



Watersheds Coalition of Ventura County Proposition 84 IRWMP Implementation Grant Attachment 6 – Monitoring, Assessment, and Performance Measures

Introduction

This attachment describes the performance measures that will be used to quantify and verify the performance of each project in this grant proposal. A separate Project Performance Measures table has been prepared for each project as follows:

Table 1:	North Pleasant Valley Groundwater Desalter (C-20)
Table 2:	West Simi Valley Water Recycling Project Phases 1 and 2 (C-21)
Table 3:	Moorpark Recycled Water Project Phase IV (C-22)
Table 4:	South Oxnard Stormwater Flood Management and Community Enhancement Project Phase 2B (SC-12B)
Table 5:	Invasive Plant Removal, Ecosystem Restoration, and Habitat Protection in the Santa Clara River (SC-13)
Table 6:	Ventura River Invasive Plant Removal and Ecosystem Restoration Project (V-11)

Each table provides a description of: project goals, desired outcomes, performance indicators, measurement tools and methods, and targets. This information illustrates how project performance will be tracked and verified.

In addition to the table, information is also provided about the planned monitoring system that will be used to verify project performance, the data management methods and analyses that will be employed, and how the monitoring data will be used to measure the performance in meeting the goals and objectives of the WCVC IRWM Plan. The information provided in this Attachment will form the foundation for the Project Performance Measures Plan for each project.

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TABLE 1
NORTH PLEASANT VALLEY GROUNDWATER DESALTER (C-20)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Reduce dependence on imported water and improve water supply reliability	<ul style="list-style-type: none"> Increased use of underutilized local groundwater and recycled water resources. Reduced demand (or slow growth in demand) for imported water supplies. 	<ul style="list-style-type: none"> Quantification of the local water resources used in lieu of imported water as a result of the project. Quantification of imported water use avoided as a result of the project. 	<ul style="list-style-type: none"> Water delivery flow meters at: <ul style="list-style-type: none"> Turnouts (Calleguas to Camarillo connections). Desalter produced water. Pre- and post-project recycled water delivered to customers by Camarillo Sanitary District. 	<ul style="list-style-type: none"> Production of 7,500 AFY of potable water from desalter. Increase recycled water use (current use is ~ 1,400 AFY).
Manage and remove salts in the Watershed and comply with TMDL requirements	<ul style="list-style-type: none"> Progress toward compliance with salts TMDL. Progress toward delisting of Calleguas Creek and tributaries from impaired waterways list. 	<ul style="list-style-type: none"> Mass of salt exported from the watershed in desalter concentrate. 	<ul style="list-style-type: none"> Flow meters for SMP discharge from NPV Groundwater Desalter. Water quality monitoring of salts in desalter concentrate and Camarillo Sanitary District recycled water. 	<ul style="list-style-type: none"> Export 17,000 metric tons salts per year.
Improve potable water quality	<ul style="list-style-type: none"> Compliance with Title 22 Secondary Maximum Contaminant Levels. 	<ul style="list-style-type: none"> Water quality analysis results. 	<ul style="list-style-type: none"> Water quality analyses of samples collected from Camarillo's potable distribution system. 	<ul style="list-style-type: none"> Meet Title 22 Secondary Maximum Contaminant Levels.

Monitoring System

Camarillo and Camarillo Sanitary District will, as part of their operations, collect product water/concentrate/recycled water meter data and water purchase data. Camarillo will collect data on influent groundwater salt concentrations, product water salt concentrations, brine salt concentrations, and distribution water quality. Camarillo Sanitary District will collect data on recycled water salt concentrations as part of their operational monitoring. Collected data will be compiled and analyzed and results used to assess progress toward project goals. Data will be provided to DWR and WVCV and be presented as part of quarterly and final grant reports.

Data Management and Analyses

As discussed above, each participating agency will collect relevant water meter data, water purchase data, and water quality data. Data will be maintained and conveyed in spreadsheets, hard copy, and/or PDFs. Flow meter data will be analyzed to assess whether actual deliveries meet project targets. Similarly, water quality data will be analyzed with meter data to arrive at a salts removal estimate and to

assess progress toward meeting Secondary Maximum Contaminant Levels. Results will be compared against the targets described in Table 1.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project goes into operation, Camarillo will prepare a report describing how the project is performing relative to the targets in Table 1. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVC IRWM Plan as denoted below:

- Reduce dependence on imported water**
- Protect, conserve, and augment water supplies**
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts
- Protect and restore habitat and ecosystems in our watersheds
- Provide water-related public access, recreational, and educational opportunities

Project performance data will be made available to State databases, DWR, and WCVC stakeholders. Project performance will be considered during WCVC plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVC IRWM Plan objectives.

TABLE 2
WEST SIMI VALLEY WATER RECYCLING PROJECT PHASES 1 AND 2 (C-21)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Improve water supply reliability and reduce dependence on imported water supply by the City of Simi Valley	<ul style="list-style-type: none"> Increased use of local recycled water resources. Reduced demand for potable water supplies, including imported water. 	<ul style="list-style-type: none"> Quantification of recycled water use in-lieu of potable water as a result of the project. 	<ul style="list-style-type: none"> Meters for recycled water customers served by Phases 1 and 2. 	<ul style="list-style-type: none"> Increase recycled water deliveries by 600 AFY.
Decrease salt imports to the Calleguas Creek Watershed and comply with TMDL requirements	<ul style="list-style-type: none"> Progress toward compliance with salts TMDL. Progress toward delisting of Calleguas Creek and tributaries from impaired waterways list. 	<ul style="list-style-type: none"> Mass of avoided salt imports to the watershed from water imports. 	<ul style="list-style-type: none"> Meters for recycled water customers served by Phases 1 and 2 (to calculate imported water use avoided). Water quality data provided by the Metropolitan Water District for its Jensen Water Filtration Plant. 	<ul style="list-style-type: none"> Avoid importation of 223 metric tons of salt per year.

Monitoring System

Phase 1 and 2 recycled water customers will have separate meters to measure their usage. Phase 1 and 2 customer meter readings will occur every two months.

Data Management and Analyses

Phase 1 and 2 recycled water meter readings will be totaled to determine the cumulative recycled water usage to evaluate actual recycled water deliveries and performance of the project. To evaluate avoided salt import, salinity levels from Metropolitan’s Jensen Water Filtration Plant (source of imported water in Ventura County) will be analyzed and compared to salinity in Simi’s recycled water. Data will be analyzed and compared against targets in Table 2.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project goes into operation, Simi Valley will prepare a report describing how the project is performing relative to the targets in Table 2. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVV IRWM Plan as denoted below:

- Reduce dependence on imported water**
- Protect, conserve, and augment water supplies**
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts

- Protect and restore habitat and ecosystems in our watersheds
- Provide water-related public access, recreational, and educational opportunities

Project performance data will be made available to State databases, DWR, and WCVC stakeholders. Project performance will be considered during WCVC plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVC IRWM Plan objectives.

TABLE 3
MOORPARK RECYCLED WATER PROJECT PHASE IV (C-22)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Improve water supply reliability and reduce dependence on imported water by Waterworks District 1	<ul style="list-style-type: none"> Increased use of local recycled water supplies. Reduced demand for potable water supplies, including imported water. 	<ul style="list-style-type: none"> Quantification of recycled water use in lieu of potable water as a result of the project. 	<ul style="list-style-type: none"> Meters for recycled water customers served by Phase IV. 	<ul style="list-style-type: none"> Increase recycled water deliveries by 425 AFY.
Decrease salt imports to the Calleguas Creek Watershed and comply with TMDL requirements	<ul style="list-style-type: none"> Progress toward compliance with salts TMDL. Progress toward delisting of Calleguas Creek and tributaries from impaired waterways list. 	<ul style="list-style-type: none"> Mass of avoided salt imports to the watershed from water imports. 	<ul style="list-style-type: none"> Meters for recycled water customers served by Phase IV. 	<ul style="list-style-type: none"> Avoid importation of 157 MT tons of salt per year.

Monitoring System

Regular readings will be conducted on the recycled water delivery flow meters at the Phase IV customers' points of connection.

Data Management and Analyses

Flow meter data will be totaled to determine the cumulative recycled water usage and performance of the project. To evaluate avoided salt import, salinity levels from Metropolitan's Jensen Water Filtration Plant (source of imported water in Ventura County) will be analyzed and compared to salinity in WWD1's recycled water. Data will be analyzed and compared against targets in Table 3.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project goes into operation, WWD1 will prepare a report describing how the project is performing relative to the targets in Table 3. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVC IRWM Plan as denoted below:

- Reduce dependence on imported water**
- Protect, conserve, and augment water supplies**
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts
- Protect and restore habitat and ecosystems in our watersheds
- Provide water-related public access, recreational, and educational opportunities

Project performance data will be made available to State databases, DWR, and WCVV stakeholders. Project performance will be considered during WCVV plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVV IRWM Plan objectives.

TABLE 4
SOUTH OXNARD FLOOD PROTECTION AND COMMUNITY ENHANCEMENT PROJECT
PHASE 2B (SC-12B)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Improve habitat quality by preventing trash from being blown or dumped into the J Street Drain and transported to Ormond Beach	<ul style="list-style-type: none"> Reduced trash entering the J Street Drain south of Hueneme Road and ultimately Ormond Beach Lagoon. 	<ul style="list-style-type: none"> Weight of trash collected annually at the Phase 1 trash boom before and after Phase 2B channel covering. 	<ul style="list-style-type: none"> Vacuum truck weight difference before and after trash collection; compare values before and after Phase 2B channel covering. 	<ul style="list-style-type: none"> Reduce trash by 4 tons annually.
Reduce negative aspects of flood control in urban community	<ul style="list-style-type: none"> Unify environmental justice community. Surface to support future linear park that will improve aesthetics, recreational access, and public health and safety. 	<ul style="list-style-type: none"> Covering flood control channel. Pre- and Post-neighborhood photos. 	<ul style="list-style-type: none"> Linear feet of flood control channel covered. 	<ul style="list-style-type: none"> Covering J Street Drain from Pleasant Valley Road to Hueneme Road (2,700 lineal feet).
Preserve coastal open space	<ul style="list-style-type: none"> Reduced development pressure on Ormond Beach Lagoon. Opportunity to restore Ormond Beach wetlands. 	<ul style="list-style-type: none"> Land placed in permanent preserve. 	<ul style="list-style-type: none"> Final recorded deed. 	<ul style="list-style-type: none"> Preservation of 20 acres in immediate vicinity of Ormond Beach Lagoon.

Monitoring System

Trash Reduction. The Ventura County Watershed Protection District (WPD) will cover the J Street Drain from Pleasant Valley Road to Hueneme Road. This cover will virtually eliminate the introduction of incidental trash (i.e., trash blown or dumped directly into the channel from above) in the section of the drain from Pleasant Valley Road to Hueneme Road. A trash boom will be placed inside the J Street Drain immediately downstream of Hueneme Road (not part of this grant application) which will collect the majority of the trash carried within the total length of the drain and its feeder channels. The trash boom will be maintained quarterly. The City of Oxnard will employ a vacuum truck to remove trash trapped on the upstream side of the boom. The weight of the vacuum truck will be recorded before and after each scheduled maintenance. The amount of trash collected before and after channel covering will be compared.

Community Enhancements. Community enhancements will occur from the covering of the flood control channel, the removal of the open drain within J Street, and the removal of fencing along the drain. Changes will be monitored based on the amount of channel cover installed over J Street Drain.

Preservation of Coastal Open Space. To confirm the acreage of coastal land preserved, TNC will provide parcel information to the Ventura County Watershed Protection District, including the final recorded deed.

Data Management and Analyses

WPD will compile data on pre- and post-project trash weight, provide pictures and spreadsheets documenting pre- and post-project community conditions (open channel, fencing), and provide GIS data on the location and size of the Ormond Beach property acquisition. Data will be analyzed and compared against the targets described in Table 4.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project goes into operation, WPD will prepare a report describing how the project is performing relative to the targets in Table 4. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVV IRWM Plan as denoted below:

- Reduce dependence on imported water
- Protect, conserve, and augment water supplies
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts
- Protect and restore habitat and ecosystems in our watersheds**
- Provide water-related public access, recreational, and educational opportunities**

Project performance data will be made available to State databases, DWR, and WCVV stakeholders. Project performance will be considered during WCVV plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVV IRWM Plan objectives.

TABLE 5
 INVASIVE PLANT REMOVAL, ECOSYSTEM RESTORATION, AND HABITAT
 PROTECTION IN THE SANTA CLARA RIVER (SC-13)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Remove arundo and other non-native, invasive plants from 150-200 acres of river corridor in the Santa Clara River between Sespe and Santa Paula Creek confluences	<ul style="list-style-type: none"> • Significantly reduced arundo in riparian habitats in the project area. • Reduced populations of other invasive plants. 	<ul style="list-style-type: none"> • Percent decrease in arundo cover, woody invasive plant cover, herbaceous invasive plant cover. 	<ul style="list-style-type: none"> • Transect surveys and statistical analyses to assess reductions in cover of invasive plants over the project period. • Photographic monitoring to document progress of vegetative growth over the project period. 	<ul style="list-style-type: none"> • Arundo and woody invasive plant cover in the project area less than 50% by year two, less than 25% by year three, and less than 5% by year four. • Invasive herbaceous plant cover in the project area less than 50% by year two, less than 30% by year three, and less than 10% by year four.
Restore native riparian forest habitat	<ul style="list-style-type: none"> • Increased cover of native plants in areas where arundo has been removed. • Increased plant diversity of project area to support complex food webs. 	<ul style="list-style-type: none"> • Plant diversity, native tree cover, native understory cover. 	<ul style="list-style-type: none"> • Transect surveys and statistical analyses to assess increase in native plant diversity and cover over the project period. • Photographic monitoring to document progress of vegetative growth over the project period. 	<ul style="list-style-type: none"> • Cover of native plants in arundo removal areas at 40% in reference areas (areas that have no short-term history of arundo infestation) by year three. • Cover of native plants in arundo removal areas at 60% in reference areas by year four.
Improve habitat quality	<ul style="list-style-type: none"> • Recovery of wildlife after arundo is removed. • Enhanced opportunities for wildlife-related recreation and education. 	<ul style="list-style-type: none"> • Bird abundance and diversity, insect abundance and diversity. 	<ul style="list-style-type: none"> • Bird surveys to document changes or increases in bird abundance and diversity over the project period. • Direct sampling to monitor insect diversity over time. 	<ul style="list-style-type: none"> • Increase in bird use and diversity in restored areas. • Yearly increase in insect abundance and diversity.

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Conserve water supplies along the Santa Clara River	<ul style="list-style-type: none"> Reduce water consumption by arundo and other invasive plants. 	<ul style="list-style-type: none"> Percent decrease in arundo cover, woody invasive plant cover, herbaceous invasive plant cover. 	<ul style="list-style-type: none"> Data from scientific literature on water consumption by invasive plants. 	<ul style="list-style-type: none"> Remove enough arundo to conserve 3,500 AFY of water.
Improve water quality and flood conditions along the Santa Clara River	<ul style="list-style-type: none"> Reduce water quality and flood impacts resulting from invasive plants. 	<ul style="list-style-type: none"> Percent decrease in arundo cover, woody invasive plant cover, herbaceous invasive plant cover. Plant diversity, native tree cover, native understory cover. 	<ul style="list-style-type: none"> Transect surveys and statistical analyses to assess reductions in cover of invasive plants over the project period. Photographic monitoring to document progress of vegetative growth over the project period. 	<ul style="list-style-type: none"> Arundo and woody invasive plant cover in the project area less than 50% by year two, less than 25% by year three, and less than 5% by year four. Invasive herbaceous plant cover in the project area less than 50% by year two, less than 30% by year three, and less than 10% by year four.

Monitoring System

Annual monitoring will be performed to evaluate effectiveness of restoration implementation including transect surveys, photographic monitoring, bird surveys, and insect surveys. Quantitative monitoring will assess growth, survivorship, and diversity of native plants in the project area.

Data Management and Analyses

The University of California Santa Barbara (UCSB) will compile data on arundo removal for each project area. UCSB will document before and after project conditions in arundo removal areas. UCSB will document the location of recreational enhancements in GIS and provide before- and after-project pictures documenting before-project and after-project conditions. Data will be analyzed and compared against the targets described in Table 5.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project completion, UCSB will prepare a report describing how the project is performing relative to the targets in Table 5. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVC IRWM Plan as denoted below:

- Reduce dependence on imported water
- Protect, conserve, and augment water supplies**
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts**

- Protect and restore habitat and ecosystems in our watersheds**
- Provide water-related public access, recreational, and educational opportunities**

Project performance data will be made available to State databases, DWR, and WCVC stakeholders. Project performance will be considered during WCVC plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVC IRWM Plan objectives.

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TABLE 6
VENTURA RIVER INVASIVE PLANT REMOVAL AND ECOSYSTEM RESTORATION
PROJECT (V-11)

Project Goals	Desired Outcomes	Performance Indicators	Measurement Tools and Methods	Targets
Remove arundo from designated areas within the Ventura River Watershed to restore native habitat and allow natural recruitment of native plant species	<ul style="list-style-type: none"> Significantly reduced arundo riparian habitats in the project area. Reduced populations of other invasive plants. 	<ul style="list-style-type: none"> Percentage of acreage on which arundo is removed and effectively controlled. Increase in native habitat cover following arundo removal. 	<ul style="list-style-type: none"> Visual assessment of reductions in cover of invasive plants over the project period. Photographic monitoring to document progress of vegetative growth over the project period. 	<ul style="list-style-type: none"> Reduce existing coverage of arundo by at least 70% in the project area.
Install recreational enhancements at Steelhead Preserve	<ul style="list-style-type: none"> Improved and enhanced recreational and educational opportunities on Ventura River. 	<ul style="list-style-type: none"> Amount of access road improved. Creation of restroom meeting Americans with Disabilities Act standards. Creation of new trailhead kiosk. Creation of new interpretive trail signage. 	<ul style="list-style-type: none"> Record drawings of improved access road. Before and after photos of restroom facilities. Before and after photos of trailhead kiosk. Before and after photos of interpretive signage. 	<ul style="list-style-type: none"> Improve 1680 linear feet access road at Steelhead Preserve to meet Ventura County Standards for “all-weather” road. Restroom meeting ADA standards. One new trailhead kiosk.
Conserve water supplies along the Ventura River	<ul style="list-style-type: none"> Reduced water consumption by arundo and other invasive plants. 	<ul style="list-style-type: none"> Percentage of acreage on which arundo is removed and effectively controlled. 	<ul style="list-style-type: none"> Data from scientific literature on water consumption by invasive plants. 	<ul style="list-style-type: none"> Remove enough arundo to conserve 284 AFY of water.
Improve water quality and flood conditions along the Ventura River	<ul style="list-style-type: none"> Reduced water quality and flood impacts resulting from invasive plants. 	<ul style="list-style-type: none"> Percentage of acreage on which arundo is removed and effectively controlled. Increase in native habitat cover following arundo removal. 	<ul style="list-style-type: none"> Visual assessment of reductions in cover of invasive plants over the project period. Documentation of native vegetative growth over the project period. 	<ul style="list-style-type: none"> Reduce existing coverage of arundo by at least 70% in the project area with related water savings.

Monitoring System

Progress monitoring will be performed by a biological monitor following initial treatment and each of the three years of retreatment. Reports will contain both qualitative data and quantitative data evaluating the status of the restoration project.

Data Management and Analyses

WPD will compile data on arundo removal for each project area. WPD will document before- and after-project conditions in arundo removal areas. WPD will document the location of recreational enhancements in GIS and provide before- and after-project pictures documenting before-project and after-project conditions. Data will be analyzed and compared against the targets described in Table 6.

Monitoring for IRWM Plan Goals and Objectives

Within 90 days after the project completion, WPD will prepare a report describing how the project is performing relative to the targets in Table 6. This data will be included in a report where the suite of projects are evaluated relative to goals and objectives of the WCVV IRWM Plan as denoted below:

- Reduce dependence on imported water
- Protect, conserve, and augment water supplies**
- Protect and improve water quality**
- Protect people, property, and the environment from adverse flooding impacts**
- Protect and restore habitat and ecosystems in our watersheds**
- Provide water-related public access, recreational, and educational opportunities**

Project performance data will be made available to State databases, DWR, and WCVV stakeholders. Project performance will be considered during WCVV plan updates and will be considered by Stakeholders when developing, updating, and quantifying WCVV IRWM Plan objectives.