8. Recommended 2013 Recharge Master Plan Update

8.1. Introduction

[to be included in the subsequent draft]The objective of tThis section is to presents the recommended recharge master plan update based on the list of projects identified in Section 6 and the criteria described in Section 7. Specific projects are recommended in Tables 8.-1c and 8-2c for production sustainability and yield enhancement projects, respectively. Implementation and financing plans are also described for the recommended projects.

8.2. Initial Project Screening

8.2.1. Production Sustainability Projects

Table 6-1 contains nine production sustainability projects that the Steering Committee and the Watermaster approved for initial screening. In contrast to the yield enhancement projects, the production sustainability projects were described conceptually and needed further development prior to screening and ranking. In the winter and spring of 2013, Watermaster staff encouraged capable appropriators to participate with the JCSD in projects that would supply the JCSD with water in-lieu of JCSD production from the parts of MZ3/MZ4/MZ5 where production sustainability is a concern. Members of the Steering Committee that could participate in production sustainability projects and Watermaster staff convened one meeting on March 20, 2013 to discuss various alternatives in which water could be provided to the JCSD and potentially to the CDA that would result in reduced production by the JCSD and potentially the CDA's Chino II desalter well field. From this meeting, subsequent discussions, and information provided by the City of Ontario and others, four project categories were identified: 1) transfer of CDA water from CDA members to the JCSD in lieu of JCSD production; 2) supply of water from other Appropriator parties through new connections among the parties, potentially including new wells and pipelines; 3) oversizing the proposed Ontario Groundwater Recovery Project (OGRP) and using the increased supply to reduce CDA Desalter II production; and 4) and the use of JCSD ASR wells to seasonally increase groundwater levels in the JCSD well field area. Figure 8-1 shows the locations of the existing water distribution systems, wells, and the proposed OGRP in the parts of MZ3/MZ4/MZ5 where production sustainability is a concern. The production sustainability projects considered herein include:

1. The City of Ontario could sell the JCSD up to 5,000 acre-ft/yr of its CDA deliveries from the Chino II Desalter without the construction of new additional facilities. The sales price would be Ontario's cost of water from the CDA of $920 per acre-ft.[1] Ontario and the JCSD take their Desalter II deliveries from a common reservoir in the JCSD service area, and Ontario would forego its deliveries from this reservoir and sell some or all of its share of CDA allocation from the Chino II Desalter to the JCSD. This would be an interim supply until Ontario needs its capacity in the Chino II

[1] CDA charge to the City of Ontario for fiscal 2013/14.

Desalter to meet its water supply needs. As an interim supply, this project could also be a proof-of-concept demonstration to determine the amount and timing of alternative supplies required to ensure production sustainability.

2. The City of Chino Hills and the Monte Vista Water District (MVWD) have proposed an in-lieu exchange project where the MVWD and Chino Hills would use more groundwater produced in Management Zone 1 and/or imported water, and Chino Hills would forego taking some of its 4,200 acre-ft/yr CDA Desalter I allocation, having that desalter water conveyed to the JCSD through existing CDA facilities. The JCSD would exchange annual production rights to Chino Hills and the MVWD equal to the amount of water supplied to the JCSD in this project. This proposal is modeled on the successful interim forbearance plan that was implemented during the development of the Management Zone 1 subsidence management plan. In addition to Chino Hills and the MVWD, the City of Chino could also participate in this project by taking more imported water and allowing some or all it's Desalter I allocation to go to the JCSD.

3. Other than through CDA facilities, there are no physical connections to the JCSD system from Chino Basin Appropriator parties that would permit a direct supply of water to the JCSD. A new connection would be required from the Ontario distribution system 1212 zone to the JCSD's 1100 zone. If this connection were constructed, Ontario could be a source of alternative supply as well as other Appropriators that could exchange water with the JCSD through Ontario's system. A new connection from the Cucamonga Valley Water District (CVWD) to the City of Ontario would be required to enable the CVWD to supply water to the JCSD. A new connection from the Fontana Water Company (FWC) to either the City of Ontario or directly to the JCSD would be required for the FWC to supply water to the JCSD. Other Appropriators may have the ability to connect to the City of Ontario to wheel water to the JCSD. Watermaster staff has encouraged the Appropriator parties that could participate in these water supply projects to review their capabilities and interests in participating in production sustainability projects and to provide Watermaster staff with alternative descriptions, operating plans, and costs. At the time this report was written, only three of the potential participants had provided alternatives to Watermaster staff. Watermaster staff ~~has~~ developed two generic in-lieu or exchange projects to bracket the scale and cost of such projects that will improve production sustainability in the JCSD service area~~that attempt to bracket the range of such projects~~: Minimum (Min) Generic In-Lieu and Maximum (Max) In-Lieu projects. These projects are described in Appendix D and ~~are~~ listed herein in Table 8-1a~~ and are meant to bracket the scale and cost of two in-Lieu or exchange projects that will improve production sustainability in the JCSD service area~~.

4. The City of Ontario has developed a project concept, the OGRP. The purpose of the OGRP is to produce groundwater near the southern leading edge of the South Archibald VOC plume, treat that water to remove ~~the~~ VOCs, treat it again at the Chino II Desalter for nitrate and TDS reduction, and subsequently serve it. The locations of the OGRP wells and raw water pipeline ~~is~~ are shown in Figure 8-1.

Ontario has suggested that the OGRP could be oversized with the resulting surplus capacity used to reduce ~~the~~ CDA Desalter II groundwater production, and thereby ~~provide~~ providing a sustainable supply of raw water to the CDA Desalter II and helping to maintain higher groundwater levels in the JCSD well field area.

5. The JCSD has developed ASR wells that could be used to improve production sustainability but has not identified the water supply that would be used for injection or the magnitude and timing of that supply. As of the time of this report's preparation, the JCSD ~~has~~ had not provided Watermaster staff with a plan to improve production sustainability with its ASR wells. Therefore, consideration of specific production sustainability projects utilizing the JCSD's ASR wells will not be included in the 2013 RMPU Amendment. Exclusion of the JCSD ASR project in the 2013 RMPU Amendment does not preclude them from future development and implementation before the next Recharge Master Plan update.

The water supply sources for the production sustainability projects include Chino Basin groundwater produced sufficiently far from the sustainability challenged area and imported water. For projects 2 and 3 described above, the JCSD would contribute its unused production rights to the Appropriator(s) that supplies them water to offset the water supply cost. The cost to produce and convey the water to the JCSD could be paid for by the JCSD or some other arrangement that could involve ~~the~~ Watermaster. Some or all the cost to produce and convey water to the JCSD would be offset by the JCSD's avoided cost to produce and convey its own water. Table 8-1a contains the list of production sustainability projects considered for evaluation and ranking. The JCSD ASR well project is not included in Table 8-1a for the reasons described above. Table 8-1a contains ~~the~~ project names, descriptions, new ~~supply~~ supplies generated by the projects, capital cost estimates, supplemental water costs, annual costs, unit costs, and ratings for water quality and reliability.

8.2.2. Yield Enhancement Projects

Table 6-1 contains 41 yield enhancement projects that the Steering Committee recommended and ~~the~~ approved through the Watermaster ~~approved~~ process for initial screening. These projects involve the construction of new facilities and four proposals to increase the frequency of operations and maintenance at existing facilities. Watermaster, the IEUA, and WEI reviewed all of the projects based on the information that was readily available to define how each project would operate, to estimate their storm and recycled water recharge performance, and to estimate their cost. Certain projects listed in Table 6-1 were not analyzed as their projected unit costs were where higher than the initial screening level of $1,500 per acre-ft. Table 8-2a lists the projects that were advanced to detailed evaluation using the criteria described in Section 7. Table 8-2a contains the following ~~for each project~~:

- Project identification numbers, ~~project~~ names, and ~~project~~ descriptions
- Indications of when a project was combined with another project or projects to take advantage of increased yield or cost efficiencies

- Opportunities for IEUA and Watermaster joint financial participation pursuant to the Peace II Agreement
- Characterizations of the new recharge (including N~~n~~ew Y~~y~~ield, as applicable) created by the proposed projects
- Indications as to whether a project would be constructed for regulatory compliance purposes and whether a project was already constructed
- Capital cost opinions for stormwater improvements, annualized capital costs, operations and maintenance costs, total annual costs, and unit costs of stormwater recharge
- New recycled water recharge capacities and recycled water acquisition costs
- Capital cost opinions for recycled water, annualized capital costs, operations and maintenance costs, total annual costs, and unit costs of recycled water recharge
- New imported water recharge capacities and imported water acquisition costs
- Capital cost opinions for imported water, annualized capital costs, operations and maintenance costs, total annual costs, and unit costs of imported water recharge
- Total combined recharge capacities for all storm, recycled, and imported waters
- Indications of additional project benefits and contributions to production sustainability

The projected new stormwater recharge estimates are based on the updated and calibrated Wasteload Allocation Model (WLAM), which has been used in past recharge investigations and to support Watermaster's groundwater model.[2] The capital and operation and maintenance costs are based on the IEUA's recent experience in the construction and operations of the CBFIP projects and other construction projects. The IEUA also provided estimates of new recycled water recharge capabilities for some of the proposed projects listed in Table 8-2a. Appendix D contains detailed drawings and cost opinions for each project listed in Table 8-2a. In total, Table 8-2a contains 54 projects and combinations of projects. Some of the projects are mutually exclusive as indicated in the notes. Table 8-2a was vetted thoroughly by the Steering Committee in the period of April through June of 2013.

8.3. Project Evaluation and Ranking

8.3.1. Production Sustainability Projects

8.3.1.1. Application of Section 7 Criteria

Table 8-1a contains the five production sustainability projects that were selected for screening by the Steering Committee. The purpose of Table 8-1a is to provide a detailed characterization of the projects in tabular form. Table 8-1b lists the same projects and the criteria upon which they will be screened. Table 8-1c lists the production sustainability projects in their order of preference, based on the screening criteria of Section 7~~,~~ and as described below.

[2] ~~Cite…[to be included in subsequent draft]~~

8.3.1.1.1. Reliability

To achieve the desired sustainability benefits, the water substituted for JSCD groundwater production must be at least as reliable as the current JCSD supplies. The production sustainability project must be sized, scalable, and sourced to ensure sustainability. The five projects listed in Table 8-1b are all assumed to use Chino Basin groundwater as a source supply, produced from parts of the Basin that are sustainable, and/or imported water treated at an existing treatment plant. Therefore, the reliability for all five projects will be high and equivalent. The amount and timing of supply required to ensure sustainability is currently unknown. Two or more of the projects listed in Table 8-1b could be combined to ensure sustainability.

8.3.1.1.2. Cost

The capital costs vary greatly among the four projects and range from zero to about $10.6 million with unit costs ranging from $95 to $920 per acre-ft. There could be additional costs for the Max General In-Lieu and Min General In-Lieu projects if the water quality produced for these projects becomes degraded. There is also opportunity for the Appropriator(s) that constructs the new wells and conveyance facilities used in these projects to use these same facilities for ~~their own~~other uses when not used to supply the JCSD.

8.3.1.1.3. Water Quality

The Ontario-CDA MZ3 In-Lieu, the Chino Hills/MVWD, and the OGRP projects will always produce potable water that can be used to replace JCSD groundwater production. For the Max General In-Lieu and Min General In-Lieu projects, water will be wheeled through an adjacent Appropriator's water system where it is assumed that the water will already be potable. The new wells associated with this project will presumably be sited to avoid water quality challenges and may in fact provide water quality benefits to the source agency. That said, future groundwater degradation could occur, necessitating treatment, and the level of risk is unknown.

8.3.1.1.4. Ease of Implementation

The facilities required to implement the Ontario-CDA MZ3 In-Lieu project and the Chino Hills/MVWD project exist, and these projects could be initiated quickly after an agreement between the parties is negotiated.

The OGRP project, if implemented, is several years out and is dependent on 1) other entities[3] paying for ~~the~~ VOC treatment prior to delivery of the source water to the Chino II Desalter and 2) the project proponents obtaining substantial grant funding. The JCSD

[3] These parties include Aerojet, Boeing, General Electric, and Lockheed Martin.

would benefit from reduced Chino II Desalter pumping at the existing wells by about 2,900 acre-ft/yr and would not receive any new water directly from the project.

The Max General In-Lieu and Min General In-Lieu projects ~~will~~ would require an agreement between the JCSD and the Appropriator(s) that serves it water. Existing wells, potentially new wells, existing treatment plant capacity, or some combination of these will be required. Interconnections between the JCSD and the City of Ontario and potentially Ontario and other Appropriators will be required. There may also be other benefits to participating Appropriators that include increasing their groundwater production capacity (joint use of wells) and improving conveyance capacity within their own distribution systems. The agreement(s) will need to consider the cost to construct and operate the improvements and economic consideration for the source water.

8.3.1.2. Ranking of Production Sustainability Projects

Table 8-1c shows a preliminary ranking of these projects by unit cost. The projects, in order of unit cost priority, are: the Min General In-Lieu project, the Chino Hills/MVWD project, the Max General In-Lieu project, the OGRP, and the Ontario-CDA MZ3 In-Lieu project. At the time this report was written, there were no cost estimates available for the Chino Hills/MVWD project, but it is believed to have an implementation cost less than the Max General In-Lieu and Min General In-Lieu projects. The Min General In-Lieu and Max General In-Lieu are ranked higher than the OGRP project even though their estimated unit cost is 50 percent greater ($150 per acre-ft versus $95 per acre-ft). The Min and Max General In-Lieu and Chino Hills/MVWD projects were rated higher than the OGRP project due to ease of implementation. The OGRP depends on substantial grant funding and cooperation with private entities, which ~~cannot be assured~~is speculative at this time. In contrast, the Max and Min General In-Lieu and Chino Hills/MVWD projects can be more readily implemented and may provide benefits to the Appropriators that participate. The ~~unit cost of for the~~ Ontario-CDA MZ3 in-Lieu project was ~~rated~~ ranked last due to its unit cost of greater than $900 per acre-ft.

8.3.2. Yield Enhancement Projects

8.3.2.1. Application of Section 7 Criteria

Table 8-2b lists ~~the list~~ the yield enhancement projects and summarizes their features pursuant to the screening criteria articulated in Section 7 herein. Some projects have two variants where the difference is how excavation cost is accounted for in the construction cost. Projects with an "a" attached to their identification numbers have their excavation costs reduced by 90 percent under the assumption that sand and gravel operators will extract the materials at their cost. Table 8-2b summarizes the project economics in Table 8-2a and includes information on the water quality and institutional challenges of each project. Table 8-2c contains the final rankings based on the Section 7 criteria and input from the Steering Committee. The application of the criteria is described below.

8.3.2.1.1. Confidence in Recharge Estimate

The WLAM was calibrated for selected recharge basins where the IEUA develops recharge estimates based on observed data. The results of these calibration efforts are contained in Appendix D. Subsequently, recharge estimates were developed for the proposed yield enhancement projects included in Table 8-2a as well as for the no-project condition at the proposed recharge sites. Pursuant to the screening and evaluation criteria contained in Section 7, new recharge is estimated as 90 percent of the difference between the recharge estimate for the proposed project and the estimate of recharge for the no-project condition. ~~The recharge estimates provided by the application of the updated and calibrated model coupled with the reduction of the new recharge estimate by~~This 10 percent reduction produces a reliable and conservative estimate of new recharge.

The IEUA prepared estimates of recycled water recharge capacity for some of the proposed projects listed in Table 8-2a. These estimates are based on the availability of recycled water that is not currently being recharged and ~~that~~ will not be used to meet direct reuse demands; therefore, ~~the~~ recycled water is considered highly reliable. The reliability of ~~the~~ new recharge estimates is equal among the projects.

8.3.2.1.2. Location of Recharge

The locations of new storm and supplemental (imported and recycled) water recharge projects have been prioritized to assist Watermaster in its best efforts to balance recharge and discharge in every area and subarea of the basin. Prior modeling investigations (see Section 3) have demonstrated that the projected groundwater production plans could cause an imbalance in recharge and discharge in Management Zone 3 and the central part of Management Zone 2. The 2012 State of the Basin Report (WEI, 2013) section on historical groundwater level and storage changes supports this finding to some extent,[4] showing ~~the~~ groundwater level declines in these areas through 2010with a slight rebound in groundwater levels between 2010 and 2012. Watermaster has been aware of this potential imbalance since 2007 and has, pursuant to the Peace Agreement and Court Order authorizing the Peace Agreement, conducted technical evaluations to develop guidance on the recharge of supplemental water.~~,~~[5]~~;~~ Watermaster's current recommended supplemental water recharge plan[6] calls for Watermaster to prioritize supplemental water recharge as follows:

- Recharge the first 6,500 acre-ft/yr of supplemental water in Management Zone 1 pursuant to the Peace Agreement.
- Recharge Management Zone 3 up to its maximum supplemental water recharge capacity (current supplemental water recharge capacity is 12,700 acre-ft/yr).

[4] Specifically, see Exhibits 19 and 20 in the 2012 State of the Basin Report.

[5] ~~Cite ... [to be included in subsequent draft]~~As required by ~~the~~ Peace Agreement Section~~s~~ 5.1 € items (i), (iii), (v), and (viii); OBMP Implementation Plan paragraph 9; and Watermaster Rules and Regulations Section 7.1 (b) (iv).

[6] 2009 Production Optimization and Evaluation of the Peace II Project Description (WEI, 2009)

- Recharge Management Zone 2 up to its maximum supplemental water recharge capacity (current supplemental water recharge capacity is 28,300 acre-ft/yr).
- Recharge Management Zone 1 up to its maximum supplemental water recharge capacity (current supplemental water recharge capacity is 42,100 acre-ft/yr).[7]

This priority scheme was developed to balance recharge and discharge at the management zone level when supplemental water recharge is being done. Watermaster recharges imported water primarily to replenish overproduction, to store imported water for the existing Dry-Year Yield program, and more recently for pre-emptive replenishment. The IEUA recharges recycled water in certain basins where the IEUA and Watermaster have a joint permit to recharge recycled water.

The yield enhancement projects are prioritized by management zone in Table 8-2c with the priorities that mirror the supplemental water recharge priority.

8.3.2.1.3. Expandability to Include Supplemental Water Recharge

The IEUA has identified recharge projects that could be used to recharge recycled water. These projects have been identified in Table 8-2a and feature prominently in Table 8-2c.

8.3.2.1.4. Cost

Watermaster, the IEUA, and WEI developed Level-5[8] cost opinions for each of the projects listed in Table 8-2a. The backup for these cost opinions is included in Appendix D. For projects that consist of only operations and maintenance activities, the IEUA prepared annual cost estimates based on their experience in basin operations and maintenance.

Table 8-2c lists recommended projects based on the unit cost of stormwater recharge and shows both the new stormwater recharge and recycled water recharge. All projects with unit costs less than $600 per acre-ft are included as recommended projects.

8.3.2.1.5. Water Quality Challenges

Storm water is considered an impaired water source for surface waters. After filtration through the soil and unsaturated zone, storm water is considered to be of suitable quality for potable uses.

[7] The supplemental water recharge capacities cited above are based on Table 6-3 in the 2010 Recharge Master Plan Update (WEI et al., 2010).

[8] ~~Cite ...[to be included in subsequent draft]~~See Recommended Practice Nu. 17R-97, Cost Estimate Classification System, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CDUQFjAB&url=http%3A%2F%2Fwww.aluminium.gl%2Fsites%2Fdefault%2Ffiles%2Fpdf%2Fnogletal%2Fcostestimatingsystemaace-208a.pdf&ei=VcQGUu6RBIaSyAHFjoDoAg&usg=AFQjCNH5E6v6F-qxcQXIDW894iTFN48eGA&sig2=wWQ1gparE5ed1pEVkrOpJg

There are some instances where storm and supplemental water recharge may cause or exacerbate existing groundwater quality challenges. Storm water and supplemental water recharge can cause groundwater mounding under recharge sites that can redirect movement of existing contaminant plumes. Recharge can also flush contaminants from the unsaturated zone to the saturated zone, ~~and~~ thus mobilizing contaminants that could ~~be~~ subsequently impact well water quality. Figure 8-2 shows the locations of all ~~the~~ recharge projects listed in Table 8-2a by identification number and the locations of ~~the~~ significant water quality anomalies ~~that concern Watermaster is concerned with~~. ~~The s~~Specific concerns include:

- Increased recharge at the Ely Basins could redirect ~~of~~ the GE Test Cell plume further to the west and impact down-gradient wells.
- Increased recharge at the Wineville Basin could redirect the Kaiser Steel Mill plume and potentially impact down-gradient wells.
- Contaminants in the unsaturated zone near the CSI Basin could be mobilized with increased recharge and impact down-gradient wells.
- Contaminants that may exist in the soil and unsaturated zone from historical operations in and adjacent to the Vulcan Pit could be mobilized with increased recharge and impact down-gradient wells

~~An example of the impact of recharge on contaminant plumes can be seen in the location and direction of the General Electric (GE) Test Cell VOC plume located just north of the Ely Basins. The location of the GE Test Cell plume is shown in Figure 8-2. In the absence of the historical stormwater recharge at the Ely Basins, the GE Test Cell plume would have flowed in a south by southwest direction. The mounding under the Ely Basins has caused this plume to flow almost due west along the north side of the Ely Basins.~~

~~The following water quality challenges have been identified for specific yield enhancement projects listed in Table 8-2b.~~

~~**Ely Basins.** As mentioned above, historical recharge at the Ely Basins has deflected the GE Test Cell plume westward. The proposed project at the Ely Basins would increase recharge by about 220 acre-ft. Increasing recharge at this basin will continue this deflection with the possibility that the plume may migrate slightly more west than under historical recharge conditions. This concentration of VOCs in this plume appears to be decreasing at its leading edge due to natural in-situ processes. The proposed increase in recharge will likely not cause the plume to migrate into potable wells. Prior to the implementation of a project at the Ely Basins that would increase recharge, the implementing entity should conduct an investigation to determine whether or not increased recharge will exacerbate water quality challenges caused by the GE Test Cell plume.~~

~~**CSI Storm Water Basin.** The proposed project at the CSI Storm Water Basin is projected to increase storm water recharge by about 80 acre-ft/yr. This new recharge could be increased if the conservation storage is increased beyond that considered herein. The~~

~~primary water quality concerns are the mobilization of contaminants in the unsaturated zone adjacent to the recharge site should the recharge migrate horizontally to the west and the acceleration of existing contaminants already in the saturated zone towards the City of Ontario's wells. Watermaster has an existing Material Physical Injury (MPI) opinion that the existing recharge at the CSI Storm Water Basin has the potential to cause MPI to the Chino Basin and a Party. However, continued surveillance by the DTSC and future plume management required by the DTSC may be sufficient to ensure that downstream impacts of the plume migration, if any, will be mitigated to a level to protect the Basin and the Parties. Prior to the implementation of a project at the CSI Storm Water Basin that would increase recharge, the implementing entity should conduct an investigation to determine whether or not increased recharge will exacerbate water quality challenges caused by soil and groundwater contamination adjacent to the recharge site and potentially accelerate contamination in the saturated zone towards the City of Ontario's wells.~~

~~**Wineville Basin.** The leading edge of the former Kaiser Steel Mill plume is located near the northern portion of the Wineville Basin with the plume projected to move in a south by southwest direction under or slightly west of the Wineville Basin. The former Kaiser Steel Mill plume, as delineated in 2008 during a Watermaster and IEUA study of water quality in MZ3, is characterized predominantly by high TDS and total organic carbon (TOC) concentrations (WEI, 2008). Sampling and analysis for this study concluded that from 1997 to 2007, maximum TDS concentrations ranged from 250 to 1,090 mg/L, and TOC concentrations ranged from <0.1 to 20 mg/L at wells within the former Kaiser Steel Mill plume. Additionally, two triple-nested wells (MZ3-1 and MZ3-2) were installed down gradient of the plume to track plume migration. High concentrations of TOC detected in MZ3-1 extended the Kaiser Steel Mill plume extent to the southeast towards the JCSD well field. Certain VOCs have been detected in the middle portion of the plume substantially north of the Wineville Basin. Since 2007, Watermaster has performed annual sampling at the leading edge of the former Kaiser Steel Mill plume at the two MZ3 triple-nested monitoring wells and at one former Kaiser Steel monitoring well (KOSF-1). TDS and TOC concentrations at these wells have remained stable or decreased since 2007. In the absence of increased recharge at the Wineville Basin, the former Kaiser Steel Mill plume would likely migrate south-southwest towards the CDA wells and potentially the JCSD wells. Increased recharge at the Wineville Basin will create a mound that will divert the Kaiser Steel Mill plume west of the Wineville Basin towards the CDA wells. Prior to the implementation of a recharge project at the Wineville Basin, the implementing entity should conduct an investigation to determine whether or not increased recharge will exacerbate the water quality challenges caused by the Kaiser Steel Mill plume.~~

8.3.2.1.6. Institutional Challenges

The common potential institutional challenges to implement the projects listed in Table 8-2a consist of the following:

- Determination of a lead entity for California Environmental Quality Act (CEQA) review and project ~~to~~ implementation ~~the projects~~

- Determination of who pays and who benefits
- Obtaining access to recharge sites and the ability to construct and operate recharge facilities
- Modification of the IEUA-Watermaster recharge permit to include more recharge basins and to increase recycled water recharge amounts at existing basins

Table 8-2b includes the institutional challenges at specific basins above and beyond those listed above.

8.4. Final Project Recommendations and Implementation Plan

8.4.1. Production Sustainability Projects

8.4.1.1. Recommended Project~~s~~

Upon reviewing all available information, ~~the Steering Committee has~~it is recommended that the ~~Watermaster~~ parties proceed with the Min General In-Lieu project due to its lowest potential capital and unit costs with all other criteria being equal. ~~The Steering Committee~~Watermaster parties see~~s~~ great ~~promise~~ potential in the Chino Hills/MVWD project and encourages the City of Chino Hills, the MVWD, the CDA, and the JCSD~~, and Watermaster~~ to pursue this project if the City of Chino Hills and the MVWD produce a feasible formal proposal after the 2013 RMPU Amendment report is finalized.

8.4.1.2. Implementation Plan

8.4.1.2.1. Year 1 – 2014

~~In the first year, the following agreements will be negotiated and completed:~~

Continue Refinement of Production Sustainability Projects. The objective of this work is to define the magnitude and timing of water deliveries to the JCSD to ensure production sustainability. During this year, technical investigations will be done to define the magnitude and timing of water deliveries to the JCSD to ensure production sustainability and to identify and refine alternative sources of supply. The end product of this work will be an optimized JCSD groundwater production plan, up to three alternative water supplies that will enable the JCSD to reduce groundwater production to sustainable levels, and a recommended project. This work will be done by the JCSD and participating Appropriators and facilitated by Watermaster.

8.4.1.2.2. Year 2 – 2015

Develop an Implementation Agreement among the Parties Participating in the Production Sustainability Project. The objective of this agreement ~~is~~ would be to define the roles of the parties that would participate in the recommended production sustainability project; in the planning, permitting, design, and implementation of the ~~yield~~

~~enhancement~~production sustainability projects; and the cost allocations. This work will be done by the JCSD and participating Appropriators and facilitated by Watermaster.

Appropriative Pool Cost Allocation Agreement. The objective of this agreement is to define how the Appropriators~~ive pool parties~~ would participate in a production sustainability agreement and what, if any, production sustainability project costs will be borne by the Appropriators and how the projects costs would be allocated.

8.4.1.2.3. Years 3 and 4 – 2016 and 2017

Preliminary Design of Recommended Production Sustainability Project~~s~~. If new facilities are required, then one of the parties to the implementation agreement will contract for preliminary design. The level of design will be such that it enables the preparation of environmental documentation pursuant to the ~~California Environmental Quality Act (~~CEQA~~)~~, provides information for identifying and acquiring construction and related permits, and produces cost estimates. This work will start in January 2016 and be completed in September 2016.

Prepare Environmental Documentation. One of the parties to the implementation agreement will be the lead agency and contract for the preparation of environmental documentation. The lead agency will determine the type of environmental documentation and subsequently prepare it. This work will start in July 2016 and be completed in June 2017.

Prepare Final Designs and Acquire Permits. One of the parties will contract for the development of final designs and acquire permits. This work will begin in July 2017 and be completed by December 2017.

8.4.1.2.4. Year 5 – 2018

Construct 2013 RMPU Amendment Production Sustainability Project. One of the parties will contract for the construction of the recommended production sustainability project~~s~~ and construct the project during calendar 2018.

8.4.1.3. Financing Plan

~~[to be included in a subsequent draft]~~The financing plan will developed during the second year of the implementation plan as part of the process to develop an implementation agreement among the parties participating in ~~the~~ production sustainability project~~s~~.

8.4.2. Yield Enhancement Projects

8.4.2.1. Recommended Projects

Table 8-2c contains the yield enhancement projects ranked using the Section 7 criteria and based on ~~the~~ input from the Steering Committee. The projects are listed by management

zone in order of increasing unit cost. The steering committee ~~recommended~~ reached consensus that all projects with unit costs of less than $600 per acre-ft would be considered for implementation. There are seven projects recommended for construction that will increase stormwater recharge by 5,000 acre-ft/yr~~,~~ and increase recycled water recharge capacity by 4,900 acre-ft/yr. The average unit cost of stormwater recharge is about $400 per acre-ft and the capital cost is about $26,000,000.

8.4.2.2. Implementation Plan

8.4.2.2.1. Year 1 – 2014

The following agreements will be completed in the first year.

Watermaster and the IEUA 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~~.~~.

Appropriative Pool New Yield and Cost Allocation Agreement. The objectives of this agreement are to determine which appropriators wish to participate in the yield enhancement projects, the allocation of yield and cost among this group of appropriators, and the waiver of new yield and cost by appropriators that choose not to participate in the new yield enhancement projects. In the absence of a new agreement to allocate cost and new yield benefits, Watermaster will assume that cost and new yield will be allocated to the Appropriator parties based on their share of operating safe yield.

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

The County will require Watermaster and the IEUA to fund County investigations to demonstrate that certain conservation improvements at flood control facilities will not reduce flood protection or if flood protection is reduced, that additional improvements will be made by Watermaster and the IEUA such that the level of flood protection is not diminished with conservation improvements.

In addition to these agreements, ~~the~~ Watermaster will have to submit a Petition for Change with the State Water Resources Control Board for some of the projects shown in 8-2c that are not included in ~~the~~ Watermaster's current diversion permits. The duration of the ~~change~~ petition process is unknown but will likely be more than one year.

8.4.2.2.2. Years 2 and 3 – 2015 and 2016

Preliminary Design of Recommended Yield Enhancement Projects. The level of design will be such that it enables the preparation of environmental documentation pursuant to ~~the California Environmental Quality Act (~~CEQA~~)~~, provides information for identifying and acquiring construction and related permits, and produces updated new yield and cost estimates. This work will start in January 2015 and be completed in September 2015.

Prepare Environmental Documentation. CEQA will cover the recommended projects in Table 8-2c at the project level and the deferred projects at a programmatic level, ~~and~~ based on the project descriptions contained herein. This work will start in July 2015 and be completed in June 2016.

8.4.2.2.3. Years 3 and 4 – 2016 and 2017

Prepare Final Designs and Acquire Necessary Permits. This work will begin in July 2016 and be completed by December 2017.

8.4.2.2.4. Years 5 and 6 – 2018 and 2019

Construct 2013 RMPU Amendment Projects. The recommended projects will be constructed over the two-year period of 2018 and 2019.

8.4.2.3. Financing Plan

The financing plan for the yield enhancement projects consists of the following elements:

- Identify the IEUA and Watermaster cost share. Watermaster and the IEUA will determine each party's cost share based on the benefit to the parties. This will be negotiated and memorialized in an agreement as identified in the Implementation Plan above.
- Once the scope of the Montclair Basins project is defined, the IEUA and ~~the~~ Watermaster will request that the CBWCD ~~to~~ consider ~~if they will~~ contribute~~ing~~ funding to recharge improvements at the Montclair Basins.
- Identify grant-funding share. The IEUA, Watermaster, and the Appropriators will combine their efforts to secure grant funding and low-interest financing from the State Water Resources Control Board, the DWR, and others.
- Allocation of cost and benefit among the Appropriators. ~~Members of the~~ The Appropriator~~sive pool~~ will determine the allocation of cost and new yield benefits from the recommended recharge projects. In the absence of a new agreement to allocate cost and new yield benefits, Watermaster will assume that cost and new yield will be allocated to the Appropriator parties based on their share of operating safe yield.
- Obtain bond financing for the construction of recharge improvements. The IEUA, the TVMWD, the WMWD, and potentially certain Appropriator parties will use their bonding capacity to obtain~~ing~~ financing to construct the recommended yield enhancement projects.

- ~~Application of~~Apply pay-as-you-go for the soft costs of all efforts through completion of the CEQA process.
- All costs associated with the development of implementing agreements, preliminary design, proof-of-concept, and completion of the CEQA process will be ~~paid for through~~ Watermaster assessments pursuant to the Appropriative Pool New Yield and Cost Allocation Agreement.
- ~~Obtain bond financing for the construction of recharge improvements. The IEUA, the TVMWD, the WMWD, and certain Appropriator parties will use their bonding capacity to obtaining financing to construct the recommended projects.~~

A detailed financing plan will be developed in a process running in parallel to the development of the implementation agreements.