

Attachment 6: Monitoring, Assessment, and Performance Measures

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Monitoring, Assessment and Performance Measures

Attachment 6 presents the anticipated project monitoring, assessment, and performance measures that will demonstrate that the three projects contained in this Proposal will meet their intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of this attachment is to provide a preview of the information that is expected to be included in the project specific monitoring plans. As such this attachment describes the project-specific performance measures that will likely be used to quantify and verify project performance. It also discusses the monitoring tools and methods to be used to verify project performance with respect to the project benefits or objectives identified in this Proposal.

Also included in this attachment is a discussion of how monitoring data will be used to measure the performance in meeting the overall goals and objectives of the region's IRWM Plan. The 2013 Mokelumne/Amador/Calaveras (MAC) Integrated Regional Water Management (IRWM) Plan Update identifies ways to measure Plan performance using program-level and project-specific performance measures. Data collected and analyzed under the performance monitoring plans will be reported to UMRWA on a quarterly basis, providing required documentation and proof of project performance. The monitoring information will also be used in the ongoing regional planning process (by the project proponents, the Regional Participants Committee and the RWMG, UMRWA) to better understand how well the project's objectives and those of the overall IRWM Plan are being met. Under the MAC Plan's data management procedures this information is also made available to the public via the region's website and by uploads to the State's databases.

This implementation grant proposal includes three projects, which are summarized in Table 6-1: the Lake Camanche Lateral Replacement Project – Phase 2, the Camanche Area Regional Water Supply Project (CARWSP) – Phase 1, and the Ponderosa Way Restoration Project – Phase 1.

Table 6-1: Projects, Proponents, and Descriptions

| Project | Project Proponent | Abstract |
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| Lake Camanche Lateral Replacement Project – Phase 2 | Amador Water Agency | Replace 200 of the polyethylene service laterals in the Lake Camanche Water Improvement District No. 7 (WID#7) water system. |
| Camanche Area Regional Water Supply Project – Phase 1 | East Bay Municipal Utility District | Phase 1 will install a 12-inch diameter pipeline from the Mokelumne Aqueduct to a new 0.5 million gallon per day (mgd) regional surface water treatment plant (WTP), as well as an 8-inch diameter treated water pipeline to deliver treated water to Camanche South and North Shores. The project will also include an intertie to Lake Camanche Village to serve as an alternative supply if existing groundwater supply becomes unavailable, and to allow for implementation of Phase 2 which consists of a WTP expansion and delivery of treated water to Lake Camanche Village. Finally, Phase 1 of CARWSP includes the Vintage Home Fixture Retrofit, a series of water conservation measures for Camanche South and North Shore Recreation Areas and Lake Camanche Village. |
| Ponderosa Way Restoration Project – Phase 1 | Calaveras County | In order to control soil erosion and siltation from Ponderosa Way into Alabama Gulch, Dutchman Gulch and the Mokelumne River, the road will be restored and a heavy duty gate near Highway 26 will be installed to control traffic during winter months. Phase 1 of the project will also allow for watershed access by CAL FIRE and BLM for fire prevention and suppression and to the general public for recreation. |

Key Performance Measures - Lake Camanche Lateral Replacement Project – Phase 2

The Lake Camanche Lateral Replacement Project – Phase 2 is a water-loss reduction project with a primary goal of reducing water losses within a specific area of the AWA water systems. The area that will benefit from the new infrastructure is the disadvantaged community (DAC) of Lake Camanche Village served by AWA. Performance measures that will be used for this water loss reduction project include measuring flows through pipelines (laterals) and master meters on water mains to calculate water loss reductions within the water supply systems post project execution (either as percentage decreases in loss or savings in acre-feet of water). Reducing water system losses will, in turn, increase water

system reliability and minimize costs to AWA (and thus its customers) by reducing lost revenue and minimizing emergency maintenance of aging infrastructure. In the long term, reducing system water losses will minimize the need for future water projects to meet increased water demands.

Monitoring for the water loss reduction project will occur throughout the entire water system, as well as at the specific location of the project improvement, wherever possible. For example, AWA will monitor overall water losses throughout its water system, but will also collect data to estimate a reduction in water lost from the portion of lateral replaced. These numbers will be compared to existing estimated losses in order to determine if there are improvements and if goals are met. Data will be collected via existing and proposed water meters, and the data collected will be compiled monthly and analyzed regularly. (Please refer to Table 6-2.)

Key Performance Measures - Camanche Area Regional Water Supply Project (CARWSP) – Phase 1

The Camanche Area Regional Water Supply Project (CARWSP) – Phase 1 is a water supply and water quality improvement project with the primary goal of providing a reliable source of drinking water to the DAC of Camanche North Shore, in the Lake Camanche area. In addition, the Vintage Home Fixture Retrofit portion of the Phase 1 project will allow for high efficiency plumbing fixtures to be installed in nearly 600 homes, reducing water usage in Camanche North Shore, Camanche South Shore, and Lake Camanche Village. Future Phases 2 and 3 would continue to provide high-quality treated surface water to Camanche South and North Shores, but would also provide treated water to Lake Camanche Village and the community of Wallace, an area currently being annexed to Calaveras County Water District's service area. Performance measures to be utilized for the Phase 1 project include the volume of water delivered annually through the new pipeline (in acre-feet per year) and a comparison of water usage before and after installation of the conservation plumbing fixtures. (Please refer to Table 6-3.)

Key Performance Measures - Ponderosa Way Restoration Project – Phase 1

Ponderosa Way Restoration Project – Phase 1 is designed to minimize erosion and siltation into Mokelumne River, provide watershed access to the fire service, and re-establish recreational river access to the public. Phases 2 and 3 will expand potential recreation opportunities and provide a long-term maintenance program for Ponderosa Way and its associated recreational facilities. This project directly benefits the surrounding disadvantaged community, which has very few recreational opportunities and limited river access opportunities. Performance measures to be utilized for the Phase I project include visual inspections of the roadway culvert discharge points for signs of erosion, stream bank measurements, measurements of the recreation area added to the Calaveras parkland inventory, and visitor tallies for the boat launch /recreation area. (Please refer to Table 6-4.)

Contribution to Regional Goals

The three projects contribute to meeting many of the regional goals that were defined in the 2013 MAC Plan Update (described in greater detail in Attachment 3 – Work Plan).

- The **Lake Camanche Lateral Replacement Project – Phase 2** meets the MAC Policies and associated goals of Improving Water Supply Reliability and Focusing on Areas of Common Ground. Specifically, the primary objective of this project is to replace approximately 200 service laterals. The Project will reduce significant water losses within the system; avoid damage to other infrastructure and private property; avoid unauthorized discharges of treated water into drainages, creeks, and other water bodies; and avoid damage to wildlife and wildlife habitat due to lateral breaks and leakage into sensitive habit.
- **CARWSP – Phase 1** meets the MAC Policies and associated goals related to Improving Water Supply Reliability, Practicing Resource Stewardship, and Focusing on Areas of Common Ground. Specific project objectives for Phase 1 of CARWSP include providing a reliable, year-round, high quality water supply to the communities of Camanche North Shore (a DAC) and Camanche South Shore and meeting all applicable regulatory requirements. Additionally, the Vintage Home Fixture Retrofit portion of CARWSP – Phase 1 has the primary objective of reducing urban water demand by installing low-flow toilets and showerheads in the DACs of Camanche North Shore and Lake Camanche Village as well as Camanche South Shore.
- The **Ponderosa Way Restoration Project – Phase 1** meets the identified MAC Policies and associated goals related to Maintaining and Improving Water Quality, Practicing Resource Stewardship, and Focusing on Areas of Common Ground. Specific project objectives include improving water quality in the Main Stem Mokelumne River by minimizing siltation from Ponderosa Way; reducing the risk of catastrophic fire in the watershed and neighboring communities by providing the fire service with access to the Mokelumne Canyon for fire prevention and suppression; and providing access to the river for public recreation, including creating an opportunity for commercial rafting on the Mokelumne River. The project also preserves an important cultural resource - Ponderosa Way itself - that was constructed by Franklin Roosevelt's Civilian Conservation Corps in 1934.

By implementing the tools and methods summarized in the Project Performance Measures Tables, each project proponent can identify whether the Project is fulfilling its Region's goals and 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 through consistent monitoring and analyzing project performance feedback data can Projects successfully achieve their stated objectives. 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.

Project proponents will have primary responsibility for developing project-specific monitoring plans for their projects, 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 identify protocols and methodologies to ensure consistency and accountability by the designated party collecting the data and performing monitoring activities. UMRWA will act as the overseeing entity, ensuring that each project proponent prepares its project-specific monitoring plan(s) and implements the plan accordingly. The monitoring plans will include monitoring schedules that UMRWA will use as a guideline for overall program implementation. Data collected and analyses performed under the performance monitoring plans will be reported to UMRWA on a quarterly basis, providing required documentation and proof of project performance. This will help ensure the projects meet the goals as originally conceived for the projects and the MAC Region's overall IRWM Plan.

Tables 2 through 4 are the Project Performance Measures Tables for the three proposed projects. The Project Performance Measures Tables present 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 each Project Performance Measures Table will provide a basis for the project-specific monitoring plan to be developed should the project receive IRWM grant funding.

Table 6-2: Lake Camanche Lateral Replacement Project – Phase 2 Performance Measures Table (AWA)

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| Project Description | Replacement of approximately 200 of the existing polyethylene (“Poly-Tube”) service laterals. | |
| Project Goals | <ul style="list-style-type: none"> • Replace approximately 200 service laterals. • Reduce significant water losses within the system. • Avoid damage to other infrastructure and private property. • Avoid unauthorized discharge of treated water into drainages, creeks and other water bodies. • Avoid damage to wildlife and wildlife habitat due to lateral breaks and leakage into sensitive habitat. | |
| Desired Outcomes | <ul style="list-style-type: none"> • Reduction in emergency maintenance requirements • Reduction in needs for new supply sources • Reduction in system losses • Improved water supply reliability | |
| Targets | <ul style="list-style-type: none"> • Replace 200 service laterals • Reduce water losses by 50% (compared to post-Phase 1 condition) | |
| Performance Indicators | <ul style="list-style-type: none"> • Number of service laterals replaced • Annual reduction in water losses (in MG) | |
| Measurement tools and methods | <u>Tool</u> – Flow meter measurements at laterals | <u>Methods</u> – Compare meter readings with lateral meter readings to calculate water losses. Compare pre- and post-retrofit data calculations |
| | <u>Tool</u> – Flow meter measurements at mains | <u>Methods</u> – Same as above |

Table 6-3: Camanche Area Regional Water Supply Project – Phase 1 Performance Measures Table (EBMUD)

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| Project Description | CARWSP Phase 1 will deliver treated surface water to Camanche South Shore and Camanche North Shore and will implement water conservation measures for Camanche North and South Shores as well as Lake Camanche Village. The project will construct an aqueduct connection, a 12” raw water pipeline to a new, 0.5 mgd WTP, an 8” treated water pipeline from the WTP to Camanche North Shore, and a Lake Camanche Village Intertie. | |
| Project Goals | <ul style="list-style-type: none"> • Provide a long-term, reliable, high-quality potable water supply from the Mokelumne Aqueduct to EBMUD’s service areas of Camanche North Shore and Camanche South Shore. • Reduce water demand by implementing water conservation measures in the Camanche North Shore, Camanche South Shore, and the Lake Camanche Village communities. | |
| Desired Outcomes | <ul style="list-style-type: none"> • Improve water supply reliability for Lake Camanche and other local communities • Improve regional water conveyance • Reduce local water demand for the local communities around Lake Camanche | |
| Targets | <ul style="list-style-type: none"> • Treat 0.5 mgd of raw water • Deliver 0.5 mgd of treated water to users in Camanche North and South Shores • Operate the WTP to meet California Department of Public Health requirements • Retrofit up to 558 homes with conservation plumbing fixtures through the Vintage Home Fixture Retrofit program • Reduce water usage in affected communities by up to 55,000 gpd through Vintage Home Fixture Retrofit program | |
| Performance Indicators | <ul style="list-style-type: none"> • Number of acre-feet (or mgd) of water delivered • Reduction in water use for communities participating in the Vintage Home Fixture Retrofit program (acre-feet or mgd) | |
| Measurement tools and methods | <p><u>Tool</u> – Pipeline meter records</p> <p><u>Tool</u> – Residential water meter records</p> | <p><u>Methods</u> – Summary of number of acre-feet (or mgd) of water delivered through the new pipeline</p> <p><u>Methods</u> – Comparison of water use before and after water conservation measures implemented</p> |

Table 6-4: Ponderosa Way Restoration Project – Phase 1 Performance Measures Table (Calaveras County Department of Public Works)

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|-------------------------------|---|--|
| Project Description | Restore Ponderosa Way to minimize erosion, provide watershed access to the fire service and river access to the public for recreation. | |
| Project Goals | <ul style="list-style-type: none"> • Improve water quality in the Main Stem Mokelumne River by minimizing siltation from Ponderosa Way. • Preserve Ponderosa Way, an important cultural resource constructed by the Rich Gulch Camp of Roosevelt’s CCC in 1934. • Reduce the risk of catastrophic fire in the watershed and neighboring communities by providing the fire service with access to the Mokelumne Canyon for wildfire prevention and suppression. • Provide access to the river for public recreation and support the tourist industry by creating an opportunity for commercial rafting on the Mokelumne River. | |
| Desired Outcomes | <ul style="list-style-type: none"> • Improve water quality • Create recreational opportunities for the surrounding community • Reduce road erosion • Create access for fire prevention and suppression | |
| Targets | <ul style="list-style-type: none"> • Access to trails, whitewater boating, and open space opportunities • Decrease in visible river siltation following a storm event | |
| Performance Indicators | <ul style="list-style-type: none"> • Number of visitors during peak recreational season • Number of feet increase in stream bank height • Reduction in erosion | |
| Measurement tools and methods | <p><u>Tool</u> – Staff report on roadway and river quality following storm event</p> <p><u>Tool</u> – Visitor counts</p> <p><u>Tool</u> – Field stream bank measurements</p> <p><u>Tool</u> – Field measurement of erosion</p> | <p><u>Methods</u> – Inspect road surface and culvert discharges for erosion.</p> <p><u>Methods</u> – Sample the number of visitors pre- and post-project.</p> <p><u>Methods</u> - Compare measure of current stream banks to stream bank height at the completion of the project to ascertain the impact to flood waters during a ten-year storm.</p> <p><u>Methods</u> – Field measurement of erosion</p> |