

Drought Resiliency Implementation: Wineville Basin, Jurupa Basin, RP-3 Basin Improvements and Pumping and Conveyance System



WaterSMART: Drought Resiliency Project Grants Funding Opportunity R16-FOA-DO-006

Inland Empire Utilities Agency

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Table of Contents

Technical Proposal.....	3
Executive Summary	3
Background Data	3
Project Map.....	3
Reclamation Relationships.....	9
Technical Project Description.....	10
Evaluation Criterion A—Project Benefits	10
Evaluation Criterion B—Drought Planning and Preparedness	14
Evaluation Criterion C—Severity of Actual or Potential Drought Impacts to be Addressed	16
Evaluation Criterion D—Project Implementation	18
Evaluation Criterion E—Nexus to Reclamation	21
Performance Measures.....	22
Environmental and Cultural Resources Compliance	22
Existing Drought Contingency Plan	24
Required Permits or Approvals.....	24
Letters of Support	25
Official Resolution.....	25
Project Budget.....	26
Funding Plan and Letters of Commitment	27
Budget Narrative	30
Budget Form	32
Appendices.....	33
Support Letter	34
Drought Monitoring Documentation	35

Drought Resiliency Implementation: Wineville Basin, Jurupa Basin, RP-3 Basin Improvements, and Pumping and Conveyance System Project

Technical Proposal

20 page limit.

Executive Summary

Date: April 11, 2016

Applicant name: Inland Empire Utilities Agency

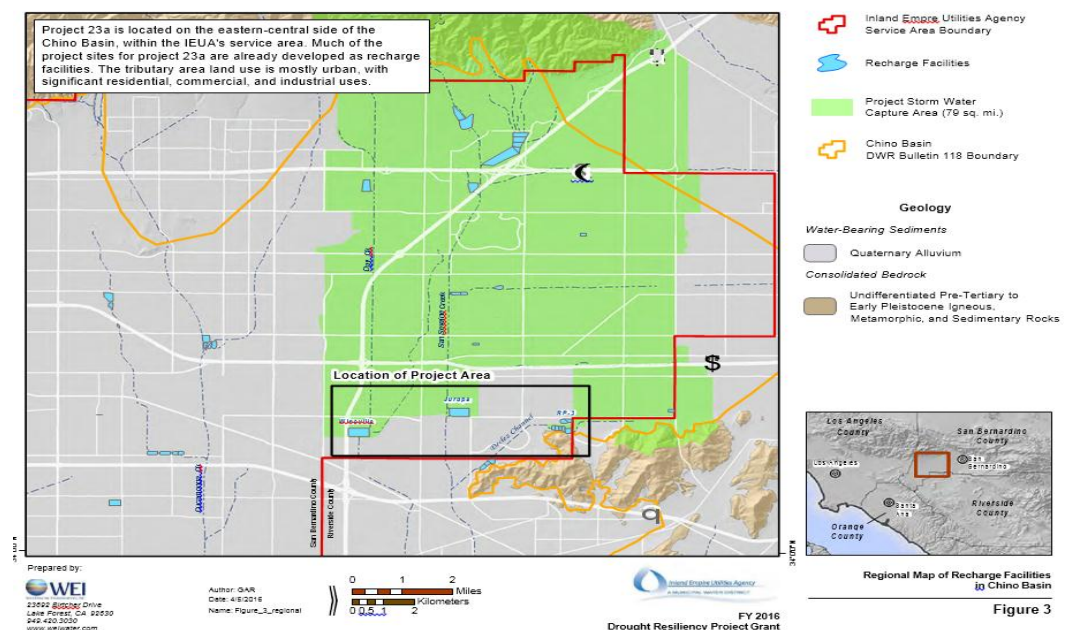
City, County and State: Chino, San Bernardino County, California

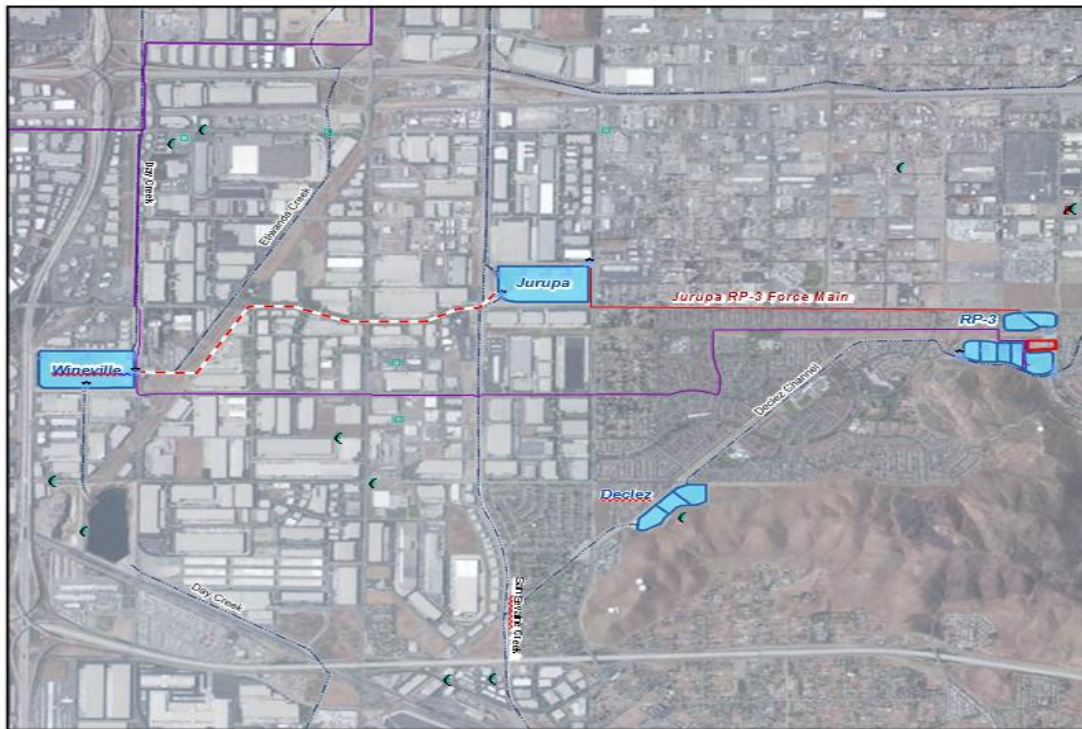
Project Title: Drought Resiliency Implementation: Wineville Basin, Jurupa Basin, RP-3 Basin Improvements, and Pumping and Conveyance System Project.

Inland Empire Utilities Agency (IEUA) is a municipal water district located in Chino, CA that serves approximately 830,000 people over 242 square miles in the western area of San Bernardino County, California. The proposed work is the design and construction of the 2013 Recharge Master Plan Update Project ID 23a (project.) The project will improve the already in existence Wineville, Jurupa and RP-3 Basins and build a pumping and conveyance system to pump storm water and dry-weather runoff from the Wineville Basin to the Jurupa Basin. This project will meet the goal of this FOA by increasing the reliability of the Chino Basins water supply, improves regional water security and drought resiliency by increasing the water supplies available to the region. Under the present schedule, the design of the proposed project is expected to begin by August 2016 and the project will be construction is expected to be completed by February 2020 which will make it approximately 22 months, the project is expected to take approximately 22 months. The proposed project is not located on a Federal facility.

Background Data

Project Map





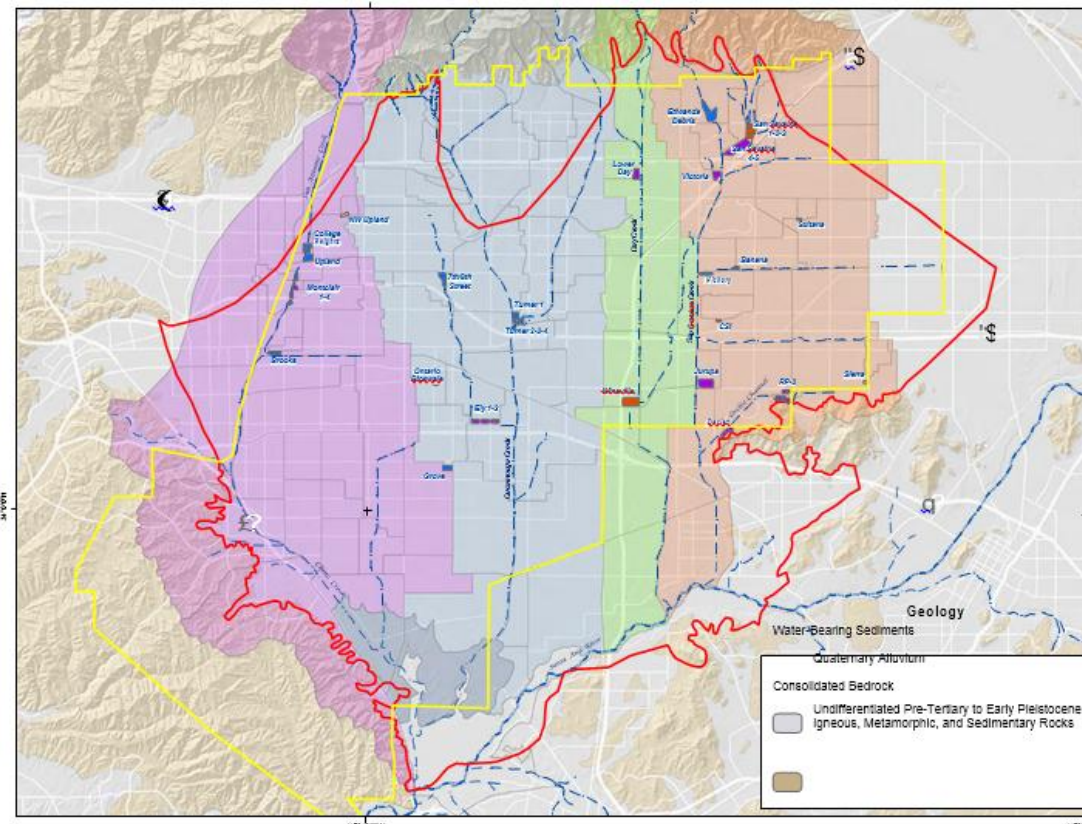
Prepared by:
WEI

Author: GAR
Date: 4/5/2016

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Inland Empire Utilities Agency
A Metropolitan Water Services Company

Project Map for Project 23a



Prepared by:
WEI
22841-Drought-Plan
Lawrence, CA 91522
916.433.2022
www.wei.com

Author: GAR
Date: 4/5/2016
Name: Figure 2_RMPU Package

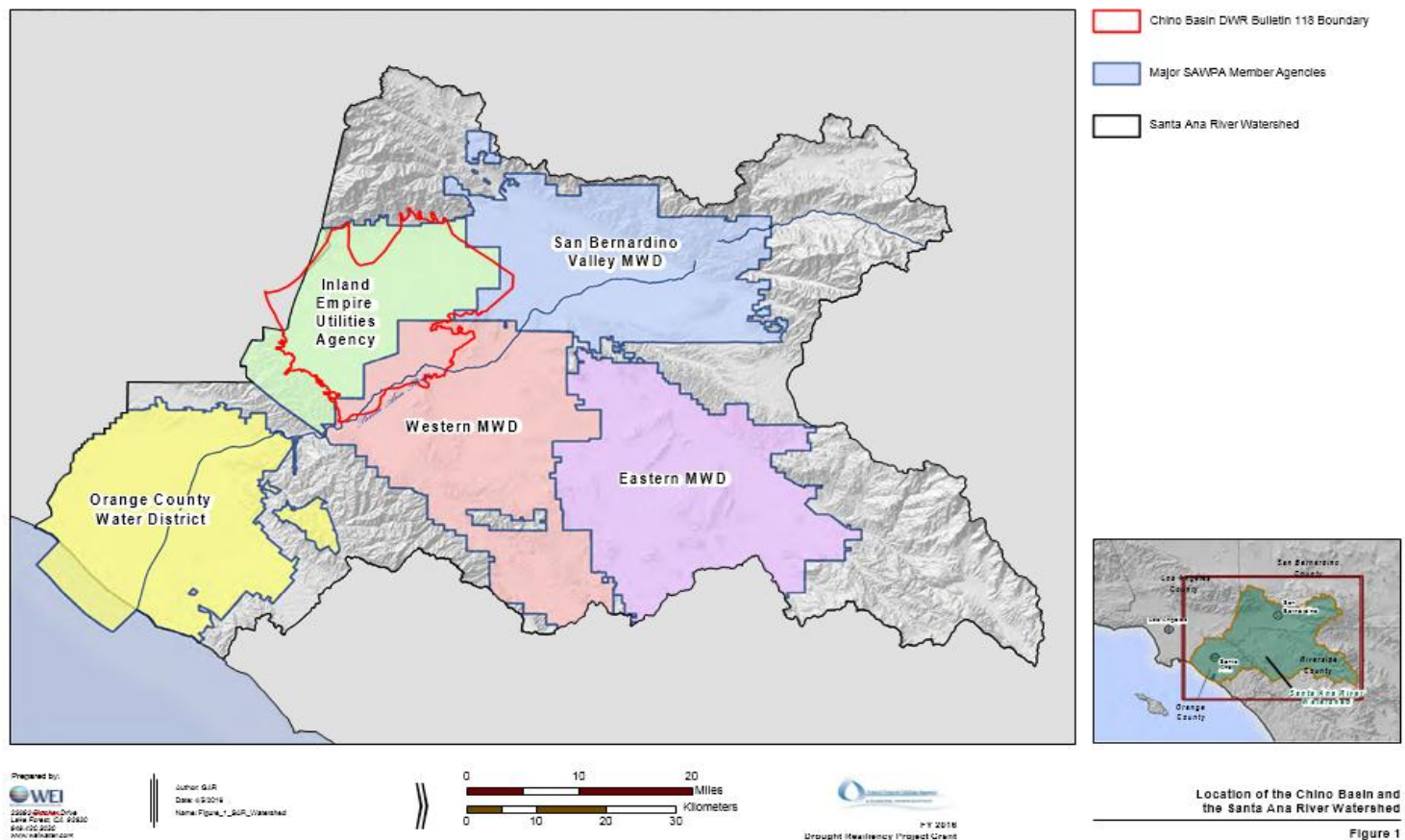
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0 2 4 6 8 Kilometers

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FY 2016



Recharge Improvements in the Chino Basin and Implementation of the 2013 RMPU and the 2001 Recharge Master Plan

Figure 2



Institutional and Regulatory Framework. The Chino groundwater basin (Chino Basin) is located in the Santa Ana Watershed and is shown in Figure 1. The basin lies within the Counties of Los Angeles, San Bernardino, and Riverside; includes the Cities of Chino, Chino Hills, Eastvale, Fontana, Ontario, Pomona, Rancho Cucamonga, and Upland, as well as several other communities; and covers about 235 square miles. The Chino Basin is an integral part of the regional and statewide water supply system. The Chino Basin is one of the largest groundwater basins in Southern California, containing about 5,700,000 AF of water in storage, and has an unused storage capacity of over 1,000,000 AF. Cities and other water supply entities produce groundwater for all or part of their municipal and industrial supplies. Agricultural users also produce groundwater from the basin. Irrigated agriculture has declined substantially in recent years and is projected to be almost nonexistent by 2020.

Production and storage rights in the Chino Basin are defined in the Stipulated Judgment (Judgment), issued in 1978 (Chino Basin Municipal Water District vs. the City of Chino et al. [SBSC Case No. RCV 51010]). Since that time, the basin has been sustainably managed, as required by the Judgment, under the direction of a court-appointed Watermaster.

A fundamental premise of the Judgment is that all Chino Basin water users are allowed to pump sufficient water from the basin to meet their requirements. To the extent that pumping by a party exceeds its share of the safe yield, assessments are levied by Watermaster to replace overproduction. Traditionally, overproduction has resulted in purchase of State Water Project

(SWP) water through IEUA that is subsequently recharged into the Chino Basin. The Judgment recognizes that there exists a substantial amount of available unused groundwater storage capacity space in the Chino Basin that can be utilized for storage and the conjunctive use of supplemental and basin waters, makes utilization of this storage subject to Watermaster control and regulation, and provides that any person or public entity, whether or not a party to the Judgment, may make reasonable beneficial use of the available storage, provided that no such use shall be made except pursuant to a written storage agreement with Watermaster.

Pursuant to the Judgment and direction by the California Superior Court, Watermaster, IEUA and other stakeholders developed the optimum basin management program (OBMP) for the Chino Basin, including both water quantity and quality considerations. Watermaster, IEUA and the other Judgment parties began the development of the OBMP in 1998 and completed it along with its implementation agreement (Peace Agreement) in 2000. The OBMP was developed in a public collaborative process that identified the needs and wants of all the stakeholders, developed a set of management goals, and identified impediments to those goals and a series of actions that could be taken to remove those impediments and achieve management goals¹. One of the resulting programs of the OBMP is Program Element 2 – Develop and Implement Comprehensive Recharge Program. Program Element 2 is fundamental to the OBMP.

Pursuant to the OBMP and the Peace Agreement, the IEUA and Watermaster completed a recharge master plan in 2002 (hereafter the 2002 Recharge Master Plan or 2002 RMP) and began its implementation in 2002 with construction occurring between 2004 and 2014. Seventeen existing flood retention facilities were modified to increase diversion rates, increase conservation storage, and subsequently increase the recharge of storm water and dry-weather runoff. And, two new recharge facilities were constructed. Figure 2 shows these facilities. The cost of these recharge improvements was about \$60 million, of which half came from grants provided from Proposition 13 bonds and other grants with the remainder paid for by the IEUA and Watermaster.

Watermaster has permits from the SWRCB to divert surface water to the spreading basins shown in Figure 2, store the recharged water, and subsequently recover it for beneficial use. Watermaster holds these permits in trust for all entities that rely on groundwater from the Chino Basin.

Prior to 2004, there was no significant recharge of dry-weather runoff, and recycled water recharge was about 500 AFY. Based on monitoring of the recharge performance and numerical model investigations, the aggregate average annual increase in storm and dry-weather runoff recharge due to the implementation of the 2002 RMP is estimated to be about 6,000 AFY. The total recharge of new storm water, dry-weather runoff, and recycled water created through the implementation of the 2002 RMP for the ten-year period July 2006 through June 2015 is about 106,000 AF and has reduced the demand for imported water from the SWP by the same amount, averaging about 10,600 AFY. During most of this period, storm water recharge was suppressed by drought, and the recycled system was expanding; the amount of storm and recycled water recharge due to the 2002 RMP will increase substantially with the fullness of time. The IEUA and Watermaster prepared the 2010 Recharge Master Plan Update and amended it in 2013. The 2010 Recharge

Master Plan Update and its 2013 amendment (hereafter the 2013 Recharge Master Plan Update or 2013 RMPU) were developed in a public, transparent process, including nine workshops for the 2010 Recharge Master Plan Update and 67 steering committee meetings and workshops for the 2013 RMPU. The steering committee meetings were open to all stakeholders with an interest in storm water and dry-weather runoff management and groundwater management in the Chino Basin. The IEUA and Watermaster boards of directors approved the 2013 RMPU, and it was submitted to the Court in the fall of 2013 for review and approval. The Court approved the 2013 RMPU in 2014 and directed the IEUA and Watermaster to implement it. Table 1 lists the project name, new storm water recharge, recycled water recharge capacity, and capital cost.

The 2013 RMPU will increase storm water and dry-weather runoff recharge in the Chino Basin by about 5,500 AFY and increase recycled water recharge capacity by about 7,100 AFY. The total cost to implement the 2013 RMPU is about \$41 million. When fully implemented, the 2013 RMPU will reduce the future demand for SWP water by about 12,600 AFY. Project ID 23a listed in Table 1 is the proposed project.

Proposed Project. Figures 3 and 4 show location of the Day and San Sevaine Creeks watersheds tributary to the proposed project and project plan. The proposed project will divert and recharge storm water and dry-weather runoff that would otherwise be lost and degrade the Santa Ana River water quality. This project includes the construction at three storm water management facilities. For the Wineville Basin the proposed improvements include the reconstruction of an embankment to enable long-term storage of water in the basin, construction of a new gated spillway, construction of new controlled outlet works and construction of a new pump station at the Wineville Basin and pipelines to convey to pump storm water and dry-weather runoff from the Wineville Basin to the Jurupa Basin. For the Jurupa Basin, the proposed improvements include an expansion of the diversion from San Sevaine Creek from 20 cfs to 200 cfs, the expansion of a pump station to increase the capacity of the existing pump station from 20 cfs to 40 cfs to enable faster transfer of storm water and dry-weather runoff from Jurupa Basin to the RP3 Basins. For the RP3 Basins the proposed improvements include the construction of new basin to increase the storage and area of recharge. Most of the new recharge will occur in the Wineville and RP3 Basins.

The IEUA and the Watermaster conducted detailed hydrologic and hydraulics analysis and determined that the proposed project would increase the average annual storm water recharge by 3,166 AFY. The average annual increase in recycled and dry-weather runoff recharge will total 2,905 AFY and 2,190 AFY, respectively. This new recharge will increase the yield of the Chino Basin by 8,261 AFY, decrease future demand for SWP water by 8,261 AFY. The increase in recharge capacity of the proposed project will enable new conjunctive use of local surface water supplies and the increase in recharge capacity will enable IEUA to recharge and store SWP water when it is available in wet years in the Chino Basin and carry over the storage for use in dry years. The proposed project improves regional water security and drought resiliency by increasing the water supplies available to the region, decreasing dependence on SWP water and freeing SWP water for other uses during drought – a benefit to the region and the State.

In addition, describe the applicant's water delivery or distribution system as appropriate.

IEUA is a wholesaler of water and owns and operates four water reclamation plants that produce recycled water, approximately 82 miles of recycled water pipelines, nine pump stations, four reservoirs, and a recycled water SCADA system that are related to their water delivery system. Since IEUA is a wholesaler, IEUA does not have direct connections to the actual water users.

IEUA operates and maintains 19 groundwater recharge basins and a SCADA system controlling the flow of water through the basins, in conjunction with the Chino Basin Watermaster, Chino Basin Water Conservation District and San Bernardino Flood control.

Table 1

Project ID	Group	Project	Yield	Recycled Water	Storm Water Recharge Unit Cost	Total Capital Cost	Total RW/SW Recharge Unit Cost
Recommende d MZ3 Projects							
18a		CSI Storm Water Basin	81	-	\$ 273	\$ 440,000	\$ 273
23a		2013 RMPU Proposed Wineville PS to Jurupa, Expanded Jurupa PS to RP3 Basin, and 2013 Proposed RP3 Improvements	3,166	2,905	\$ 365	\$ 21,310,000	\$ 215
27		East Declez Basin Declez Basin	913	-	\$ 1,155	\$ 23,470,000	\$ 1,155
			241	-	\$ 1,135	\$ 4,070,000	\$ 1,135
Total MZ3			4,401	2,905	550	\$ 49,290,000	\$ 352
Recommende d MZ2 Projects							
11		Victoria Basin	43	120	\$ 114	\$ 150,000	\$ 67
7		San Sevaline Basins	642	4,100	\$ 281	\$ 6,460,000	\$ 88
12		Lower Day Basin (2010 RMPU)	789	-	\$ 173	\$ 2,480,000	\$ 173
14		Turner Basin	66	-	\$ 623	\$ 890,000	\$ 623
15a		Ely Basin	221	-	\$ 666	\$ 3,200,000	\$ 666
Total MZ2		1,761	4,220	\$ 290	\$ 13,180,000	\$ 126	
Recommende d MZ1 Projects							
2		Montclair Basins	248	-	\$ 289	\$ 1,440,000	\$ 979
Total MZ1 Total			248	-	\$ 289	\$ 1,440,000	\$ 289
Total Re commende d Projects			6,410	7,125	\$ 468	\$ 63,910,000	\$ 251
*The capital cost for projects with an "a" on the Project ID assumes a 90% reduction on excavation and hauling cost, where efforts will be made to work with local contractors to remove earth material for their beneficial use.							

Reclamation Relationships Table 2

Project Name	Amount	Contract Number	Award Date	Contract Termination
CEQA for Regional Water Recycling Project	\$22,608	01-FC-35-0020	Prior to 2001	11/20/2002
Chino Basin Comprehensive Water Efficiency Landscape Planning Process	\$125,000	00-FC-20-0208	6/26/2000	3/31/2003
Regional Recycled Water Program Feasibility Study	\$980,000	06-FC-35-0189	6/27/2006	3/31/2008
Chino Basin Water Efficient Irrigation Demonstration	\$50,000	05-FG-35-0170	9/12/2005	1/31/2010
Regional Recycled Water Program NE Area	\$5,938,454	R10AC35R16	12/22/2009	4/15/2011
California Friendly Water Wise Landscape Program	\$30,000	R09AP35261	8/28/2009	5/31/2011
Regional Recycled Water Program NW Area	\$7,910,000	R10AC35R17	12/22/2009	3/21/2012
Turner Basin/Guasti Multi Use Beneficial Project	\$406,712	R11AP35315	9/22/2011	9/30/2013
Regional Residential Landscape Surveys and Retrofit Programs	\$199,000	R12AP35353	9/7/2012	12/31/2014
Construct Regional Recycled Water Program	\$4,940,000	08-FC-35-0237-1	3/20/2009	6/30/2015
1010 Zone Pump Station and New Product Water Pipelines	\$3,970,000	R12AC35339	9/24/2012	11/30/2016
Brine Concentrate Reduction Facility	\$4,940,000.00	R15AC00059	9/14/2015	12/30/2016
Groundwater Supply Wells and Raw Water Pipelines	\$3,000,000	R14AC00049	9/17/2014	5/31/2017
Groundwater Recharge Yield Enhancement Conjunctive Use Project for Storm water Capture	\$750,000.00	R15AP00151	9/4/2015	5/31/2017
Total	\$38,201,774			

Technical Project Description

Evaluation Criterion A—Project Benefits

Will the project make additional water supplies available? Yes

If so, what is the estimated quantity of additional supply the project will provide and how was this estimate calculated?

The proposed project will recharge the following additional supplies into the Chino Basin: 3,166 AFY of storm water, 2,905 AFY of recycled water and 2,190 AFY of dry-weather runoff. This new recharge will increase the yield of the Chino Basin by 8,261 AFY and decrease future demand for State Water Project (SWP) water by 8,261 AFY. The average annual estimate of storm water recharge is based on sophisticated and detailed surface water modeling of the drainage system in the Day and San Sevaine Creek watersheds using long-term records of daily precipitation and the routing of daily storm water discharges throughout the drainage systems. The annual recycled water recharge estimate is based on existing recycled water conveyance system and recharge capacity at the proposed project. And, the average dry-weather runoff recharge is based on review of measured dry-weather runoff in the watershed and observations of dry-weather runoff in the Day and San Sevaine Creeks.

What percentage of the total water supply does the additional water supply represent? How was this estimate calculated?

The percentage of total additional water supply is 1.35-percent of the total annual water consumption on the IEUA service area.

The following proposed recharge projects shall provide 3,166 acre-feet per year of stormwater capture and 2,905 acre-feet per year of recycled water for the replenishment of the Chino Basin. Currently, the total annual water consumption in IEUA's service area averaged 215,285 AFY over the past 5 years.

$$\begin{aligned} & (215,285 \text{ AF}) \text{ Total Annual Supply of Water} \\ & (2,905 \text{ AF Recharged Recycled Water} + 2190 \text{ AF dry weather runoff} \\ & \quad + 3,166 \text{ AF Stormwater}) = 8,261 \text{ AF Conserved} \\ & (100\%) \times \frac{8,261 \text{ AF}}{215,285 \text{ AF}} \\ & = 3.84\% \text{ of total annual water consumption in the IEUA service area} \end{aligned}$$

Refer to Table 3 below to view the summarized tabulated value for the project savings.

Table 3

Overall Project Savings				
Groundwater Recharge Yield Enhancement Project	Recycled Water Capture (AF)	Stormwater Capture (AF)	Dry Weather Runoff (AF)	Total
PID 23a	2,905	3,166	2,190	8,261
Total Water Saved Annually	2,905	3,166	2,190	8,261
Total Water Saved Over 30 Years	87,150	94,980	65,700	247,830

The water sources in Chino Basin area are 75% local, 25% imported (Bay-Delta). The local sources include groundwater, surface water, desalinated water and recycled water. Imported water is purchased from MWD for redistribution to local retail agencies within IEUA's service area. Therefore, over the thirty (30) year life of the project there will be an estimated increase in recharge of 87,150 AF based on the storage and reuse of recycled water. An additional estimated 94,980 AF of stormwater and 65,700 AF of Dry Weather Runoff will be recharged into the basin over thirty (30) years as well.

Provide a brief qualitative description of the degree/significance of the benefits associated with the additional water supplies.

Pursuant to the Judgment, the Safe Yield of the Chino Basin is allocated to the Judgment parties in constant amounts from year to year whether or not the region is experiencing drought or wet periods – the immense storage capacity of the Chino Basin is used to regulate the variable recharge during dry and wet periods producing a constant yield. Watermaster intends to treat the variability of new storm water recharge the same way and allocate new production rights to the Judgment parties based on the expected increase in average annual storm water recharge. Coupled with the dry-weather runoff and recycled water recharge, the proposed project will create a new stable water supply that will be available during drought periods. This new water supply would reduce the water supply that would be imported from the SWP thereby having not only a local impact but also an impact on the watershed that supplies the SWP.

How will the project build long-term resilience to drought? How many years will the project continue to provide benefits?

The one of the sources of the water expected to be recharged will help drought-proof the region. Recycled water will exist whether or not the region is in a drought or not. In addition, the water that is recharged will not be affected by evaporation. The proposed project is planned to be a

permanent project. The life of the project is estimated to be 30 years. It is expected that the project will continue to bring benefits for the life of the project and beyond.

How will the project improve the management of water supplies? For example, will the project increase efficiency or increase operational flexibility (e.g., improve the ability to deliver water during drought or access other sources of supply)? If so, how will the project increase efficiency or operational flexibility?

The proposed project improves water management by providing a constant stable new supply that can be counted in drought periods. In addition, water managers will have the improved ability to better manage and control stormwater and recycled water flows by having an improved flexibility to divert flows to multiple recharge sites through an added interconnected conveyance system and expanded facilities. The proposed project will divert and recharge storm water and dry-weather runoff that would otherwise be lost and degrade the Santa Ana River water quality. This project includes the construction at three storm water management facilities. For the Wineville Basin the proposed improvements include the reconstruction of an embankment to enable long-term storage of water in the basin, construction of a new gated spillway, construction of new controlled outlet works and construction of a new pump station at the Wineville Basin and pipelines to convey to pump storm water and dry-weather runoff from the Wineville Basin to the Jurupa Basin. For the Jurupa Basin, the proposed improvements include an expansion of the diversion from San Sevaine Creek from 20 cfs to 200 cfs, the expansion of a pump station to increase the capacity of the existing pump station from 20 cfs to 40 cfs to enable faster transfer of storm water and dry-weather runoff from Jurupa Basin to the RP3 Basins. For the RP3 Basins the proposed improvements include the construction of new basin to increase the storage and area of recharge. Most of the new recharge will occur in the Wineville and RP3 Basins.

Will the project make new information available to water managers?

Data regarding the flows between the basins, the amount of recycled water delivered for recharge, will be available to water managers in order to make sure the blend of recycled water and other sources of water recharged meet the requirements of the groundwater recharge program. In addition, data gleaned from the analysis of groundwater samples collected from the well will also be available to water managers to ensure that the requirements in RWQCB Order No. R8-2007-0039 issued for the IEUA/CBWM Chino Basin recycled water groundwater recharge program are met.

Will the project have benefits to fish, wildlife, or the environment?

Yes. The proposed project will reduce storm water discharge to the Santa Ana River and will virtually eliminate dry-weather runoff discharge to the Santa Ana River. This will reduce the high levels of copper, lead and pathogens which degrade the Santa Ana River habitat that support ecosystems that include, but are not limited to vegetation, fish and wildlife, including invertebrates. The reduction of storm water discharge and elimination of dry-weather runoff will also have recreational benefits by improved water quality as well as a reduction of greenhouse gas emissions due the ability to reduce the water imported from the SWP by the additional amount of water that this project will capture for recharge of the local water basins.

What is the estimated quantity of water that will be better managed as a result of this project? How was this estimate calculated?

The proposed project will recharge the following additional supplies into the Chino Basin: 3,166 AFY of storm water, 2,905 AFY of recycled water and 2,190 AFY of dry-weather runoff. This new recharge will increase the yield of the Chino Basin by 8,261 AFY, decrease future demand for SWP water by 8,261 AFY. The average annual estimate of storm water recharge is based on sophisticated and detailed surface water modeling of the drainage system in the Day and San Sevaine Creek watersheds using long-term records of daily precipitation and the routing of daily storm water discharges throughout the drainage systems. The annual recycled water recharge estimate is based on existing recycled water conveyance system and recharge capacity at the proposed project. And, the average dry-weather runoff recharge is based on review of measured dry-weather runoff in the watershed and observations of dry-weather runoff in the Day and San Sevaine Creeks.

What percentage of the total water supply does the water better managed represent? How was this estimate calculated?

The better managed of water percentage is 365-percent of the existing stormwater capture to the existing project system.

Groundwater Recharge Yield Enhancement Project	Current Stormwater Capture (AF)	Improved Stormwater Capture (AF)
PID 23a	867	3,166

This estimate as calculated below.

$$(100\%) \times \frac{3,166 \text{ AF}}{867 \text{ AF}} = 365\% \text{ increased stormwater capture for recharge}$$

Provide a brief qualitative description of the degree/significance of anticipated water management benefits.

The recharge improvements will provide better management of stormwater for groundwater recharge. Instead of allowing the stormwater and dry-weather runoff to be discharged into the streams and rivers that flow to the ocean, this project will allow these sources of water to be recharged into the Chino Basin for later use. This project will also allow water to be conveyed from the Jurupa storage basins to recharge basins for immediate groundwater recharge. New stormwater/dry-weather flows captured by the Project will help to develop sustainable local water resources that will be available in the future including during periods of drought. The occurrence of long dry periods, characteristic of Southern California's climate, limit the storage of stormwater for years at a time, thus requiring collaborative and forward-thinking approaches on the part of

Chino Basin water managers in order to conserve, enhance, and maximize groundwater for its highest and best use. The stormwater, dry weather flows and recycled water that will be recharged due to this project will preserve local flexibility in water supply management options and increase the groundwater for use during periods of drought.

If the proposed project includes any of the following components, please provide the applicable additional information:

Salt Water Barriers: Not applicable.

Wells: Monitoring wells maybe installed as part of this project to demonstrate that IEUA is compliant with the regulations established by the State of California for using recycled water to recharge groundwater. Groundwater samples collected from the well will be analyzed for specific constituents outlined in RWQCB Order No. R8-2007-0039 issued for the IEUA/CBWM Chino Basin recycled water groundwater recharge program.

New Water Marketing Tool or Program: Not applicable.

Metering/Water Measurement Projects: The project may features added new or additional monitoring water levels for tracking and controlling the performance of the facilities.

Environmental/Wildlife Projects: While the project is not an environmental/wildlife project, the project's CEQA process will address any environmental issues and provide any required mitigation measure during and after construction of the new facilities.

Evaluation Criterion B—Drought Planning and Preparedness

The agencies comprehensive Integrated Resource Plan (IRP) 2015-2040, Recharge Master Plan Update (RMPU), Urban Water Management Plan (UWMP), and IEUA 2009 Drought Plan have been included as attachments.

Explain how the applicable plan addresses drought. Proposals that reference plans clearly intended to prepare for and address drought will receive more points under this criterion.

IEUA is simultaneously applying for the 2016 Drought Contingency Planning Grant to consolidate and update the agencies multiple water management plans which will result in a comprehensive Regional Drought Response Plan. The consolidation will encompass the Phase1 of the Integrated Resources Plan (IRP,) , 2009 IEUA Drought Plan, and the Recharge Master Plan Update all of which focus on extensive analyses of future projected water needs and water supply strategies under conditions of climate change, drought and growth. Results will include summaries of the recommended regional water resource strategies; options available to mitigate drought impacts to the region, corresponding ranges of costs, and a regionally developed, all-inclusive list of potential projects with detailed project level analysis including project scopes, water savings solutions, costs, prioritization, and implementation scheduling.

Explain whether the drought plan was developed with input from multiple stakeholders. Was the drought plan developed through a collaborative process?

Yes, agency planning has been a collaborative effort for all of the plans that are acting as the foundation for the DRP. Discussions continue with stakeholders, including regional technical staff, water managers, and regional committees. Planning is inclusive and coordinate efforts acts as the Inland Empire region's blueprint for ensuring reliable, cost-effective, and environmentally responsible long-term water supplies. It will consider availability of current and future water supplies and account for possible fluctuations in demand forecasts and climate change impacts. Stakeholders in the DRP foundational plans, including the cities and water agencies will continue to work collaboratively to develop a comprehensive and detailed drought response plan.

Does the drought plan include consideration of climate change impacts to water resources or drought?

Yes, because climate change is one of the key factors that will have a substantial impact on water supplies, IEUA is prioritizing projects that address drought conditions as focusing on significant data available regarding climate change trends and indications of a future of unprecedented "megadroughts" that have the potential to last multiple decades.

Describe how your proposed drought resiliency project is supported by an existing drought plan.

The 23(a) Wineville, Jurupa and RP-3 Basin Improvement projects as part of the agencies water management planning is supported through the RMPU, one of four existing plans that will be incorporated into our Phase 2 drought planning. These plans act as the foundation for the DPR. The RMPU is a comprehensive basin management plan committed to the recharge of recycled and storm water.

Does the drought plan identify the proposed project as a potential mitigation or response action?

Yes. The 23a Wineville, Jurupa and RP-3 Basin Improvement project is one of the 9 projects identified by the RMPU that is part of the drought planning response action.

Does the proposed project implement a goal or need identified in the drought plan?

One of the goals of the drought plan will be to have water sources that will be available during long periods of drought. This project will provide additional water supply, an additional 3,116 AFY new storm water supply and 2,905 AFY recycled water supply. The additional water that is recharged due to this project will be a source of water that can be made available during long periods of drought.

Describe how the proposed project is prioritized in the referenced drought plan?

The RMPU is one of the documents that provides the foundation for the DRP. Within the RMPU document, this project is a top priority. The RMPU document evaluated over 40 potential projects and this project is deemed to be more beneficial than the other projects by evaluating cost effectiveness, creating a significant new stormwater and dry water flow recharge, barriers to implementation and compliance permitting. Under the present schedule, the design of the

proposed project will begin in the fall of 2016 and the project will be constructed and operational by the 2020.

Evaluation Criterion C—Severity of Actual or Potential Drought Impacts to be Addressed

What are the ongoing or potential drought impacts to specific sectors in the project area if no action is taken?

Potential ongoing drought impacts in the project area include but are not limited to the following:

Agriculture – The region currently produces feed crops for the dairy industry and other food crops on over 2,000 acres for consumption in Southern California, and beyond. These practices have a high potential to be interrupted or eliminated due to water quality and supply impacted by the drought.

Industrial – The region supplies water for various types of industries, including food & beverage, steel processing, and other beneficial industries. These industries rely on the water supply to operate and provide services, which helps maintain economic growth in the region.

Urban use – The service area currently has over 840,000 people that depend on these water supplies for food, families, business, etc. As further drought impacts continue, decreased water quality and supply availability may result in supply interruptions for customers. The region also currently supplies water to several international and cable airports serving the region, and Southern California.

Habitat – The region currently discharges approximately 20,000 AFY water to sustain habitat along various creeks and channels, including the Prado Dam Wetlands, Chino Creek Wetlands and Educational Park, and other ecological habitats. These waters help sustain habitat and wildlife in the region.

Whether there are public health concerns or social concerns associated with current or potential drought conditions.

There are vast public and social concerns in the region with regards to a decreased water supply. The concerns are generally the loss of water to support the following users: Residential, Commercial, Industrial, Public/Institutional, Parks, Schools, Irrigation, and Agriculture. The region's water sources are limited, and are directly impacted by climate. If local water is unavailable, the region may receive a limited supply of imported water. The imported water supply has the potential for interruption, is dependent on MWD's pipelines, relies on available supply from the SWP, and supplies water to other major regions which could result in new water rights battles between regions. If a megadrought occurs as predicted, and projects such as this do not get constructed, there could be limited water available in the basin. This would pose a major health concern for the region and could result in water needing to be trucked in for drinking if it is available.

Whether there are ongoing or potential environmental impacts.

The drought brings varying concerns regarding maintaining suitable habitat for a variety of species, including endangered and threatened species. With wetlands, creeks, rivers and basins in the service area, there are various endangered and threatened species that have potential to be impacted by the drought conditions. Water supplies provide sustainability for these habitats and ecosystems, and for the various creatures who claim the region as their home. It is not only the animals of the watershed that are threatened by habitat degradation and the competition from non-native species, but plant life as well. A drought-resilient water plan is critical to their existence.

Whether there are ongoing, past or potential, local, or economic losses associated with current drought conditions.

With decreased water supply and increased cost to supply treated water, local businesses and agencies are faced with financial impacts. As previously mentioned, the region serves residential, industrial, commercial, public and agricultural customers. The extreme drought conditions in our region will directly impact real estate values, businesses, and agencies financially, and has the potential to influence relocation of their customers to other areas. A detailed plan on drought-resiliency will benefit the region in terms of water sustainability and economy. State regulations related to required reduction of water usage has already impacted the local retail water agencies financially. Possible increases in water rates to make up for the financial loss caused by the regulation will have a domino effect on local business and residents in regards to profit and spending ability respectively.

Whether there are other drought-related impacts not identified above, including tensions over water that could result in a water-related crisis or conflict, for example.

Yes, there are complex and real links between water and crises/conflict. While major known water resource concerns are identified above, as drought conditions worsen there is potential that water-related tensions develop. Collaborating with the region's water agencies and other stakeholders on a drought-resilient DRP will help find projects for a sustainable water future, and reduce the risk of water-related conflicts.

Describe existing or potential drought conditions in the project area.

Is the project in an area that is currently suffering from drought or which has recently suffered from drought? Please describe existing or recent drought conditions, including when and the period of time that the area has experienced drought conditions (please provide supporting documentation, [e.g., Drought Monitor, droughtmonitor.unl.edu]).

Yes, the project area has been suffering drought conditions since 2012 as Southern California faces many water challenges. Severe conditions called for voluntary and mandatory water use reductions ordered by Governor Brown including numerous news articles about water supply conditions, and massive public outreach campaigns from water agencies across the State. Climate change impacts have already created critical challenges for water resources management in Southern California. More intense storm events and the changing frequency and duration of

drought years are becoming evident throughout the State and the West. This makes future water supplies available to the region more uncertain, particularly imported water resources that are uniquely vulnerable to changes in the state's snowpack.

General climate change trends projected for California are that temperatures will increase and precipitation will increasingly fall as rain rather than snow. These trends will impact water supplies in two ways: higher temperatures will cause increased water demands; however, infrastructure to capture rain runoff is limited as water infrastructure in California was designed to capture slow melting snowpack not rapid storm water.

See supporting documentation in the appendix section from *Drought Monitor*, droughtmonitor.unl.edu.

Describe any projected increases to the severity or duration of drought in the project area resulting from climate change. Provide support for your response (e.g., reference a recent climate change analysis, if available)

Climatologists have changed the way they view drought in years past and now recognize ongoing higher temperatures and longer drought conditions may be the “new normal” for California. A study conducted by scientists at Stanford University entitled “Anthropogenic Warming Has Increased Drought Risk in California” has linked climate change with “more frequent occurrences of high temperatures and low precipitation that will lead to increased severe drought conditions”.

Droughts are expected to occur more frequently, more intensely, and last longer. The Natural Resources Defense Council (NRDC) estimates that if nothing is done to address the implications associated with climate change, between the years 2025 and 2100, the cost of providing water to the western United States will increase from \$200 billion to \$950 billion per year.

Climate change is one of the key factors that will have a substantial impact on water supplies. While recent droughts in California have been significant, climate change trends indicate a future of unprecedented “megadroughts” that have the potential to last multiple decades.

Evaluation Criterion D—Project Implementation

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

The project efforts shall consist of the following phases to ensure the project implementation maintains its goals, prevent delays and cost increases during the life of the project:

Project Phases	Start	Finish	Status
Preliminary Design	06/25/15	08/17/16	In Progress
Environmental	02/19/15	08/17/16	In Progress

Design	08/18/16	12/29/17	Not Started
Permits	08/18/16	12/29/17	Not Started
Bid/Award	01/02/18	04/18/18	Not Started
Construction	04/19/18	02/19/20	Not Started

Preliminary Design - The consultant will evaluate the proposed design and submit technical memorandums to discuss alternative design options which would best implement the design and construction. The alternatives shall include a full business case evaluation to support the final design recommendations. This phase shall also confirm the construction cost estimates and required permitting before full design commences.

30%, 50% and 85% Design Submittal and Review - The consultant will provide status updates, progress plans, and specifications for review to IEUA staff and other stakeholders to ensure the project's design intent is secured.

- Draft plans and specification
- Updated estimate of probable construction cost for the project.
- Design calculation package
- Design review comments with permit agencies

Permitting - Permitting documents will be provided prior to the construction of this project. During the design and environmental tasks IEUA and its consultants will coordinate and meet with various permitting and regulatory agencies to ensure the project meets all agency and potential permit requirements.

Environmental - IEUA will identify and prepare the relevant CEQA/NEPA and historical preservation compliance documents for this project and will provide the documents to state for proper filing.

Final Design – The consultant shall submit for final review and approve of the design plans before construction bidding begins. This phase typically consists the following:

- Final design drawings and specifications
- Final engineer's estimate - the consultant shall update the construction cost estimate and provide an opinion of cost
- Final calculation package

Bid/Award and Construction – The construction implementation through a qualified contractor. IEUA will competitively do a public bid by using pre-qualified contractors.

Describe any permits that will be required, along with the process for obtaining such permits.

Permitting documents will be provided prior to the construction of this project. During the design and environmental tasks IEUA and its consultants will coordinate and meet with various permitting and regulatory agencies to ensure the project meets all agency and potential permit requirements. The following are the anticipated permits and regulatory agencies that staff will apply for and be in compliance with:

1. Endangered Species Act (ESA) Section 7 Consultation with US Fish and Wildlife Services (FWS) and/or National Marine Fisheries Service (NMFS) Biological Opinion
2. ACOE Section 404 Permit
3. State Historic Preservation Officer Section 106 Consultation
4. Air Quality Conformity Determination
5. California Department of Fish and Wildlife 1602 Streambed Alteration Agreement (SAA)
6. California Endangered Species Act (CESA) Compliance- CDFG Incidental Take Permit/Consistency Determination
7. Regional Water Quality Control Board (RWQCB) Section 401 Permit
8. California General Construction Stormwater NPDES Permit
9. San Bernardino County Flood Control Permit (SBCFCD) construction permits

Identify and describe any engineering or design work performed specifically in support of the proposed project.

This project was evaluated by an engineering contractor for the following:

- Cost effectiveness
- Whether or not the project would create a significant new stormwater recharge and dry weather flow recharge basin
- Barriers to implementation of the project and
- whether the project would be in compliance with current permitting

At the time of this application, the preliminary design report (pdr) is underway. The pdr process was started June 2015 and is expected to be completed by August 2016.

Describe any new policies or administrative actions required to implement the project.

As part the RMPU, the implementation of the project will require the following administrative actions:

Contract with Sand and Gravel Companies. Sand and gravel companies will be contacted to determine their interest in participating in yield enhancement projects in the RMPU. Currently, the project is projecting an immediate savings on the project cost by assuming the effort to remove any earth material will be done through a private contractor who can use the dirt for a beneficial

purpose. IEUA's past project was able to successfully utilize this approach where over 400,000 cubic yards was excavated and removed at no cost which resulted in a new recharge basin. The goal of this project to implement this approach which will save approximately \$1.5 million on the total capital cost.

Establish a Watermaster and IEUA Yield Enhancement Project Implementation Agreement. The objective of this agreement is to define the roles of Watermaster and the IEUA in the planning, permitting, design, and implementation of the yield enhancement projects, and the cost allocations pursuant to the Peace II Agreement.

Flood Control and Water Conservation Agreement. The parties to this agreement include San Bernardino County Flood Control District (SBCFCD), Watermaster, and the IEUA. The objectives of this agreement are to define the terms and conditions to jointly explore and construct new conservation works on SBCFCD and IEUA properties and to conduct flood control and water conservation activities utilizing those same conservation works on the properties. The agreement will define the project sites, facility improvements, construction and maintenance cost allocations, user or license fees, operating criteria (with flood control purposes taking priority over conservation for joint use facilities), and other conditions.

Evaluation Criterion E—Nexus to Reclamation

How is the proposed project connected to a Reclamation project or activity?

The proposed project service area covers the Inland Empire region, which spans 242 square miles in San Bernardino County. Within this region there have been various Bureau of Reclamation-funded plans and projects that have been completed (see Table 2: Past Working Relationships with Reclamation). In addition, this project will assist Reclamation in their activities toward managing water in the west by improving a segment of California's water supply.

Does the applicant receive Reclamation project water?

Yes, Western, one of Chino Basin Watermaster's member agencies is receiving water from the Colorado River which is Reclamation water.

Is the project on Reclamation project lands or involving Reclamation facilities?

No.

Is the project in the same basin as a Reclamation project or activity?

Yes, there is a clear nexus between the Bureau of Reclamation and the capital improvement projects that will be detailed in the final DPR. These projects will serve the Chino Basin, where the Bureau has contributed over \$30 million of funds towards water plans and construction projects. See Table 2.

Will the proposed work contribute water to a basin where a Reclamation project is located?

Yes, this project will yield approximately 6,000 AFY of storm water and recharge water benefit through basin improvements in the project area.

Will the project help Reclamation meet trust responsibilities to any tribe(s)?

Not applicable.

Performance Measures

All Drought Resiliency Project Grant applicants are required to propose a method (performance measure) of quantifying the benefits of their proposed project once it is implemented. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of Drought Resiliency Project Grants.

In order to demonstrate project performance, IEUA will use each basin's base line performance data and compare them with post-project performance data. Currently, each site has monitoring sensors that collect basin water levels and calculates recharge performance rates. At the completion of the project the ongoing data will be compared with pre-project data to confirm performance. IEUA staff will prepare a detailed chart which will compare pre and post conditions of each basin and provide detailed narratives on the project to ensure that the projects are meeting its design goals.

Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?

This project will have earth disturbing components. During the environmental review air quality studies will be conducted to forecast Greenhouse Gas (GHG) emission and recommend mitigation measures. IEUA is required to comply with South Coast Air Quality Management District Rule 403 to minimize dust during construction.

The general project area was previously disturbed and contains minimal vegetation. The diversion structures that will be modified are in concrete-lined channels. Most of the area is already operated and maintained by IEUA and the Flood Control District for flood control and water conservation through groundwater recharge. IEUA has operational and maintenance permits for these activities from the Army Corps of Engineers, the Regional Water Quality Control Board, the Department of Fish and Game, and the Flood Control District. IEUA will avoid impacts to animal habitat by performing any vegetation removal and major construction outside of the nesting season and performing animal surveys to identify areas that need to be avoided.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

The specific project areas are known to provide a habitat for federally-listed endangered, threatened or special status species. The following is a listing per site of potential species:

<u>Location</u>	<u>Potential Species</u>
Lower Day Basin	SBKR,CAGN,BUOW
San Sevaïne Basins (1-5)	SBKR

SBKR=Merriam's San Bernardino Kangaroo Rat CAGN=California Gnatcatcher;
BUOW=Burrowing Owl

However, it is not anticipated that there will be any impacts on such species. Regardless IEUA will conduct a thorough evaluation to ensure no harm or impacts come to these species. A series of biological survey will be conducted. The following biological study will be made a part of the environmental efforts under this project: Compiling a General Biological Resources Survey conducting a Coastal California Gnatcatcher Survey (CAGN breeding season survey for six site visits); and a San Bernardino Kangaroo Rat survey SBKR, 5 trapping nights. A burrowing owl survey will be conducted during the CAGN survey site visits. All required mitigation based on the environmental review and biological survey will be complied with fully.

Agency staff is familiar with working in this general area to operate and maintain the existing recharge basins and IEUA has O&M permits for the existing basins from the Army Corps of Engineers, the Regional Water Quality Control Board, the Flood Control District, and the Department of Fish & Game.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

Both Deer Creek and Cucamonga Channel, which border and traverse the project site, are concrete-lined flood control channels with no detectable vegetation, but are considered to be U.S. Waterways. Appropriate construction methods and designs will be used to avoid "discharging fill" or discharging pollutants during construction. However, a determination will need to be made whether the construction of a rubber dam, itself, is considered "discharge of fill" under Section 404 of the Clean Water Act.

When was the water delivery system constructed?

IEUA is a member of the Metropolitan Water District of Southern California and thus acts as a supplemental water provider. One-fourth of the water used in the region is imported from MWD through the State Water Project. The water delivery system within the Agency's 242 square-mile service area was constructed in stages between 1940 through 2009.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?

No.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

Yes, there are such sites in IEUA's service area (IEUA is not an irrigation district.) However, they are not located in the project area.

Are there any known archeological sites in the proposed project area?

No.

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

No.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

No.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No.

Existing Drought Contingency Plan

The agencies comprehensive water management plans including the Integrated Resource Plan (IRP) 2015-2040, IEUA Drought Plan, and Recharge Master Plan Update (RMPU) has been included as an attachment due to the large file size of each document. These documents form the foundation of the IEUA DRP.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Permitting documents will be provided prior to the construction of this project including the following:

1. Endangered Species Act (ESA) Section 7 Consultation with US Fish and Wildlife Services (FWS) and/or National Marine Fisheries Service (NMFS) Biological Opinion. The outcome of the biological assessment determines what level of consultation is necessary. This consultation will conclude either informally with written concurrence from the FWS and/or NMFS or through formal consultation with a biological opinion provided to the ACOE.
2. ACOE Section 404 Permit. A permit will be required from the ACOE Regulatory Branch (Los Angeles District Office) should improvements associated with the project result in the discharge of material within the ACOE jurisdiction.
3. State Historic Preservation Officer Section 106 Consultation.
4. Air Quality Conformity Determination.
5. California Department of Fish and Wildlife 1602 Streambed Alteration Agreement (SAA). Areas within this project site are considered jurisdictional by the CDFG. Therefore, a 1602 SAA must be obtained prior to any CDFG jurisdictional impacts. CDFG has the duty to propose avoidance or mitigation measures that limit the project as necessary to prevent adverse impacts to fish and wildlife resources.
6. California Endangered Species Act (CESA) Compliance- CDFG Incidental Take Permit/Consistency Determination. Measures to minimize the take of species covered by the permit (Covered Species) and to mitigate the impacts caused by the take will be set

forth in one or more attachments to the permit. This attachment will generally be a mitigation plan (possibly a Habitat Conservation Plan) prepared and submitted by the Permittee in coordination with CDFG staff.

7. Regional Water Quality Control Board (RWQCB) Section 401 Permit.
8. California General Construction Storm Water NPDES Permit.
9. San Bernardino County Flood Control Permit (SBCFCD) construction permits. The permit will allow SBCFCD to review and approve all proposed improvements within basins owned by the District. The permit typically entails special and standard provisions to protect the primary function of each basin which is flood control.

Letters of Support

Please see the letter(s) provided as an appendix as support of the proposed project described within.

Official Resolution

The officially certified Resolution will not be available until April 20, 2016. The resolution will be forwarded to Reclamation at that time. See the draft of the official Resolution to follow.

RESOLUTION NO. 2016-4-2

RESOLUTION OF THE BOARD OF DIRECTORS OF THE INLAND EMPIRE UTILITIES AGENCY*, SAN BERNARDINO COUNTY, CALIFORNIA, AUTHORIZING THE INLAND EMPIRE UTILITIES AGENCY TO ENTER INTO A FINANCIAL ASSISTANCE AGREEMENT UNDER THE WATERSMART: DROUGHT RESILIENCY PROJECT GRANTS FOR FY 2016 WITH THE U.S. DEPARTMENT OF INTERIOR - BUREAU OF RECLAMATION AND DESIGNATING A REPRESENTATIVE TO EXECUTE THE FINANCIAL ASSISTANCE AGREEMENT, AND ANY AMENDMENTS THERETO FOR THE RECHARGE MASTER PLAN UPDATE (RMPU) PROJECT NO. 23A WINEVILLE, JURUPA AND RP-3 BASIN IMPROVEMENT PROJECT

BE IT RESOLVED, that the Inland Empire Utilities Agency* (IEUA) is authorized to enter into a financial assistance agreement under the WaterSMART: Drought Resiliency Project Grants with the U.S. Department of Interior - Bureau of Reclamation (USBR) for the Recharge Master Plan Update (RMPU) Project No. 23a Wineville, Jurupa and RP-3 Basin Improvement Project;

BE IT RESOLVED, that IEUA's Board of Directors authorizes the General Manager, or in his absence, his designees, to execute the financial assistance agreement, any amendments, and any grant related documents thereto;

BE IT RESOLVED, that IEUA has the capacity to provide the amount of funding and/or in-kind contributions specified in the funding plan;

BE IT RESOLVED, that IEUA will work with the USBR to meet established deadlines for entering into a cooperative agreement, and;

Project Budget

Funding Plan and Letters of Commitment

The total design, construction, and administrative cost for the proposed combined Wineville, Jurupa and RP-3 Basin Improvement project is \$21,314,000.

The Project is one of the projects in the 2013 Recharge Master Plan Upgrade Program approved by the Inland Empire Utilities Agency and the Chino Basin Water Master Board of Directors. The main funding sources for the Project will be derived from the following primary sources:

- 1) \$5,000,000 from the Proposition 1 Storm Water Grant funding of the State Water **Resources Control Board. A grant application will be submitted in June of 2016,**
- 2) **\$5,000,000 Proposition 1 Groundwater Quality Grant funding from the State Water Resource** Control Board. A grant application will be submitted in June of 2016
- 3) \$11,014,000 from the State Revolving Fund Loan Program of California State Water Resources Control Board. A SRF loan application will be submitted in July 2016. The SRF loan funding will increase if the Storm Water or Groundwater Quality Grant applications are not received for the anticipated grant amount. and
- 4) \$300,000 USBR Drought Resiliency Project Grant funding.

The funding plan must include all project costs, as follows:

Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:

In-kind costs have not been incurred.

Identify what project expenses that have been incurred and describe the amount of the expense.

Not applicable.

The date of cost incurrence.

Not applicable.

How these costs benefit the project.

Not applicable.

Describe any funding requested or received from other Federal partners.

We are not seeking additional federal funding.

Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

Appendices

Support Letter



CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730
Tel: 909.484.3888 Fax: 909.484.3890 www.cbwm.org

PETER KAVOUNAS, P.E.
General Manager

April 11, 2016

Bureau of Reclamation
Mid-Pacific Region
Attn: Christina A. Muñoz, MP-3812
2800 Cottage Way, Room E-1815
Sacramento, CA 95825-1898

Re: Funding Opportunity Announcement No: R16-FOA-DO-006
WaterSMART: Drought Resiliency Project Grants FY 2016

To the Selection Committee:

Chino Basin Watermaster is pleased to support the Inland Empire Utilities Agency (IEUA) in its submission of a grant application to the U.S. Bureau of Reclamation (USBR) in response to the Funding Opportunity Announcement No: R16-FOA-DO-006 WaterSMART: Drought Resiliency Project Grants FY 2016. If awarded, the grant would allow IEUA to implement the Wineville, Jurupa, RP-3 Basin Improvement projects.

Chino Basin Watermaster is particularly supportive of this project as it will support continued drought planning efforts through the implementation of projects to increase the amount of storm water and recycled water recharge to enhance resiliency. The impact of such projects is critical for effective local sustainability planning for this region, which Chino Basin Watermaster supports as well.

We are excited to be a part of this important program, and we look forward to providing assistance to IEUA's staff in gathering and developing the Grant's required reporting documents to monitor the projects' performance measures.

Sincerely,

Peter Kavounas, P.E.
General Manager

cc: Joe Grindstaff – Inland Empire Utilities Agency
Jason Gu – Inland Empire Utilities Agency

U.S. Drought Monitor West

April 5, 2016


(Released Thursday, Apr. 7, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.50	61.50	35.64	15.09	9.53	4.33
Last Week 3/29/2016	32.63	67.37	34.24	14.82	9.53	4.74
3 Months Ago 1/5/2016	33.48	66.52	45.17	25.43	13.09	6.85
Start of Calendar Year 12/29/2015	33.17	66.83	45.07	29.30	15.92	6.85
Start of Water Year 9/29/2015	22.77	77.23	57.81	42.42	26.50	7.62
One Year Ago 4/7/2015	27.70	72.30	59.80	37.72	17.04	7.63

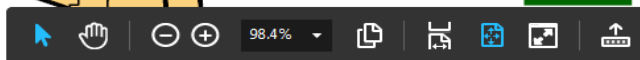
Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu/