by major water bodies and represents an important water resource in one of the most arid regions of the nation. It is comprised of six major watersheds: 1) Laguna Coastal Streams, 2) Aliso Creek, 3) Dana Point Coastal Streams (Salt Creek), 4) San Juan Creek, 5) San Clemente Coastal Streams, and 6) San Mateo Creek, and two groundwater basins: 1) San Juan Valley Groundwater Basin and 2) San Mateo Groundwater Basin. The Project is located in the San Juan Creek Watershed.

San Juan Creek Watershed

The San Juan Creek Watershed is the largest watershed in the South Orange County WMA. The approximately 173 square mile watershed includes portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, San Juan Capistrano, and unincorporated areas within the County. The Arroyo Trabuco and Oso Creeks are smaller tributaries. A small western portion of the San Juan Creek Watershed extends into Riverside County. The Creek ultimately discharges into the Pacific Ocean at Doheny Beach in the City of Dana Point.

San Juan Creek falls under the Mission Viejo subunit of the San Juan Hydrologic Basin (designated Hydrologic Sub Area 1.21-1.28). The Basin Plan lists Cañada Gobernadora Creek as a small tributary to San Juan Creek as receiving waters. The following existing beneficial uses are designated in the Basin Plan for San Juan Creek and Cañada Gobernadora: agricultural supply; industrial; contact water recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; and wildlife habitat. The following designations apply to the mouth of San Juan Creek at the Pacific Ocean: rare, threatened, or endangered species; non-contact water recreation; marine habitat; migratory habitat; shellfish habitat; and wildlife habitat. The Project would greatly assist in protecting the beneficial uses of the San Juan Creek Watershed as described in the Basin Plan by reducing the amount of urban runoff entering various waterways.

The Project will result in significantly improving the quality of water flowing throughout the San Juan Creek Watershed. The Project will receive drainage water treated for pollutants of concern from urban drainage runoff that is degrading the water quality in San Juan Creek. Runoff will be recovered for reuse in designated uses and irrigation. Specifically, the Project will mitigate peak drainage flow retarding basin for reducing 25 years through 100 year storm

events in the region. Significant reductions in sedimentation degradation for downstream habitats are also expected.

The Ranch Plan Monitoring Program – The Project is included within the greater Rancho Mission Viejo Plan ("Ranch Plan") as a key component to water quality protection and habitat preservation. The Ranch Plan supports the basin plan objectives of water quality enhancement and habitat protection. Since 1991, detailed scientific studies have been conducted in partnership with state and federal wildlife agencies for 23,000 acres of Rancho Mission Viejo. The Project will be part of the overall monitoring program that has been established for the Ranch Plan.

As part of the Ranch Plan's monitoring efforts, the San Diego Regional Water Quality Control Board ("SDRWQCB"), United States Fish and Wildlife Service ("USFWS"), U.S. Army Corps of Engineers ("ACOE"), and RMV have described the baseline biology, geomorphology, hydrology, and water quality in FEIR 584 and 589, the Final Environmental Impact Statement for the Habitat Conservation Plan (HCP) and the Final Environmental Impact Report of the Special Area Management Plan (SAMP). Through implementation of adaptive management, the Ranch Plan seeks to maintain the net habitat values of Rancho Mission Viejo. Three inter-related plans/programs form the core of the Adaptive Management Plan for the Ranch Plan, including: 1) Open space/Habitat Reserve – the Habitat Reserve Monitoring and Management Program ("HRMP"), 2) Primary stream/creeks in the open space/Habitat Reserve – the Stream Monitoring Plan and 3) Developed Planning Areas – the Water Quality Management Plan ("WQMP"). The HRMP monitors and manage biological resources within the Ranch Plan area. Annual compliance and effectiveness reports are written and provided to USFWS, ACOE and CDFG. The Stream Monitoring Plan will monitor and manage erosion and stream stability of major tributaries within the Ranch Plan including the Project. This is more fully described in the San Juan Creek Watershed Stream Monitoring Program, prepared by PACE, dated March 2008.

Interagency Partnership

On January 29, 2013, a Letter of Support was executed by the County of Orange to promote an interagency partnership to provide a general outline of certain goals, objectives, and responsibilities for the Ortega Reservoir Project. A Memorandum of Understanding is pending.

The Stakeholders have engaged in certain discussions regarding the Project and key elements that will need to be addressed in relation to the administering design and construction, understanding ownership, and providing long-term operation of the Project. In relevant part, the Stakeholders will address the following key features of the Project:

1. Environmental Certification
2. Costs and Funding Plan
3. Design
4. Right-of-way
5. Construction
6. Ownership and Concurrent Use
7. Operations and Maintenance (O&M)
8. Consistency with Ranch Plan

III. Project Goals: ***How Monitoring Data will be Used to Measure the Performance in Meeting the Overall Goals and Objectives of the IRWM Plan.***

This Project will manage storm flows, treat urban runoff, and protect downstream waters, contributing to meeting the Basin Plan objectives. As shown in the table above, the Project Performance Measures Table, the measurable Project goals include:

1. Attenuation of storm flows (flood control).
2. Reduce urban runoff to San Juan Creek.
3. Capture and reuse of surface water and storm flows for irrigation and other designated reuse.

The Project is consistent with the IRWM Plan Objectives of Water Supply, Water Quality, Water Conservation, Aquatic Ecosystems and Watershed Management, Groundwater Management, Sewage and Flood Management, and Information Management. The Project meets the adopted South Orange County IRWM Plan objectives, as described below:

- Sewage/Flood Management, Aquatic Ecosystems, and Watershed Management - Reduction in hydrologic conditions for erosion control stabilization and reduction of sediment degradation from the County's unincorporated communities.
- Groundwater Management – Localized ground water recharge providing opportunity for groundwater harvesting.
- Water Supply, Water Management, and Water Conservation - Water harvesting for regional water conservation (for SMWD water supplies to the Chiquita Water Reclamation Plant and elsewhere)

The IRWM Plan contains several goals and objectives that the Project will help to realize. First, the Project will capture potentially thousands of acre feet per year in potential nuisance flows. The water quality basins designed within the Project will provide a water quality treatment system for waters draining from upstream and neighboring communities.

Existing Data Collection/Management

As described in the IRWM Plan, water management data is collected throughout the South Orange County WMA by various governmental and non-governmental organizations. This data includes surface water quality, surface flow, groundwater quality and quantity, stormwater discharge (NPDES Program), water use, and habitat assessments. The Ortega Reservoir Project would contribute useful water management data to the region through implementing the Project performance measures. The objective of data collection is to; define existing conditions, evaluate Project and overall Plan effectiveness, provide a tool for IRWM planning and decision making, and provide a means of sharing information with state agencies, stakeholders, and the general public. The proper collection, organization, storage, and dissemination of this data are essential to the continued success of regional water management and ongoing stakeholder participation.

The South Orange County WMA aims to provide a regional focus, prevent duplicating data efforts, and provide access to water and land use plans, GIS data, IRWM planning information, and various technical data. The South Orange County IRWM Group will continue to promote the collection and dissemination of data that will provide information valuable to the

management, conservation, and quality of the region's limited water supply, and for the continued preservation of the region's delicate ecological resources. The Project will contribute to this monitoring data to support the local, regional, and state-wide data management systems.

Various monitoring is being implemented throughout the Region to meet water quality data collection needs. As previously described, the Ranch Plan has several monitoring efforts underway for the land including the Project. The Project, along with the other projects included in the adopted IRWM Plan will implement one or more of the following data monitoring efforts:

- Water Quality Monitoring: For those projects designed to improve the chemical quality of water, water sampling is expected to be performed in a manner compatible with State prescribed methods. The monitoring program would be consistent existing Ranch Plan EIR and County of Orange Mitigation Monitoring and Reporting Program.
- Photo-Monitoring: Projects that include restoration or construction activities will include photographic documentation in accordance with the guidelines produced by the SWRCB.

As projects within the IRWM Plan come to fruition, monitoring and information management will be implemented. To ensure data consistency and quality assurance, two activities will be employed, as consistent with the SWRCB: quality control and quality assessment. Quality control assures that adequate sampling and technical activities are employed. Quality assessment refers to the process of quantifying the effectiveness of the quality control procedures.

IRWM Plan Data Management System and Dissemination

A wide variety of water and natural resource data are collected throughout the region by various entities such as permitted dischargers, non-governmental organizations, research institutes, and government agencies. The South Orange County IRWM Group supports data collection throughout the region and assists with consistency, management, and dissemination of the data to support regional decision making, stakeholder interests, and public education and involvement. As members of the IRWM Group, the County of Orange will work with SMWD to ensure effective data collection and dissemination for the benefit of regional and the statewide databases.

The data owners are responsible for the collection, storage, quality assurance/quality control ("QA/QC"), analysis, reporting in compatible formats, and dissemination of the data. Data owners are responsible for ensuring that the data disseminated to the existing state databases, including IWRIS, CERES, CEDEN, SWAMP, GAMA, and other RWQCB programs, is in a format compatible with those databases. Data owners shall also submit data in a format specified by the County for dissemination to stakeholders and the public on the County's website. The County shall post the data on its website in a user-friendly format for easy accessibility by stakeholders and the public.

State Data Management Programs

As stated in the South Orange County IRWM Plan, the Project will follow the commitment to promote data reliability. The Region will implement techniques compatible with State programs such as the Integrated Water Resources Information System ("IWRIS"), the California

Environmental Resources Evaluation System ("CERES"), the California Environmental Data Exchange Network ("CEDEN"), the Surface Water Ambient Monitoring Program ("SWAMP"), and the Groundwater Ambient Monitoring and Assessment ("GAMA") Program. The Project will comply with SWAMP formatting and potentially provide useful data for the GAMA Program, however, the Project program will reflect existing Ranch Plan EIR and County of Orange Mitigation Monitoring and Reporting Program requirements.

The following provides an overview of the State information and data exchange programs, including SWAMP and GAMA:

SWAMP: The Surface Water Ambient Monitoring Program ("SWAMP") was proposed to integrate existing water quality monitoring activities of the State Water Resources Control Board ("SWRCB") and the Regional Water Quality Control Boards ("RWQCB"), and to coordinate with other monitoring programs.

SWAMP is a statewide ambient monitoring effort designed to assess the conditions of surface waters throughout the state of California. Responsibility for implementation of monitoring activities resides with the nine (9) RWQCBs that have jurisdiction over their specific geographical areas of the state. Ambient monitoring refers to any activity in which information about the status of the physical, chemical, and biological characteristics of the environment is collected to answer specific questions about the status, and trends in those characteristics. For the purposes of SWAMP, ambient monitoring refers to these activities as they relate to the characteristics of water quality.

SWAMP also hopes to capture monitoring information collected under other State and Regional Board Programs such as the State's TMDL (Total Maximum Daily Load), Nonpoint Source, and Watershed Project Support programs. SWAMP does not conduct effluent or discharge monitoring which is covered under National Pollutant Discharge Elimination System permits and Waste Discharge Requirements. In addition, local Project implementation and reported water quality results will also provide additional monitoring information for the SWAMP.

In accordance with Clean Water Act section 305(b), the SWRCB and RWQCBs periodically compile an inventory of the state's major waters and the water quality condition of those waters, using monitoring data and other pertinent information. This inventory is known as the Water Quality Assessment. The Water Quality Assessment is the foundation upon which the TMDL Program is built, although continues to be inadequately funded.

The San Diego RWQCB uses SWAMP resources to ensure that monitoring is conducted in each hydrologic unit once in every five-year period. The San Diego RWQCB locates monitoring sites on main stem rivers and streams, just above tidal influence; main stem rivers and streams just above the confluence with major tributaries, and major tributaries just above the confluence with the main stem rivers and streams.

The Project is located in the San Juan Creek and will contribute to water quality monitoring as well as overall water quality enhancement. The Project's monitoring program includes completion of a QAPP in compliance with the SWAMP. Therefore, the monitoring results will be incorporated into the state's data collection and monitoring programs.

Currently, in the San Juan Watershed, the nine monitoring stations administered by the County of Orange are:

» Aliso Creek	1	» Bell Canyon Creek	1
» San Juan Creek	2	» Laguna Canyon Creek	1
» Arroyo Trabuco	1	» Moro Canyon Creek	1
» Oso Creek	1	» English Creek	1

Ambient monitoring is not intended to be conducted only by SWRCB / RWQCB staff. Academic and other research groups, dischargers, and other stakeholders all have a role in monitoring and assessment. The South Orange County IRWM Group will assist in meeting the goals of the Water Quality Assessment Program and the SWAMP by providing water quality data to the State's programs. This additional level of monitoring information will be conducted and coordinated with the State to enable sharing of information and avoid duplicative monitoring. The State's monitoring coordination program, initiated in July 2004, will assist in identifying regulatory and non-regulatory monitoring efforts in the San Diego Region and to coordinate the SWAMP monitoring efforts with these programs.

Data from the Project's groundwater monitoring wells also has the potential to contribute to the state's GAMA Program, as described below:

GAMA: The primary objective of the Groundwater Ambient Monitoring and Assessment ("GAMA") Program is to comprehensively assess statewide groundwater quality and gain an understanding about contamination risk to specific groundwater resources. The primary goals of the GAMA Program are to:

1. Improve comprehensive groundwater monitoring and,
2. Increase the availability of groundwater quality information to the public.

Just as state agency data are being incorporated into a comprehensive database, local groundwater quality data may also assist in basin/subbasin and larger scale assessments. It is anticipated that the amount of local data is significant in some basins/subbasins. Partnerships and effective coordination with the local agencies will be an important part of the GAMA Program. Thus, projects implemented as part of the South Orange County IRWM Plan that result in information beneficial to the GAMA Program will coordinate with the state to provide useful data.

The Ortega Reservoir Project will implement monitoring, assessment, and performance measures to track progress success and provide useful data for regional and statewide databases. The South Orange County IRWM Plan incorporates the Basin Plan into the IRWM Plan objectives. This Prop 1E Grant Proposal is consistent with the San Diego Region 9 Basin Plan by implementing the IRWM Plan objectives and protecting beneficial uses of the waterways in the WMA through ongoing monitoring.

IV. Measurement Tools and Methods: *Performance Measures that will be used to Quantify and Verify Project Performance.*

The following performance measures will be used:

- The existing "San Juan Creek Stream Monitoring Plan ("SMP") summarizes how the Basin project performance will be assessed on stabilizing the downstream creek system. The program will focus on runoff flow, groundwater, and stream stability.

- Prepare a Quality Assurance Project Plan ("QAPP") that reflects the monitoring and data reporting requirements outlined in the existing Ranch Plan EIR and County of Orange Mitigation Monitoring and Reporting Program (such as the "San Juan Creek Stream Monitoring Plan" (PACE 2006).
- Implement a monitoring plan consistent with the existing Ranch Plan EIR and County of Orange Mitigation Monitoring and Reporting Program, which will include a description of the monitoring objectives, types of assessments, and specific observations to be monitored and the frequency and schedule for the monitoring activities.
- Water Meter and Groundwater monitoring wells, within the Ortega Reservoir Project area, operated by SMWD
- Field Observation and Photo documentation to evaluate changes in the stability of the streambed and streambanks, downstream of the Project. This includes evaluating performing assessments of the recorded stream data in order to evaluate the performance of the system, as well as implementing corrected procedures when needed.

Performance measures include monitoring of captured dry season flows and groundwater levels, photo/field verification. Monitoring plans will include flow measurement and recording. Measurable targets for flow capture include 2,900-4,900 acre-feet per year of captured flows and reduction in peak storm flows for 25, 50, and 100 year events.

V. Measurement Tools and Methods: *Monitoring System to be used to Verify Project Performance with respect to the Project Benefits or Objectives Identified; Where Data will be Collected and Types of Analysis Used.*

The Project will include existing data and monitoring systems to verify Project performance with respect to Project analysis. As described in the *Watershed Hydrology Analysis, Impacts Analysis, Planning Level Mitigation Study*, PACE, approved by the County, April 2009, the Project's baseline conditions include initial analysis of the development hydrology and comparison to the "baseline" conditions to test effectiveness.

SMWD has experienced damage to existing pipeline right-of-ways within the watershed. RMV has established a photo monitoring program entitled "San Juan Creek Watershed Stream Monitoring Program," approved by the County of Orange, March 2008, to monitor post-storm event erosion. Ongoing water quality monitoring associated with the San Juan Creek Watershed/Western San Mateo Creek Watershed Special Area Management Plan ("SAMP") and Southern Subregion Natural Communities Conservation Plan ("NCCP") has documented the degraded water quality of both urban runoff and storm flows. Data collection will continue at these photo monitoring stations for the Project.

Additionally, groundwater wells currently collect groundwater data and reflect potential fluctuations in groundwater levels. Data will continue to be collected here. The deep on-site monitoring wells are screened below 35 feet and indicate the groundwater hydraulic conditions deeper within the local aquifer. This observation suggests that the deeper aquifer is at least partially confined and contains pressurized groundwater. Historic groundwater data for these wells indicate that the potentiometric surface fluctuates approximately 2 to 3 feet between periods of high and low precipitation. Groundwater wells will continue to monitor groundwater levels as part of the Project.

SMWD will provide a monitoring plan for the operation of the production wells which will be completed to detail the methods of measuring and reporting Reservoir operation and well production implementation and benefits.

The proposed stream monitoring program includes a description of the monitoring objectives, types of assessments and measurements to be monitored, and the frequency and schedule for the monitoring activities. Monitoring will be consistent with the existing Ranch Plan EIR and County of Orange Mitigation Monitoring and Reporting Program. The Project's monitoring plans will carefully assess the effectiveness of the Project.