CHINO BASIN WATERMASTER

NOTICE OF MEETING

Thursday, September 28, 2023

11:00 a.m. – Watermaster Board Meeting

Watermaster's function is to administer and enforce provisions of the Judgment and subsequent orders of the Court, and to develop and implement an Optimum Basin Management Program

CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING
11:00 a.m. – September 28, 2023
Mr. Jim Curatalo, Chair
Mr. Jeff Pierson, Vice-Chair
Mr. Bob Kuhn, Secretary/Treasurer
At The Offices Of
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

AGENDA

FLAG SALUTE

CALL TO ORDER

ROLL CALL

PUBLIC COMMENTS
This is an opportunity for members of the public to address the Board on any short non-agenda items that are within the subject matter jurisdiction of the Chino Basin Watermaster. No discussion or action can be taken on matters not listed on the agenda, per the Brown Act. Each member of the public who wishes to comment shall be allotted three minutes, and no more than three individuals shall address the same subject.

AGENDA – ADDITIONS/REORDER

I. CONSENT CALENDAR
All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. MINUTES
Approve as presented:
Minutes of the Watermaster Board Meeting held August 24, 2023 *(Page 1)*

B. FINANCIAL REPORTS
The monthly financial reports are being redesigned and will be available next month.

C. OBMP SEMI-ANNUAL STATUS REPORT 2023-1
Adopt the Semi-Annual OBMP Status Report 2023-1, and direct staff to file a copy with the Court, subject to any necessary non-substantive changes. *(Page 6)*

II. BUSINESS ITEMS

A. 2023 RECHARGE MASTER PLAN UPDATE AND RESOLUTION NO. 2023-06
Approve the 2023 RMPU as presented, adopt Resolution No. 2023–06, and direct staff to file with the Court. *(Page 27)*

B. BOARD-REQUESTED RECHARGE PROJECT ANALYSIS
Approve staff moving forward with gathering necessary information and documentation for each project to be considered grant-ready and prepare the Work Plan. *(Page 202)*

C. INCREASE OF FY 2023/24 DRY YEAR YIELD PROGRAM DELIVERY
Approve an increase of the annual delivery limit from 25,000 acre-feet to 50,000 acre-feet for Fiscal Year 2023/24. *(Page 205)*

III. REPORTS/UPDATES

A. WATERMASTER LEGAL COUNSEL
1. Court Tour of Chino Basin
2. Court of Appeal Case No. E079052 (City of Chino, MVIC, MVWD, City of Ontario appeal re OAP Expenses and Attorney Fees)
3. Court of Appeal Case No. E080457 (City of Ontario appeal re 2021-22 Assessment Package)
4. Court of Appeal Case No. E080533 (Cities of Chino, Ontario appeal re 2022-23 Watermaster budget expenses to support CEQA analysis)
5. Court of Appeal Case No. E082127 (City of Ontario appeal re Challenge to 2022-23 Assessment Package)
6. Kaiser Permanente Lawsuit

B. ENGINEER
1. 2025 Safe Yield Reevaluation
2. Model Update and Required Demonstrations
3. Ground-Level Monitoring Committee
4. 2022 State of the Basin Report

C. GENERAL MANAGER
1. Long Term Planning Efforts
2. New Staff Member Introduction
3. Other

IV. BOARD MEMBER COMMENTS

V. OTHER BUSINESS

VI. CONFIDENTIAL SESSION – POSSIBLE ACTION
Pursuant to Article II, Section 2.6, of the Watermaster Rules & Regulations, a Confidential Session may be held during the Watermaster Board meeting for the purpose of discussion and possible action.

VII. FUTURE MEETINGS AT WATERMASTER

09/28/23	Thu	9:30 a.m.	Watermaster Orientation*
09/28/23	Thu	11:00 a.m.	Watermaster Board
10/04/23	Wed	9:00 a.m.	Ground-Level Monitoring Committee (GLMC)
10/12/23	Thu	9:00 a.m.	Appropriative Pool Committee
10/12/23	Thu	11:00 a.m.	Non-Agricultural Pool Committee
10/12/23	Thu	1:30 p.m.	Agricultural Pool Committee
10/18/23	Wed	1:00 p.m.	Water Quality Committee
10/19/23	Thu	9:00 a.m.	Advisory Committee
10/19/23	Thu	9:30 a.m.	Recharge Investigations and Projects Committee (RIPComm)
10/24/23	Tue	9:00 a.m.	2025 Safe Yield Reevaluation – Scenario Design #1
10/26/23	Thu	9:30 a.m.	Watermaster Orientation*
10/26/23	Thu	11:00 a.m.	Watermaster Board

* The Watermaster Orientation sessions are held in person with no remote access.

ADJOURNMENT

DRAFT MINUTES
CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING
August 24, 2023

The Watermaster Board meeting was held at the offices of the Chino Basin Watermaster located at 9641 San Bernardino Road, Rancho Cucamonga, CA, and via Zoom (conference call and web meeting) On August 24, 2023.

WATERMASTER BOARD MEMBERS PRESENT AT WATERMASTER

James Curatalo, Chair	Appropriative Pool – Minor Representative
Jeff Pierson, Vice Chair	Agricultural Pool – Crops
Bob Kuhn, Secretary/Treasurer	Three Valleys Municipal Water District
Bob Bowcock	Non-Agricultural Pool – CalMat Co.
Scott Burton	City of Ontario
Marco Tule for Steve Elie	Inland Empire Utilities Agency
Paul Hofer	Agricultural Pool – Dairy
Mike Gardner	Western Municipal Water District
Manny Martinez	Monte Vista Water District

WATERMASTER STAFF PRESENT

Peter Kavounas	General Manager
Joseph Joswiak	Chief Financial Officer
Edgar Tellez Foster	Water Resources Mgmt. & Planning Director
Anna Nelson	Director of Administration
Justin Nakano	Water Resources Technical Manager
Frank Yoo	Data Services and Judgment Reporting Mgr.
Alexandria Moore	Executive Assistant I/Board Clerk
Ruby Favela Quintero	Administrative Analyst
Kelli Hills	Office Specialist/Receptionist
Alonso Jurado	Water Resources Associate

WATERMASTER CONSULTANTS PRESENT AT WATERMASTER

Brad Herrema	Brownstein Hyatt Farber Schreck, LLP
Scott Slater	Brownstein Hyatt Farber Schreck, LLP
Cindy Byerum	Eide Bailly
Scott Nelsen	Eide Bailly
Andy Malone	West Yost

WATERMASTER CONSULTANTS PRESENT ON ZOOM

Kristi Even	Eide Bailly
Garret Rapp	West Yost
Lauren Sather	West Yost

OTHERS PRESENT AT WATERMASTER

Bob Feenstra	Agricultural Pool – Dairy
Jimmy Medrano	Agricultural Pool – State of CA
Brian Geye	California Speedway Corporation
Dave Crosley	City of Chino
Chris Diggs	City of Pomona
Amanda Coker	Cucamonga Valley Water District
Eduardo Espinoza	Cucamonga Valley Water District
Eric Grubb	Cucamonga Valley Water District
Jiwon Seung	Cucamonga Valley Water District
Eddie Lin	Inland Empire Utilities Agency

John Russ	Inland Empire Utilities Agency
Jesse Pompa	Jurupa Community Services District
Bryan Smith	Jurupa Community Services District
Alyssa Coronado	Santa Ana River Water Company
Mallory Gandara	Western Municipal Water District
Laura Roughton	Western Municipal Water District

OTHERS PRESENT ON ZOOM

Gino Filippi	Agricultural Pool – Crops
Marilyn Levin	Agricultural Pool – State of CA
Nicole deMoet	City of Upland
Mark Gibboney	Cucamonga Valley Water District
Tracy Egoscue	Egoscue Law Group, Inc.
Derek Hoffman	Fennemore Law
Chris Berch	Jurupa Community Services District
Kevin O'Toole	Orange County Water District
David De Jesus	Three Valleys Municipal Water District
Nicole deMoet	West End Consolidated Water Co.
Richard Rees	WSP USA

FLAG SALUTE
Chair Curatalo led the Board in the flag salute.

CALL TO ORDER
Chair Curatalo called the Watermaster Board meeting to order at 11:00 a.m.

ROLL CALL
(00:00:43) Ms. Moore conducted the roll call and announced that a quorum was present.

PUBLIC COMMENTS
None

AGENDA – ADDITIONS/REORDER
(00:02:02) Mr. Kavounas recommended taking confidential session at the beginning of the meeting; the Chair concurred and reordered the room for confidential session at 11:05 a.m.

I. CONSENT CALENDAR

All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. MINUTES

Approve as presented:

1. Minutes of the Watermaster Board Meeting held June 22, 2023

B. FINANCIAL REPORTS

Receive and file as presented:

1. Cash Disbursements for the month of May 2023
2. Watermaster VISA Check Detail for the month of May 2023
3. Combining Schedule for the Period July 1, 2022 through May 31, 2023
4. Treasurer's Report of Financial Affairs for the Period May 1, 2023 through May 31, 2023
5. Budget vs. Actual Report for the Period July 1, 2022 through May 31, 2023
6. Cash Disbursements for the month of June 2023

7. Watermaster VISA Check Detail for the month of June 2023
8. Combining Schedule for the Period July 1, 2022 through June 30, 2023
9. Treasurer's Report of Financial Affairs for the Period June 1, 2023 through June 30, 2023
10. Budget vs. Actual Report for the Period July 1, 2022 through June 30, 2023
11. Cash Disbursements for July 2023 (Information Only)

C. APPLICATION: WATER TRANSACTION – NICHOLSON FAMILY TRUST TO FONTANA WATER COMPANY

Approve the proposed transaction:
The purchase of 3.5 acre-feet of water from Nicholson Family Trust by Fontana Water Company. This purchase is made from Nicholson Family Trust's Annual Production Right/Operating Safe Yield first, then any additional from Storage.

D. APPLICATION: WATER TRANSACTION – SAN ANTONIO WATER COMPANY TO CUCAMONGA VALLEY WATER COMPANY

Approve the proposed transaction:
The purchase of 403.02 acre-feet of water from San Antonio Water Company by Cucamonga Valley Water District. This purchase is made from San Antonio Water Company's Excess Carryover Account. Cucamonga Valley Water District is utilizing this transaction to produce its San Antonio Water Company shares.

E. APPLICATION: WATER TRANSACTION – WEST END CONSOLIDATED WATER COMPANY TO CITY OF UPLAND

Approve the proposed transaction:
The purchase of 708.3 acre-feet of water from West End Consolidated Water Company by City of Upland. This purchase is made from West End Consolidated Water Company's Excess Carryover Account. The City of Upland is utilizing this transaction to produce its West End Consolidated Water Company shares.

F. APPLICATION: LOCAL STORAGE AGREEMENT – APPROPRIATIVE POOL

Approve the Application for Local Storage Agreement submitted on behalf of the Appropriative Pool members as presented.

G. PROFESSIONAL SERVICES AGREEMENT BETWEEN EIDE BAILLY LLP AND WATERMASTER

Approve the attached Professional Services Agreement and authorize the General Manager to execute on behalf of Watermaster, subject to any non-substantive changes.

H. **LOCAL AGENCY INVESTMENT FUND (LAIF) RESOLUTION 2023-05 TO RESCIND RESOLUTION 2023-02**

Adopt Resolution 2023-05 – Resolution Authorizing Investment of Monies in the Local Agency Investment Fund (LAIF) and rescinding Resolution 2023-02.

(00:09:50)
Motion by Mr. Bob Kuhn, seconded by Mr. Mike Gardner, there being no dissent, the item passed unanimously.

Moved to approve the Consent Calendar as presented.

II. BUSINESS ITEMS

A. WATERMASTER AMENDED AND RESTATED LEASE AGREEMENT

Approve the Amended and Restated Lease Agreement and authorize the General Manager to execute on behalf of Watermaster, subject to any non-substantive changes.

(00:10:32) Mr. Kavounas introduced Ms. Nelson to give a report. A discussion ensued.

(00:16:13)
Motion by Mr. Hofer, seconded by Mr. Jeff Pierson, there being no dissent, the item passed unanimously.

Moved to approve Watermaster amended and restated lease agreement (Business Item II.A.) as presented.

B. BROWNSTEIN HYATT FARBER SCHRECK, LLP CONFLICT WAIVER

Approve the attached Conflict Waiver allowing BHFS to serve the County of San Bernardino in unrelated litigation.

(00:16:47) Mr. Kavounas prefaced the item and introduced Mr. Slater gave a report. A discussion ensued.

(00:23:57)
Motion by Mr. Mike Gardner, seconded by Mr. Manny Martinez, there being no dissent, the item passed unanimously.

Moved to approve Brownstein Hyatt Farber Schreck, LLP conflict waiver (Business Item II.A.) as presented.

III. REPORTS/UPDATES

A. WATERMASTER LEGAL COUNSEL

1. August 4, 2023 Hearing (City of Ontario Motion re 2022-23 Assessment Package; Court Tour of Chino Basin)
2. Court Tour of Chino Basin
3. Court of Appeal Case No. E079052 (City of Chino, MVIC, MVWD, City of Ontario appeal re OAP Expenses and Attorney Fees)
4. Court of Appeal Case No. E080457 (City of Ontario appeal re 2021-22 Assessment Package)
5. Court of Appeal Case No. E080533 (Cities of Chino, Ontario appeal re 2022-23 Watermaster budget expenses to support CEQA analysis)
6. Kaiser Permanente Lawsuit

(00:25:19) Mr. Slater gave a report. A discussion ensued.

B. ENGINEER

1. 2025 Safe Yield Reevaluation
2. Board-Requested Recharge Project Analysis
3. Ground-Level Monitoring Committee
4. 2022 State of the Basin Report

(00:36:41) Mr. Rapp gave a report on items 1 and 2, Mr. Malone on item 2, then introduced Ms. Ou and Ms. Sather to give a presentation on item 4. A discussion ensued.

C. CHIEF FINANCIAL OFFICER

None

D. GENERAL MANAGER

1. Long Term Planning Efforts
2. RMPU Project 23A Potential Change of Scope
3. Other

(00:56:19) Mr. Kavounas gave a presentation on the long-term planning efforts and reported that implementation of the 2017 Court Order for the Safe Yield Reevaluation is underway with a technical workshop scheduled for August 30, 2023. On item 2, he mentioned that a value engineering

construction option was presented for the RMPU Project 23a by the contractor. IEUA and Watermaster, presented the recommendation to the Advisory Committee at its August 2023 meeting. No action was taken by the Advisory Committee and the item was deferred to the Appropriative Pool for its consideration. The Appropriative Pool considered this item during a confidential session meeting and gave its direction to staff to reduce the scope as recommended. A discussion ensued.

IV. BOARD MEMBER COMMENTS

None

V. OTHER BUSINESS

(01:04:40) Chair Curatalo announced Mr. Joswiak's retirement. The Watermaster Board, parties, and staff recognized Mr. Joswiak for his 13+ years of dedicated service at Watermaster, congratulated him on his retirement, and the Board presented him with a gift. Mr. Joswiak addressed the Board, staff, and parties, thanking them for the opportunity to be of service and indicated he would miss everyone.

VI. CONFIDENTIAL SESSION – POSSIBLE ACTION

Pursuant to Article II, Section 2.6, of the Watermaster Rules & Regulations, a Confidential Session may be held during the Watermaster Board meeting for the purpose of discussion and possible action.

The Board convened into Confidential Session at the beginning of the meeting at 11:05 a.m. to discuss the following:

1. CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION: *Initiation of litigation:* one case
2. CONFERENCE WITH LEGAL COUNSEL – PERSONNEL MATTERS

Confidential Session concluded at 11:53 a.m. with no reportable action. Chair Curatalo resumed open session at 11:53 a.m. as shown under Consent Calendar.

ADJOURNMENT

Chair Curatalo adjourned the Watermaster Board meeting at 1:08 p.m.

Secretary: _____

Approved: _____

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

STAFF REPORT

DATE: September 28, 2023

TO: Board Members

SUBJECT: OBMP Semi-Annual Status Report 2023-1 (Consent Calendar Item I.C.)

SUMMARY:

Issue: Watermaster produces the Semi-Annual Optimum Basin Management Program (OBMP) Status Reports as required by the September 28, 2000, Court Order. The report for the period January to June 2023 has been drafted. [Discretionary Function]

Recommendation: Adopt the Semi-Annual OBMP Status Report 2023-1, and direct staff to file a copy with the Court, subject to any necessary non-substantive changes.

Financial Impact: None

Future Consideration
Watermaster Board – September 28, 2023: Adoption

ACTIONS:
Appropriative Pool – September 14, 2023: Unanimously recommended Advisory Committee to recommend Watermaster Board approval.
Non-Agricultural Pool – September 14, 2023: Unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to changes they deem appropriate.
Agricultural Pool – September 14, 2023: Unanimously recommended Advisory Committee to recommend Watermaster Board approval.
Advisory Committee – September 21, 2023: Unanimously recommended Watermaster Board adoption and filing.
Watermaster Board – September 28, 2023:

BACKGROUND

The OBMP Semi-Annual Status Report 2023-1 covers the period from January to June 2023. The report describes work conducted, and the status of the nine Program Elements of the Optimum Basin Management Program during the six-month period.

DISCUSSION

OBMP Semi-Annual Status Report 2023-1 has been drafted (Attachment 1). Once adopted by the Watermaster Board, a copy of the OBMP Semi-Annual Status Report 2023-1 will be filed with the Court. Prior to the Pool Committee meetings, Watermaster received comments that have been incorporated into the report.

At the Pool Committee meetings held on September 14, 2023, the Appropriative and Overlying (Agricultural) Pools unanimously recommended Advisory Committee to recommend to the Watermaster Board to adopt the Report; the Overlying (Non-Agricultural) Pool unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to changes they deem appropriate.

On September 21, 2023, this item was presented to the Advisory Committee for consideration and was unanimously recommended the Watermaster Board to adopt the OBMP Semi-Annual Status Report 2023-1 along with filing a copy with the Court, subject to any necessary non-substantive changes.

ATTACHMENTS

1. OBMP Semi-Annual Status Report 2023-1

Optimum Basin Management Program

Staff Status Report 2023-1: January to June 2023

CHINO BASIN WATERMASTER

Optimum Basin Management Program

Highlighted Activities

- During this reporting period, Watermaster manually measured about 300 water levels at about 40 private wells, three monitoring wells, and nine municipal supply wells throughout the Chino Basin, conducted two quarterly download events at about 130 wells containing pressure transducers, collected seven groundwater quality samples from four monitoring wells, and collected four surface water quality samples from two sites.

- Pursuant to a monitoring and mitigation requirement of the Peace II Subsequent Environmental Impact Report (SEIR), Watermaster, the Inland Empire Utilities Agency (IEUA), and the Orange County Water District (OCWD) continued to implement the Prado Basin Habitat Sustainability Program (PBHSP). During this reporting period, Watermaster conducted two quarterly downloads of pressure transducers that measure water levels at the 18 PBHSP monitoring wells and one surface water site, prepared the annual report on the monitoring and analysis for water year 2022, and developed the PBHSP scope and budget for the fiscal year 2023/24.

- Pursuant to the Chino Basin Subsidence Management Plan, Watermaster continued to implement the Ground-Level Monitoring Program for the MZ-1 and Northwest MZ-1 areas. During this reporting period, Watermaster: collected, processed, and checked groundwater level data and aquifer-system deformation data from the Ayala Park, Chino Creek, and Pomona extensometer facilities, continued high-resolution water-level monitoring at about 30 wells within the MZ-1 Managed Area and the Areas of Subsidence Concern. The Watermaster also conducted a Ground-Level Monitoring Committee meeting to review the draft technical memorandum" Construction, and Calibration of One-dimensional Compaction Models in the Northwest MZ-1 Area" and developed a recommended scope of work and budget of the Ground-Level Monitoring Program for fiscal year 2023/24.

Important Court Hearings and Orders

- **JANUARY 20, 2023:**
  HEARING AND ORDER GRANTING WATERMASTER'S MOTION FOR COURT TO RECEIVE AND FILE THE 2021/22 ANNUAL REPORT OF THE GROUND-LEVEL MONITORING COMMITTEE

- **MARCH 17, 2023:**
  HEARING AND ORDER GRANTING CHINO BASIN WATERMASTER'S MOTION FOR COURT TO RECEIVE AND FILE WATERMASTER'S 45TH ANNUAL REPORT

- **MAY 12, 2023:**
  HEARING AND ORDER GRANTING WATERMASTER'S MOTION FOR COURT TO RECEIVE AND FILE WATERMASTER'S SEMI-ANNUAL OBMP STATUS REPORT 2022-2

- Watermaster and the IEUA are continuing to implement the 2013 Amendment to the 2010 Recharge Master Plan Update (2013 RMPU) pursuant to the October 2013 Court Order authorizing its implementation. During this reporting period, construction of the Wineville/Jurupa/RP3 and Lower Day projects continued. The agreements for the Montclair Basins were obtained in preparation for the start of construction in 2024.

- During this reporting period, Watermaster and the IEUA recharged a total of 29,501 acre-feet of water: 14,855 acre-feet of stormwater and 5,475 acre-feet of recycled water, and 9,171 acre-feet of imported water.

- Watermaster and IEUA are continuing to implement the Maximum Benefit Salinity Management Plan which includes conducting groundwater and surface water monitoring, maintaining Hydraulic Control of the basin, operating the Chino Desalters at 40,000 acre-feet per year of pumping, managing recycled water quality and recharge, and participating in the re-computation of ambient water quality with the Santa Ana Watershed Project Authority and Basin Monitoring Program Task Force. During this reporting period, Watermaster and the IEUA worked with the Regional Board staff to identify the appropriate regulatory compliance strategy to incorporate the longer-term averaging period into the Basin Plan. The Watermaster and IEUA also prepared and submitted the 2022 Maximum Benefit Annual Report to the Regional Board by its regulatory deadline of April 15, 2023.

- Watermaster continued work to implement elements of the 2017 Court Order. During this reporting period this work included completed the annual data collection and evaluation process covering the period through fiscal year 2021/22 to evaluate changes in cultural conditions compared to the data used in the 2020 Safe Yield recalculation, and initiated the process to reevaluate the Safe Yield of the Chino Basin for the period of fiscal year 2021 through 2030.

Program Element 1: Develop and Implement a Comprehensive Monitoring Program

Fundamental to the implementation of the OBMP Program Elements are the monitoring and data collection efforts performed in accordance with Program Element 1, including monitoring basin hydrology, production, recharge, groundwater levels, groundwater quality, and ground-level movement. Various monitoring programs have and will continue to be refined over time to satisfy the evolving needs of Watermaster and the IEUA, such as new regulatory requirements and improved data coverage. Monitoring is performed by basin pumpers, Watermaster staff, and other cooperating entities as follows.

Groundwater Level Monitoring

Watermaster's basin-wide groundwater-level monitoring program supports the periodic reassessment of Safe Yield, the monitoring and management of ground-level movement, the impact analysis of desalter pumping on private wells, the impact analysis of the implementation of the Peace II Agreement on groundwater levels and riparian vegetation in the Prado Basin, the triennial re-computation of ambient water quality mandated by the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), and the assessment of Hydraulic Control—a maximum-benefit commitment in the Basin Plan. The data are also used to update and recalibrate Watermaster's computer-simulated groundwater flow model in order to assess groundwater flow directions, to compute storage changes, to support interpretations of water quality data, and to identify areas of the basin where recharge and discharge are not in balance.

The current groundwater-level monitoring program is comprised of approximately 1,150 wells. At about 960 of these wells, groundwater levels are measured by well owners, which include municipal water agencies, the California Department of Toxic Substances Control (DTSC), the Counties, and various private consulting firms. Watermaster collects these groundwater level data semi-annually from the well owners. At the remaining 190 wells, groundwater levels are measured monthly by Watermaster staff using manual methods or by pressure transducers that record data on a 15-minute interval. These wells are mainly Agricultural Pool wells or dedicated monitoring wells located south of the 60 freeway.

All groundwater-level data are checked and uploaded to a centralized database management system that can be accessed online through HydroDaVE℠. During this reporting period, Watermaster measured approximately 300 groundwater levels at about 40 private wells and 15 municipal supply wells throughout the Chino Basin and conducted two quarterly downloads of 130 pressure transducers installed in private, municipal, and monitoring wells. Additionally, Watermaster compiled all available groundwater-level data from well owners in the basin for the April 2022 to October 2022 period.

Groundwater Quality Monitoring

Watermaster initiated a comprehensive groundwater-quality monitoring program in which the obtained data may be used for: the biennial *Chino Basin OBMP State of the Basin* report, the triennial re-computation of ambient water quality, the demonstration of Hydraulic Control, monitoring of nonpoint-source groundwater contaminations and plumes associated with point-source contamination, and assessing the overall health of the groundwater basin. Groundwater-quality data are also used in conjunction with numerical models to assist Watermaster and other parties in evaluating proposed salinity management and groundwater remediation strategies. The details of the groundwater-quality monitoring programs as of fiscal year 2022/23 are described below.

Chino Basin Data Collection (CBDC). Watermaster routinely and proactively collects groundwater-quality data from well owners including municipal and governmental agencies. Groundwater quality data are also obtained from special studies and monitoring required by orders of the Santa Ana Regional Water Quality Control Board (Regional Board)—such as for landfills and other groundwater quality investigations, the DTSC, the US Geological Survey (USGS), and others. These data are collected semi-annually from well owners and monitoring entities. Data are collected for approximately 860 wells as part of the CBDC program. During this reporting period, Watermaster compiled data collected for the CBDC program for the June to December 2022 period.

Preparing for Water Quality Sampling at a Monitoring Well

Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

Watermaster Field Groundwater Quality Monitoring Programs. Watermaster monitors groundwater quality at privately owned wells and dedicated monitoring wells on a routine basis as follows:

1. *Private Wells*. About 80 private wells, located predominantly in the southern portion of the basin, are sampled at various frequencies based on their proximity to known point-source contamination plumes. Seven wells near contaminant plumes are sampled annually, and the remaining 73 wells are sampled triennially.
2. *Watermaster Monitoring Wells*. Watermaster collects groundwater-quality samples from a total of 49 multi-nested monitoring wells at 22 well sites located throughout the Chino Basin. These monitoring well sites include: nine HCMP sites constructed to support the demonstration of Hydraulic Control in the southern Chino Basin, nine sites constructed to support the PBHSP in the Prado Basin region, and three sites that fill spatial data gaps near contamination plumes in MZ-3. Each nested well site contains up to four wells in the borehole. Additionally, Watermaster samples one single-casing well in MZ-3. Currently, the HCMP and MZ-3 wells are sampled annually, and the PBHSP wells are sampled triennially.
3. *Other Wells*. Watermaster collects quarterly samples from four near-river wells to characterize the interaction of the Santa Ana River and groundwater. These shallow wells along the Santa Ana River consist of two former USGS National Water Quality Assessment Program wells (Archibald 1 and Archibald 2) and two Santa Ana River Water Company (SARWC) wells (active Well 9 and inactive Well 10).

During this reporting period, Watermaster collected groundwater quality samples from three near river wells that are sampled quarterly; the SARWC well 10 was unable to be sampled because it is an old well that appears to be filling in and can no longer be monitored. Well SARWC 10 is a recently converted monitoring well to replace well SARWC 11 that was lost the prior year . Also during this reporting period, Watermaster collected groundwater quality samples from: one MZ3 monitoring well that is sampled annually. The samples were sent to Clinical Laboratories for analysis. All groundwater quality data are checked by Watermaster staff and uploaded to a centralized database management system that can be accessed online through HydroDaVE℠.

Groundwater Production Monitoring

As of the end of this reporting period, there were a total of 443 producing wells, 240 of which were for agricultural uses. The number of agricultural wells has been decreasing in recent years due to urbanization and development. Many of the remaining active agricultural production wells are metered, and Watermaster reads the meters on a quarterly basis. Meter reads and production data are then entered into Watermaster's relational database, which can be accessed online through HydroDaVE℠.

Surface Water Monitoring in the Santa Ana River

Watermaster collects grab water quality samples at two sites along the Santa Ana River (Santa Ana River at River Road and Santa Ana River at Etiwanda) on a quarterly basis. Sample data from these surface water sites and from the near-river wells are used to characterize the interaction between the Santa Ana River and nearby groundwater. During this reporting period, Watermaster collected four surface water-quality samples from the two surface water sites.

Prado Basin Habitat Sustainability Program (PBHSP)

Mitigation Measure 4.4-3 from the Peace II SEIR requires that Watermaster and the IEUA, in collaboration with the OCWD, form a committee, the Prado Basin Habitat Sustainability Committee (PBHSC), to develop and implement an Adaptive Management Plan for the PBHSP. The PBHSC is open to all interested participants, including the Watermaster Parties, IEUA member agencies, the OCWD, and other interested stakeholders. The objective of the PBHSP is to ensure that riparian habitat in the Prado Basin is not adversely impacted by the implementation of Peace II activities. Currently, the PBHSP consists of a monitoring program and the annual reporting on its results. The monitoring program includes an assessment of the riparian habitat and all factors that could potentially impact the riparian habitat, including those factors affected by Peace II activities such as changes in groundwater levels. Sixteen monitoring wells at nine sites were constructed in 2015 to support the PBHSP. Two existing wells are also monitored as part of the PBHSP. The PBHSC developed the Adaptive Management Plan of the PBHSP to describe an initial monitoring program and a process to modify the monitoring program and/or implement mitigation strategies, as necessary.

During this reporting period, Watermaster performed the following tasks:

- Conducted the groundwater monitoring program, which included quarterly downloads in April and June 2023 of transducers that measure groundwater levels at 14 PBHSP monitoring wells, and transducers that measure electrical conductivity (EC), temperature, and level at four PHBSP monitoring wells in two locations.

Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

- Conducted the surface-water monitoring program at two surface water sites, which included quarterly downloads in April and June 2022 of transducers that measure EC, temperature, and level.
    - Site-specific field vegetation surveys for the summer of 2022 performed by the United States Bureau of Reclamation (USBR).
- Prepared a memorandum titled: "Recommended Scope and Budget of the Prado Basin Habitat Sustainability Program for Fiscal Year 2022/23". This memorandum was used by Watermaster and the IEUA to develop and approve their respective fiscal year 2022/23 budgets.
- Prepared the seventh annual report: *Annual Report of the Prado Basin Habitat Sustainability Committee for Water Year 2021*. The main conclusion of the annual report was that the quality of the riparian habitat remained stable across most of the Prado Basin from 2021-2022 and at the same time slightly wetter but below average precipitation, warmer temperatures, and lower stream discharge conditions. Groundwater levels have remained relatively stable and within their historical range of short-term and long-term variability in the Prado Basin, except where there are some notable decreases since monitoring began in 2016 by about nine feet near the top of Mill Creek, and three feet near the northern portion of the Santa Ana River. No mitigation measures are proposed at this time.
- Conducted two meetings of the PBHSC:
    - On March 8, 2023 to present the Recommended Scope and Budget of the PBHSP for fiscal year 2022/23.
    - On May 10, 2023 to present the draft Annual Report of the PBHSC for water year 2022.

Chino Basin Groundwater Recharge Monitoring Program

Watermaster, the IEUA, the Chino Basin Water Conservation District, and the San Bernardino County Flood Control District jointly sponsor the Chino Basin Groundwater Recharge Program. This is a comprehensive water supply program to enhance water supply reliability and improve groundwater quality in local drinking water wells by increasing the recharge of storm, imported, and recycled waters. The recharge program is regulated under IEUA and Watermaster's recycled water recharge permit Regional Board Order No. R8-2007-0039 and Monitoring and Reporting Program No. R8-2007-0039.

Watermaster and the IEUA measure the quantity of storm, imported, and recycled water that enters recharge basins using pressure transducers or staff gauges. The IEUA also conducts water-quality monitoring for all required parameters in Order No. R8-2007-0039 for recycled water, diluent water (storm water, dry-weather flow, and imported water), and groundwater. The IEUA staff samples for recycled water quality data: daily and weekly for the RP-1 and RP-4 effluent; quarterly and annually at two recycled water locations representative of recharge quality; and weekly or monthly from lysimeters at recharge basins. Most of the recycled water recharge basins have alternative compliance plans for total organic carbon (TOC) and Total Nitrogen (TN) using the results from the recycled water samples and the application of a correction factor for soil aquifer treatment. The IEUA also collects samples at about 15 surface water locations for stormwater and dry-weather flows. Imported water quality data for State Water Project water are obtained from the Metropolitan Water District of Southern California (MWDSC). The flow and quality data is used to calculate: 120-month blended water quality for total dissolved solids (TDS) and nitrate of all recharge sources in each recharge basin to assess adequate dilution of recycled water as required by the recycled water recharge permits held with the Division of Drinking Water (DDW); and 5-year blended water quality for TDS and nitrate for all recharge sources in all recharge basins in the Chino Basin as required by the Maximum Benefit Salinity Management Plan (see the Program Element 7 update in this status report).

The IEUA also collects quarterly and annual groundwater quality samples at a network of about 35 dedicated monitoring wells and production wells that are downgradient of the recharge basins.

Monitoring Activities. During this reporting period, the IEUA performed its ongoing monitoring program to measure and record recharge volumes and to collect water quality samples for recycled water, diluent water, and groundwater pursuant to IEUA and Watermaster's permit requirements. This included collecting approximately 110 recycled water quality samples, 6 lysimeter samples, 9 diluent water quality samples, and 96 groundwater quality samples for analytical analyses. Daily composite water quality data was also collected at the RP-1 and RP-4 effluent.

Reporting. Watermaster and the IEUA completed the following compliance reports concerning the recharge program during this reporting period:

- 4Q-2022 Quarterly Report, which was submitted to the Regional Board on February 15, 2023

Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

- 1Q-2023 Quarterly Report, which was submitted to the Regional Board on May 15, 2023

Ground Level Monitoring

To address the historical occurrence of land subsidence and ground fissuring in the Chino Basin, Watermaster prepared and submitted a subsidence management plan (known as the MZ-1 Plan) to the Court for approval, and in November 2007, the Court ordered its implementation (see Program Element 4 in this report for more on MZ-1 Plan implementation). The MZ-1 Plan required several monitoring and mitigation measures to minimize or abate the future occurrence of land subsidence and ground fissuring. These measures and activities included:

- Continuing the scope and frequency of monitoring within the so-called Managed Area that was conducted during the period when the MZ-1 Plan was being developed.
- Expanding the monitoring of the aquifer system and ground-level movement into other areas of MZ-1 and the Chino Basin where data indicate concern for future subsidence and ground fissuring (Areas of Subsidence Concern).
- Monitoring of horizontal strain across the historical zone of ground fissuring.
- Conducting additional testing and monitoring to refine the MZ-1 Guidance Criteria for subsidence management (e.g., the Long-Term Pumping Test).
- Developing alternative pumping plans for the MZ-1 producers impacted by the MZ-1 Plan.
- Constructing and testing a lower-cost cable extensometer facility at Ayala Park.
- Evaluating and comparing ground-level surveying and Interferometric Synthetic Aperture Radar (InSAR) and recommending future monitoring protocols for both techniques.
- Conducting an aquifer storage recovery (ASR) feasibility study at a City of Chino Hills production well (Well 16) within the MZ-1 Managed Area.

Since the initial MZ-1 Plan was adopted in 2007, Watermaster has conducted the Ground-Level Monitoring Program (GLMP). The main results from the GLMP show that very little permanent land subsidence has occurred in the MZ-1 Managed Area, indicating that subsidence is being successfully managed in this area, but land subsidence has been occurring in Northwest MZ-1. One concern is that land subsidence in Northwest MZ-1 has occurred differentially across the San Jose Fault, following the same pattern of differential subsidence that occurred in the MZ-1 Managed Area during the time of ground fissuring.

Based on these observations, Watermaster determined that the subsidence management plan needed to be updated to include a Subsidence Management Plan for Northwest MZ-1, with the long-term objective of minimizing or abating the occurrence of the differential land subsidence. Thus, Watermaster expanded the GLMP into Northwest MZ-1 and prepared an updated Chino Basin Subsidence Management Plan, which included the Work Plan to Develop a Subsidence Management Plan for Northwest MZ-1 (Work Plan) as an appendix.

During this reporting period, Watermaster undertook the following Chino Basin Subsidence Management Plan activities:

- Continued high-resolution water-level monitoring at approximately 30 wells within the MZ-1 Managed Area and within the Areas of Subsidence Concern. All monitoring equipment was inspected at least quarterly and was repaired and/or replaced as necessary. The data collected were checked and analyzed to assess the functionality of the monitoring equipment and for compliance with the Chino Basin Subsidence Management Plan.
- Performed monthly routine maintenance, data collection, and verification at the Ayala Park and Chino Creek extensometer facilities.
- Continued implementation of the Work Plan:
    - Collected, processed, and checked groundwater level data and production data from wells in Northwest MZ-1 on a monthly basis.

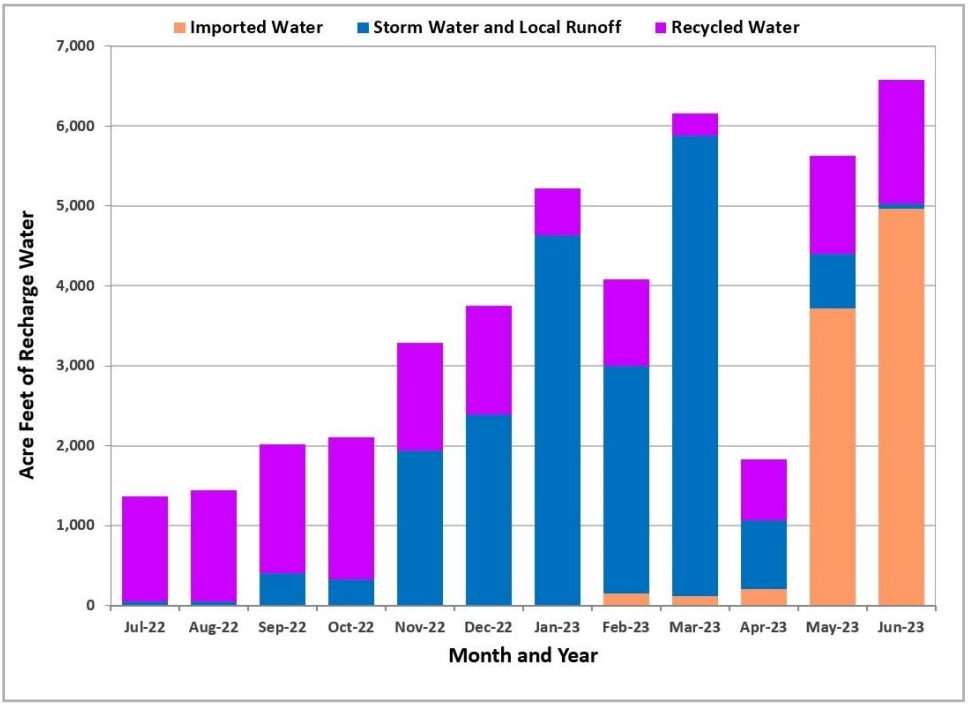
Program Element 1: Develop and Implement a Comprehensive Monitoring Program (Continued)

- Collected, processed, and checked groundwater level data and aquifer-system deformation data from the Pomona extensometer facility (PX).
- Finalized the technical memorandum Description of Subsidence Management Alternative #1 for 1D Model Simulation of Subsidence in Northwest MZ-1. The one-dimensional (1D) compaction models at the MVWD-28 and PX locations will be used to simulate aquifer-system deformation under this future scenario of pumping and recharge that was used in the 2020 Safe Yield Reset. The results will be used as a first step to explore subsidence management strategies in Northwest MZ-1 and develop a subsidence management plan for Northwest MZ-1.

Program Element 2: Develop and Implement a Comprehensive Recharge Program

The objectives of the comprehensive recharge program include: enhancing the yield of the Chino Basin through the development and implementation of a Recharge Master Plan to improve, expand, and construct recharge facilities that enable the recharge of storm, recycled, and imported waters; ensuring a balance of recharge and discharge in the Chino Basin management zones; and ensuring that sufficient storm and imported waters are recharged to comply with the recycled water dilution requirements in Watermaster and the IEUA's recycled water recharge permits.

Pursuant to Program Element 2 of the OBMP, Watermaster and the IEUA partnered with the San Bernardino County Flood Control District and the Chino Basin Water Conservation District to construct and/or improve 18 recharge sites. This project is known as the Chino Basin Facilities Improvement Project (CBFIP). The average annual stormwater recharge of the CBFIP facilities is approximately 10,000 acre-feet per year, the supplemental "wet"[1] water recharge capacity is about 56,600 acre-feet per year, and the in-lieu supplemental water recharge capacity ranges from 17,700 to 49,900 acre-feet per year. In addition to the CBFIP facilities, the Monte Vista Water District (MVWD) has four aquifer storage and recovery (ASR) wells with a well injection capacity of 5,500 acre-feet per year. The current total supplemental water recharge capacity ranges from 90,310 to 118,310 acre-feet per year, which is greater than the projected supplemental water recharge capacity required by Watermaster.



[1] The modifier "wet" means actual physical water is being recharged in spreading basins as opposed to the dedication of water from storage or in-lieu recharge.

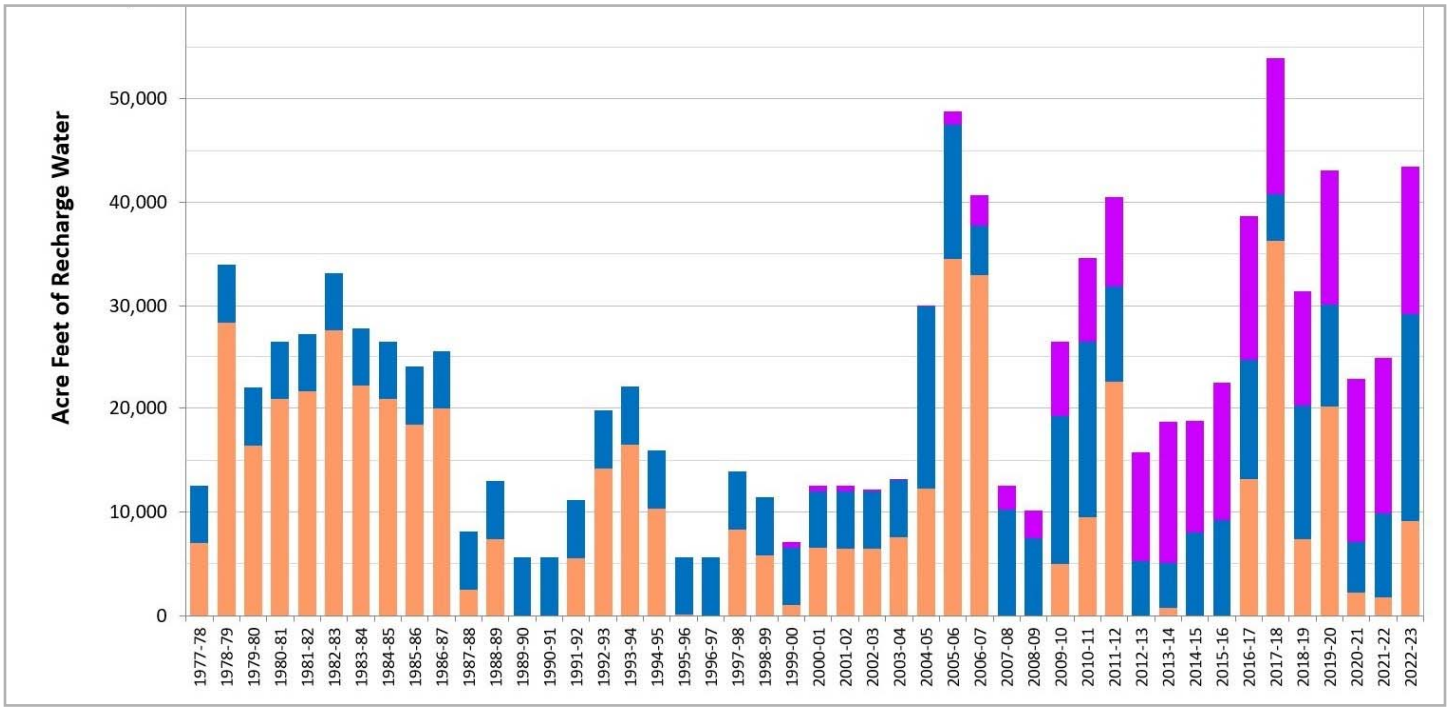
Program Element 2: Develop and Implement a Comprehensive Recharge Program (Continued)

In 2008, Watermaster began preparing the *2010 Recharge Master Plan Update* (2010 RMPU) pursuant to the December 21, 2007 Court Order (the Peace II Agreement) to complete a Recharge Master Plan Update by July 1, 2010. In October 2010, the Court accepted the 2010 RMPU as satisfying the condition and ordered that certain recommendations of the 2010 RMPU be implemented. In November 2011, Watermaster reported its progress to the Court pursuant to the October 2010 Court Order, and in December 2011, the Court issued an order directing Watermaster to continue with its implementation of the 2010 RMPU per its October 2010 order but with a revised schedule. On December 15, 2011, the Watermaster Board moved to:

> "approve that within the next year there will be the completion of [a] Recharge Master Plan Update, there will be the development of an Implementation Plan to address balance issues within the Chino Basin subzones, and the development of a Funding Plan, as presented."

This motion led to the development of an update to the 2010 RMPU, and in 2012, Watermaster staff sent out a "call for projects" to the Watermaster Parties, seeking their recommendations for recharge improvement projects that should be considered in the update. The *2013 Amendment to the 2010 Recharge Master Plan Update* (2013 RMPU) outlines the recommended projects to be implemented by Watermaster and the IEUA and lays out the implementation and financing plans. The 2013 RMPU report was approved by the Watermaster Board in September 2013 and filed with the Court in October 2013. In December 2013, the Court approved the 2013 RMPU except for Section 5, which dealt with the accounting for new recharge from Municipal Separate Stormwater Sewer Systems; Section 5 was later approved by the Court in April 2014.

In September 2018, Watermaster completed the 2018 Recharge Master Plan Update (2018 RMPU) and submitted it to the Court in October 2018. On December 28, 2018, the Court approved the 2018 RMPU. The next Recharge Master Plan Update (2023 RMPU) is currently being developed and will be completed no later than October 2023.



2013 RMPU Implementation. Watermaster and the IEUA are continuing to carry out the October 2013 Court Order, which authorizes them to implement the 2013 RMPU. Construction of the San Sevaine Basin improvements was completed in September 2018 and the construction of the Victoria Basin improvements was completed in December 2018. During this reporting period, the construction work for the Wineville/Jurupa/RP3 and Lower Day projects continued. The Lower Day project is substantially complete, pending a check list and final systems test. IEUA finalized the required regulatory agreement with California Department of Fish and Wildlife which has delayed the project bidding and construction for the Montclair Basins project. The Montclair project updated project completion is in 2024.

Program Element 2: Develop and Implement a Comprehensive Recharge Program (Continued)

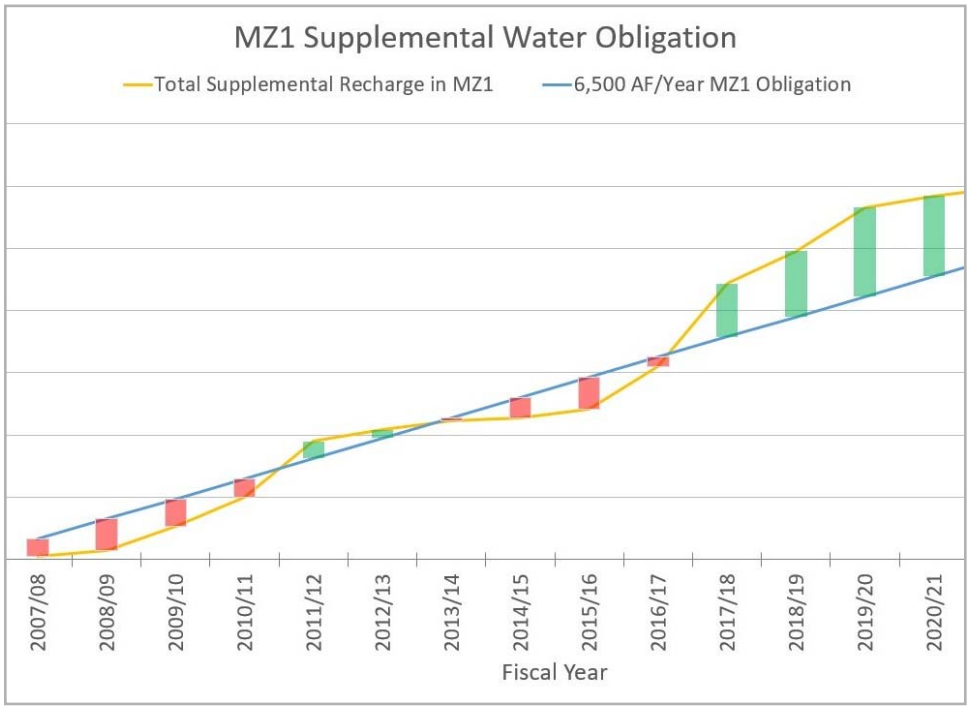
Additionally, Watermaster and the IEUA continue to collaborate in the development of projects outside of the 2013 RMPU effort that will increase and/or facilitate stormwater and supplemental water recharge and have jointly funded these projects, including monitoring upgrades and habitat conservation. During this reporting period, no projects were completed.

The Recharge Investigation and Projects Committee met three times during this reporting period on the progress of implementing the 2013 RMPU Projects and other recharge-related projects.

Recharge for Dilution of Recycled Water. In fiscal year 2009/10, Watermaster and the IEUA's recycled water recharge permit was amended to allow for existing underflow dilution and extended the period for calculating dilution from a running 60-month to a running 120-month period. Additionally, the IEUA has worked with the DDW to obtain approval to increase the allowable recycled water contribution (RWC) at wells to 50 percent. These permit amendments allow for increased recycled water recharge without having to increase the amount of imported and storm waters required for dilution. The IEUA projects its dilution requirements as part of its annual reporting to the Regional Board. Based on the latest Annual Report (May 2023), the IEUA projects that dilution requirements will be met through 2032 even if no imported water is available for dilution.

Recharge Activities. During this reporting period, ongoing recycled water recharge occurred in the Brooks, 8th Street, Victoria, San Sevaine, Banana, RP-3, and Declez Basins; stormwater was recharged at 18 recharge basins across all Chino Basin management zones; and imported water was recharged at MVWD's ASR wells, College Heights, Montclair, Turner, Lower Day, Victoria, San Sevaine, and RP-3 Basins, and at the Intext Property for a pilot agricultural managed aquifer recharge project. From January 1 through June 30, 2023, Watermaster and the IEUA recharged a total of 29,501 acre-feet of water: 14,855 acre-feet of stormwater, 5,475 acre-feet of recycled water, and 9,171 acre-feet of imported water.

Balance of Recharge and Discharge in MZ-1. The total amount of supplemental water recharged in MZ-1 since the Peace II Agreement through June 30, 2023 was approximately 126,518 acre-feet, which is about 22,518 acre-feet more than the 104,000 acre-feet required by June 30, 2023 (annual requirement of 6,500 acre-feet). The amount of supplemental water recharged into MZ-1 during the reporting period was approximately 6,826 acre-feet.



Program Element 3: Develop and Implement Water Supply Plan for the Impaired Areas of the Basin; and Program Element 5: Develop and Implement Regional Supplemental Water Program

As stated in the OBMP, "the goal of Program Elements 3 and 5 is to develop a regional, long range, cost effective, equitable, water supply plan for producers in the Chino Basin that incorporates sound basin management." One element of the water supply plan is the development of a way to replace the decline in agricultural groundwater production to prevent significant amounts of degraded groundwater from discharging to the Santa Ana River and violating the Basin Plan. Replacing the decline in agricultural groundwater production will mitigate the reduction of the Safe Yield of the basin and allow for more flexibility in the basin's supplemental water supplies if the produced groundwater is treated. This is achieved through the operation of the Chino Basin Desalter facilities, which comprise a series of wells and treatment facilities in the southern Chino Basin that are designed to replace the decline of the agricultural groundwater producers and to treat and serve this groundwater to various Appropriative Pool members.

The Chino I Desalter expansion and the Chino II Desalter facilities were completed in February 2006, bringing the total Chino Basin Desalter capacity to 29 million gallons per day (MGD) (32,480 acre-feet per year). Development and planning continued between the Chino Desalter Authority (CDA) and Watermaster to expand the production and treatment capacity of the Chino Basin Desalter by about 10 MGD. More than $77 million in grant funds were secured toward this expansion. As currently configured, the Chino I Desalter produces about 15,500 acre-feet of groundwater per year (13.8 MGD) at 14 wells (I-1 through I-11, and I-13 through I-15). This water is treated through air stripping (volatile organic compound [VOC] removal), ion exchange (nitrate removal), and/or reverse osmosis (for nitrate and TDS removal). The Chino II Desalter produces about 24,500 acre-feet of groundwater per year (21.8 MGD) at eleven wells (II-1 through II-4 and II-6 through II-12). This water is treated through ion exchange and/or reverse osmosis.

The most recently completed expansion project included adding three wells (Wells II-10, II-11, and II-12) to Chino II Desalter. These wells provide additional raw water to the Chino II Desalter to meet the maximum-benefit commitment to produce a total of 40,000 acre-feet per year from the combined desalter well fields. These wells are being utilized as part of the remediation action plan to clean up the South Archibald Plume (see the Program Element 6 update in this status report). Construction of wells II-10 and II-11 was completed in late 2015, equipping of the wells was completed in August 2018, and production at the wells commenced soon after.

Construction of well II-12 was completed in November 2020. And in August 2021 construction of the dedicated pipeline to convey groundwater from wells II-12, II-10, II-11, and I-11 to the Chino II Desalter was completed and well II-12 began pumping. The Chino Bain Desalters reached the 40,000 acre-feet per year of pumping capacity in June 2020, prior to the commencement of pumping at well II-12. During the reporting period, the Chino Basin Desalters maintained the pumping rate of 40,000 acre-feet per year.

Program Element 4: Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1

Because of the historical occurrence of pumping induced land subsidence and ground fissuring in southwestern Chino Basin (Managed Area), the OBMP required the development and implementation of an Interim Management Plan (IMP) for MZ-1 that would:

- Minimize subsidence and fissuring in the short-term.
- Collect the information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring.
- Formulate a management plan to reduce to tolerable levels or abate future subsidence and fissuring.

From 2001-2005, Watermaster developed, coordinated, and conducted an IMP under the guidance of the MZ-1 Technical Committee (referred to now as the Ground-Level Monitoring Committee or GLMC). The investigation provided enough information for Watermaster to develop Guidance Criteria for the MZ-1 producers in the investigation area that, if followed, would minimize the potential for subsidence and fissuring during the completion of the MZ-1 Plan. The Guidance Criteria included a list of Managed Wells and their owners subject to the criteria, a map of the so-called Managed Area, and an initial threshold water level (Guidance Level) of 245 feet below the top of the PA-7 well casing. The MZ-1 Summary Report and the Guidance Criteria were adopted by the Watermaster Board in May 2006. The Guidance Criteria formed the basis for the MZ-1 Plan, which was approved by Watermaster in October 2007. The Court approved the MZ-1 Plan in November 2007 and ordered its implementation. Watermaster has implemented the MZ-1 Plan since that time, including the ongoing Ground-Level Monitoring Program (GLMP) called for by the MZ-1 Plan (refer to in Program Element 1).

Program Element 4: Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1 (Continued)

The MZ-1 Plan states that if data from existing monitoring efforts in the so-called Areas of Subsidence Concern indicate the potential for adverse impacts due to subsidence, Watermaster will revise the MZ-1 Plan pursuant to the process outlined in Section 3 of the MZ-1 Plan. In early 2015, Watermaster prepared an update to the MZ-1 Plan, which included a name change to the *2015 Chino Basin Subsidence Management Plan*, and a *Work Plan to Develop the Subsidence Management Plan for Northwest MZ-1* (Work Plan) as an appendix. The Chino Basin Subsidence Management Plan and the Work Plan were adopted through the Watermaster Pool process in July 2015.

The data, analysis, and reports generated through the implementation of the MZ-1 Plan, Chino Basin Subsidence Management Plan, and Work Plan are reviewed and discussed by the GLMC, which meets on a periodic basis throughout the year. The GLMC is open to all interested participants, including the Watermaster Parties and their consultants. During this reporting period, Watermaster undertook the following data analysis and reporting tasks:

- Finalized the Recommended Scope of Work and Budget of the Ground-Level Monitoring Committee for Fiscal Year 2023/24 to describe the committee's recommendation for the Watermaster budget in Fiscal Year 2023/24.

One GLMC meeting was conducted during the reporting period on March 2, 2023. The meeting agenda included:

- Review the Recommended Scope of Work and Budget of the Ground-Level Monitoring Committee for Fiscal Year 2023/24.
- Review the technical memorandum on the recommendation for Subsidence Management Alternative #1 for 1D Modeling in Northwest MZ-1. The 1D model will be used to explore subsidence management strategies and develop a subsidence management plan for Northwest MZ-1.

Program Element 6: Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region and Other Agencies to Improve Basin Management

Program Elements 6 and 7 are necessary to address the water quality management problems in the Chino Basin. During the development of the OBMP, it was identified that Watermaster did not have sufficient information to determine whether point and non-point sources of groundwater contamination are being adequately addressed, including the various Chino Basin contaminant plumes. With the Regional Board and other agencies, Watermaster has worked to address the following major point source contaminant plumes in the Chino Basin:

South Archibald Plume

In July 2005, the Regional Board prepared draft Cleanup and Abatement Orders (CAOs) for six parties who were tenants on the Ontario Airport regarding the South Archibald Trichloroethene (TCE) Plume in the southern portion of the Chino Basin. The draft CAOs required the parties to "submit a work plan and time schedule to further define the lateral and vertical extent of the TCE and related VOCs that are discharging, have been discharged, or threaten to be discharged from the site" and to "submit a detailed remedial action plan, including an implementation schedule, to cleanup or abate the effects of the TCE and related VOCs." Four of the six parties (Aerojet-General Corporation, The Boeing Company, General Electric, and Lockheed Martin) voluntarily formed a group known as ABGL to work jointly on a remedial investigation. Northrop Grumman declined to participate in the group. The US Air Force, in cooperation with the US Army Corps of Engineers, funded the installation of one of the four clusters of monitoring wells installed by the ABGL Parties.

In 2008, Regional Board staff conducted research pertaining to the likely source of the TCE contamination and identified discharges of wastewater that may have contained TCE to the RP-1 treatment plant and associated disposal areas as a potential source. The Regional Board identified several industries, including some previously identified tenants of the Ontario Airport property, that likely used TCE solvents before and during the early-1970s, and discharged wastes to the Cities of Ontario and Upland's sewage systems and subsequently to the RP-1 treatment plant and disposal areas. In 2012, an additional Draft CAO was issued by the Regional Board jointly to the City of Ontario, City of Upland, and IEUA as the previous and current operators of the RP-1 treatment plant and disposal area (collectively, the RP-1 Parties). In part, the draft CAOs require that RP-1 Parties "supply uninterrupted replacement water service […] to all residences south of Riverside Drive that are served by private domestic wells at which TCE has been detected at concentrations at or exceeding 5 µg/L […]" and to report this information to the Regional Board. In addition, the RP-1 Parties are to "prepare and submit [a] […] feasibility study" and "prepare, submit and implement the Remedial Action Plan" to mitigate the "effects of the TCE groundwater plume."

Program Element 6: Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region and Other Agencies to Improve Basin Management (Continued)

Under the Regional Board's oversight, the ABGL Parties and/or the RP-1 Parties conducted sampling four sample events at private residential wells and taps between 2007 and 2014 in the region where groundwater is potentially contaminated with TCE. By 2014, all private wells and/or taps in the region of the plume had been sampled at least once. Alternative water systems (tanks) have been installed at residences in the area where well or tap water contains TCE at or above 80 percent of the maximum contaminant level (MCL) for TCE. Residents who declined tank systems are being provided bottled water. Watermaster also samples for water quality at private wells in the area and uses this and other data obtained from its data collection programs to independently delineate the spatial extent of the plume. Watermaster completed its most recent characterization of the plume in June 2021 for the *2020 Chino Basin OBMP State of the Basin Report*. In October of this reporting period, Watermaster prepared a semi-annual status report on the South Archibald Plume for Watermaster Parties.

In July 2015, the RP-1 Parties completed the Draft Feasibility Study Report for the South Archibald Plume (Feasibility Study). The Feasibility Study established cleanup objectives for both domestic water supply and plume remediation and evaluated alternatives to accomplish these objectives. In November 2015, a revised Draft Feasibility Study, Remedial Action Plan, and Responses to Comments were completed to address input from the public, the ABGL, and others. In September 2016, the Regional Board issued the Final CAO R8-2016-0016 collectively to the RP-1 Parties and the ABGL Parties. The Final CAO was adopted by all parties in November 2016, thus approving the preferred plume remediation and domestic water supply alternatives identified in the Remedial Action Plan. The parties also reached a settlement agreement that aligns with the Final CAO and authorizes funding to initiate implementation of the plume remediation alternative.

The plume remediation alternative involves the use of CDA production wells and facilities. The RP-1 Parties reached a Joint Facility Development Agreement with the CDA for the implementation of a project designed in part to remediate the South Archibald Plume. The project, termed the Chino Basin Improvement and Groundwater Clean-up Project, includes the operation of three newly constructed CDA wells (II-10, II-11, and II-12) and a dedicated pipeline connecting the three wells and the existing CDA well I-11 to the Desalter II treatment facility. Construction of two of the three wells (II-10 and II-11) were completed and became operational in 2018. The construction of well II-12 was completed in November 2020. In the first half of 2021, the RP-1 Parties and the CDA submitted the final *Monitoring and Reporting Plan for the Chino Basin Improvement and Groundwater Clean-up Project* to the Regional Board and completed the construction of five multi-depth monitoring wells at two locations in the South Archibald Plume (II-MW-4 and II-MW-5). In 2021, the CDA completed the equipping of well II-12, the modification to the decarbonator, and the construction of the raw water pipeline, and the project became operational in August of 2021.

The domestic water supply alternative for the private residences affected by TCE groundwater contamination is a hybrid between the installation of tank systems for some residences, where water is delivered from the City of Ontario potable supply via truck deliveries, and the installation of a temporary pipeline to connect some residences to the City of Ontario potable water system. The Cities of Ontario and Upland have assumed responsibility for implementing the domestic water supply alternative. In February 2017, the Cities of Ontario and Upland submitted the Domestic Water Supply Work Plan to the Regional Board to outline the approach to monitoring and supplying alternative water supplies for affected residences. As of the end of 2022, there are 30 affected residences that are being supplied water by tank systems, and five affected residences that have limited alternative water supply systems offered by the City of Ontario and remain on bottled water. The City of Ontario will continue to monitor for potentially affected residences to ensure that an alternative water supply is offered and provided to any residences with TCE concentrations greater than 80% of the MCL for TCE. There were no new activities during this period. reporting period.

Chino Airport Plume

In 1990, the Regional Board issued CAO No. 90-134 to the County of San Bernardino, Department of Airports (County) to address groundwater contamination originating from Chino Airport. During 1991 to 1992, ten underground storage tanks and 310 containers of hazardous waste were removed, and 81 soil borings were drilled and sampled on the airport property. From 2003 to 2005, nine onsite monitoring wells were installed and used to collect groundwater quality samples. In 2007, the County conducted its first offsite monitoring effort, and in 2008, the Regional Board issued CAO No. R8-2008-0064, requiring the County to define the lateral and vertical extent of the plume and prepare a remedial action plan. From 2009 to 2012, Tetra Tech, consultant to the County, conducted several off-site plume characterization studies to delineate the areal and vertical extent of the plume and constructed 33 offsite monitoring wells. From 2013 to early-2015, Tetra Tech conducted an extensive investigation of several areas identified for additional characterization of soil and groundwater contamination. At the conclusion of this work, they constructed an additional 33 groundwater monitoring wells on and adjacent to the airport property. In August 2016, the County completed a Draft Feasibility Study to identify remedial action objectives and evaluate remediation alternatives for mitigation. In January 2017, the Regional Board issued CAO R8-2017-0011, which requires the County to prepare a Final Feasibility Study that incorporates comments from the Regional Board

Program Element 6: Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region and Other Agencies to Improve Basin Management (Continued)

and to prepare, submit, and implement a Remedial Action Plan. The County submitted a Final Feasibility Study for Chino Airport on June 6, 2017, and it was approved by the Regional Board on June 7, 2017. On December 18, 2017, the County submitted the *Draft Interim Remedial Action Plan* for public review and comment through April 2018. The preferred remediation alternative is a groundwater pump-and-treat system to provide hydraulic containment and treatment of both the West and the East Plumes, originating from Chino Airport. The system consists of ten extraction wells that combined will produce approximately 900 gallons per minute of groundwater for treatment using granular activated carbon (GAC). The system will also treat groundwater from CDA wells I-1 through I-4 and I-16 through I-18. Once treated, the preferred option is to discharge the treated groundwater to the CDA's Chino I Desalter influent pipeline via a newly constructed pipeline. Currently the County is in discussions with the CDA to discharge the treated water from the extraction system to the CDA's influent pipeline. During this period, the CDA wells I-17 (offline for 5 years) and I-18 (never been online) within the Chino Airport plume began pumping.

In 2018, the County constructed five extraction wells and 12 nearby piezometers and conducted aquifer pumping tests of the extraction wells to help prepare the final design for the remedial solution. In 2019 and 2020, the County constructed 14 new monitoring wells at six locations to assist with the delineation of the plume. In 2022, the County completed the final *Remedial Action Work* that describes the plans for the construction and installation of the extraction wells, pipelines for conveyance of extracted groundwater, and the groundwater treatment system...

In late 2018, Watermaster used the Chino Basin groundwater flow model to analyze how increased groundwater production for the remedial solution from the ten new County well clusters and CDA wells will affect groundwater levels within the vicinity. Watermaster has commitments to this area to maintain Hydraulic Control and to avoid impacts to the groundwater dependent, riparian habitat in the Prado Basin. Watermaster completed the modeling and prepared a technical memorandum to describe the results, which concluded that operation of the remedial solution would improve Hydraulic Control in this area. In January 2022, the County completed construction of six wells near the riparian habitat along Chino Creek and initiated monitoring of groundwater levels for potential impacts to groundwater levels and the habitat from pumping at the remedial solution.

The County conducts quarterly and/or annual monitoring events at all 89 of their monitoring wells constructed to date. The conclusions from this monitoring program can be found in reports posted on the Regional Board's GeoTracker website. The most recent monitoring report submitted to the Regional Board is the *Semiannual Groundwater Monitoring Report Winter and Spring 2022 Chino Airport Groundwater Assessment, San Bernardino County, California*, which was submitted to the Regional Board in during this reporting period in February 2023. Also during this reporting period, the County submitted a *Sampling and Analysis Plan Update* to update the plan prepared in 2002 plan. Watermaster also samples for water quality at private and monitoring wells in the area and uses this and other data obtained from its data collection programs to independently delineate the spatial extent of the plume. During this reporting period in June 2023, Watermaster completed its most recent characterization of the plume for the *2022 Chino Basin OBMP State of the Basin Report*. In April of this reporting period, Watermaster prepared a semi-annual status report on the Chino Airport Plume for Watermaster Parties.

Other Water Quality Issues

Watermaster continues to track the monitoring programs and mitigation measures associated with other point sources in the Chino Basin, including: Alumax Aluminum Recycling, Alger Manufacturing Facility, the Former Crown Coach Facility, General Electric Test Cell and Flatiron, Former Kaiser Steel Mill, Milliken Landfill, Upland Landfill, and the Stringfellow National Priorities List sites. Watermaster prepared the most recent annual status reports in October 2022 for the GE Test Cell, GE Flatiron, Milliken Landfill, California Institution for Men, Stringfellow Plumes, and the former Kaiser Steel Mill site.

During the reporting period, Watermaster completed the most current delineations of the extent of the VOC plumes in June 2023 for the GE Test Cell, GE Flatiron, Milliken Landfill, and so-called Pomona VOC Plumes as part of the *2022 Chino Basin OBMP State of the Basin Report*.

Program Element 7: Develop and Implement a Salt Management Program

Maximum Benefit Salinity Management Plan

In January 2004, the Regional Board amended the Basin Plan to incorporate an updated TDS and nitrogen (N) management plan. The Basin Plan amendment includes both "antidegradation" and "maximum-benefit" objectives for TDS and nitrate (nitrate) for the Chino-North and Cucamonga groundwater management zones (GMZs). The maximum-benefit objectives allow for recycled water

Program Element 7: Develop and Implement a Salt Management Program (Continued)

reuse and recharge of recycled water and imported water without the immediate need for mitigation; these activities are an integral part of the OBMP. The application of the maximum-benefit objectives is contingent on the implementation of specific projects and requirements termed the maximum-benefit commitments by Watermaster and IEUA. The status of compliance with each commitment is reported to the Regional Board annually in April. The nine maximum-benefit commitments include:

1. The implementation of a surface water monitoring program.
2. The implementation of a groundwater monitoring program.
3. The expansion of the Chino I Desalter to a capacity of 10 MGD and the construction of the Chino II Desalter with a design capacity of 10 MGD.
4. The additional expansion of desalter capacity (to 40 MGD) pursuant to the OBMP and the Peace Agreement (tied to the IEUA's agency-wide effluent TDS concentration).
5. The completion of the recharge facilities included in the Chino Basin Facilities Improvement Program.
6. The management of recycled water quality to ensure that the IEUA agency-wide, 12-month volume-weighted running average TDS and TIN concentrations do not exceed 550 mgl and 8 mgl, respectively.
7. The management of basin-wide, volume-weighted TDS and nitrogen concentrations in artificial recharge to less than or equal to the maximum-benefit objectives of 420 mgl and 5 mgl, respectively, on a five-year volume-weighted basis.
8. The achievement and maintenance of the "Hydraulic Control" of groundwater outflow from the Chino Basin, specifically from Chino-North GMZ, to protect Santa Ana River water quality and downstream beneficial uses.
9. The determination of ambient TDS and nitrate concentrations of Chino Basin groundwater every three years.

Monitoring Programs. Pursuant to maximum-benefit commitment numbers 1 and 2, Watermaster and the IEUA submitted a surface water and groundwater monitoring program work plan to the Regional Board in May 2004. On April 15, 2005, the Regional Board adopted resolution R8-2005-0064, approving Watermaster and the IEUA's surface and groundwater monitoring programs (2005 Work Plan). These monitoring programs were implemented pursuant to the 2005 Work Plan from 2004 to 2012. On February 12, 2012, the Regional Board adopted an amendment to the Basin Plan to remove all references to the specific monitoring locations and sampling frequencies required for groundwater and surface water monitoring. The Basin Plan amendment allows the monitoring programs to be modified over time, subject to the approval of the Executive Officer of the Regional Board. On December 6, 2012, the State Office of Administrative Law finalized the approval of the Basin Plan amendment. In place of specific monitoring requirements, the Basin Plan amendment required that Watermaster and the IEUA submit (i) a new surface water monitoring program work plan by February 25, 2012, and (ii) a new groundwater monitoring program work plan by December 31, 2013 to the Regional Board for approval. Pursuant to (i), Watermaster and the IEUA submitted the *2012 Hydraulic Control Monitoring Program Work Plan*, which was approved by the Regional Board in March 2012. Pursuant to (ii), Watermaster and the IEUA submitted the *2014 Maximum-Benefit Monitoring Program Work Plan* (2014 Work Plan) which was approved by the Regional Board in April 2014. The 2014 Workplan describes: the questions to be answered by the monitoring program, the methods that will be employed to address each question, the monitoring and data collection that will be performed to implement the methods, and a reporting schedule. The monitoring pursuant to the 2014 Work Plan is incorporated as part of the groundwater level, groundwater quality, and surface water monitoring programs described in Program Element 1. During this reporting period, Watermaster continued implementing the monitoring programs (see Program Element 1 for details).

Hydraulic Control and Chino Basin Desalters. Pursuant to maximum-benefit commitment number 8, to achieve and maintain Hydraulic Control, Watermaster and the IEUA constructed desalter wells and expanded the desalter capacity (maximum-benefit commitments numbers 3 and 4) to increase desalter production in the southern portion of the Chino Basin. The Chino Basin Desalters are designed to replace the diminishing agricultural production that previously prevented the outflow of high TDS and nitrate groundwater to the Santa Ana River and the Prado Basin surface water management zone (PBMZ). Hydraulic Control is defined by the Basin Plan as the elimination of groundwater discharge from the Chino-North GMZ to the Santa Ana River to a *de minimis* level. Pursuant to commitment number 8, Watermaster and the IEUA submitted a mitigation plan (2005 Mitigation Plan) to the Regional Board in March 2005. This plan demonstrated how Watermaster and the IEUA would address the mitigation for any temporary loss of Hydraulic Control. In October 2011, the Regional Board defined the *de minimis* discharge of groundwater from the Chino-North GMZ to the PBMZ as 1,000 acre-feet per year or less. Watermaster and the IEUA have demonstrated that complete Hydraulic

Program Element 7: Develop and Implement a Salt Management Program (Continued)

Control has been achieved at and east of Chino I Desalter Well 20. The construction and operation of the CCWF (see Program Element 5), which began in 2010, is intended to achieve Hydraulic Control, per the definition above, at the area west of Chino I Desalter Well 5. Watermaster and the IEUA recalibrate the Chino Basin groundwater-flow model every five years to estimate groundwater discharge from the Chino-North GMZ to the PBMZ (i.e., annual underflow past the CCWF) to determine whether Hydraulic Control has been achieved.

In February 2016, the CCWF commenced full-scale operation with production at wells I-16, I-17, I-20, and I-21 to achieve and maintain Hydraulic Control at the area west of Chino I Desalter Well 5. Production at the CCWF has decreased since 2017 as a result of the new MCL for 1,2,3-TCP, which required the temporary cessation of operation at Well I-17. In 2020, the Chino Basin groundwater-flow model was used to estimate the historical (fiscal year 2004-2018) and projected (fiscal year 2019-2050) volume of groundwater discharge past the CCWF under revised pumping conditions at the CCWF. The model results indicate that both the estimated historical and projected discharge past the CCWF area is always below the *de minimis* threshold level of 1,000 acre-feet per year. The model assumes an annual average pumping volume at the CCWF of 992 acre-feet per year from fiscal year 2019 through 2050.

Future agricultural groundwater production in the southern part of the basin is expected to continue to decline, necessitating future expansion of the desalters to sustain Hydraulic Control. In a letter dated January 23, 2014, the Regional Board required that Watermaster and the IEUA submit a plan detailing how Hydraulic Control will be sustained in the future as agricultural production in the southern region of Chino-North continues to decrease—specifically, how the Chino Basin Desalters will achieve the required total groundwater production level of 40,000 acre-feet per year. On June 30, 2015, Watermaster and the IEUA submitted a final plan and schedule for the construction and operation of three new desalter wells (II-10, II-11, and II-12). Well II-10 and II-11 were constructed and began operation in mid-2018, and Well II-12 was constructed in 2020 and began operation in mid-2021. The CDA officially reached the pumping capacity necessary to meet the 40,000 acre-feet per year required for Hydraulic Control in June 2020. This pumping capacity was achieved without the inclusion of Well II-12, which was part of the final expansion plan designed to meet the 40,000 acre-feet per year. A full status report on the desalter expansion facilities is described in Program Element 3.

Watermaster prepared an update to the 2005 Mitigation Plan to formally update (i) plan and schedule for the mitigation of any temporary loss of Hydraulic Control, (ii) definition of the required minimum pumping at the CCWF to maintain outflows from the Chino-North GMZ to the PBMZ to de minimis level, and (iii) definition of operational flexibility around the 40,000 acre-feet per year requirement for the aggregate pumping at the CDA facilities. The updated mitigation plan was submitted to the Regional Board on June 21, 2022. The Regional Board has reviewed the updated mitigation plan and has requested a meeting with Watermaster and the CDA. Watermaster and the CDA will meet with the Regional Board staff on September 2023 to discuss the mitigation plan.

Recycled Water Recharge. Pursuant to the maximum-benefit commitment number 5, Watermaster and the IEUA completed the construction of the recharge facilities and began artificial recharge of stormwater and recycled water in the Chino Basin in 2005. Additionally, pursuant to maximum-benefit commitment number 7, Watermaster and the IEUA limit recycled water for artificial recharge to the amount that can be blended on a volume-weighted basis with other sources of recharge to achieve five-year running average concentrations of no more than the maximum-benefit objectives (420 and 5 mgl for TDS and nitrate, respectively). This data is compiled and analyzed in April of each year for reporting to the Regional Board. During this reporting period, Watermaster and the IEUA continued their monitoring programs to collect the data required for analysis and reporting to the Regional Board. Since recycled water recharge began in July 2005, the five-year volume-weighted running average TDS and nitrate concentrations have never exceeded the maximum-benefit objectives. As of December 2022, the five-year volume-weighted running average TDS and nitrate concentrations of these three recharge sources were 314 and 1.8 mgl respectively.

Recycled Water Quality. Pursuant to the maximum-benefit commitment number 6, Watermaster and the IEUA manage the recycled water quality to ensure that the 12-month volume-weighted running average IEUA agency-wide, wastewater effluent quality does not exceed the permit limits of 550 mgl and 8 mgl for TDS and TIN, respectively. Additionally, Watermaster and the IEUA must submit a plan and schedule to the Regional Board for the implementation of measures to ensure long-term compliance with these permit limits when either the 12-month volume-weighted running average IEUA agency-wide effluent TDS concentration exceeds 545 mgl for three consecutive months or the TIN concentration exceeds 8 mgl in any one month (action limits). The IEUA calculates and reports the 12-month volume-weighted running average agency-wide effluent TDS and TIN concentrations in the *Groundwater Recharge Program Quarterly Monitoring Reports*.

Since the initiation of recycled water recharge in July 2005, the 12-month running average TDS and TIN concentrations have ranged between 456 and 534 mgl and 3.8 and 7.6 mgl, respectively, and have never exceeded the permit limits. During the statewide drought in mid-2015, a historical high 12-month running average IEUA agency-wide effluent TDS concentration of 534 mgl was calculated for three consecutive months: June, July, and August. This 12-month running average IEUA agency-wide effluent TDS

Program Element 7: Develop and Implement a Salt Management Program (Continued)

concentration of 534 mgl was only 11 mgl below the action limit. The 12-month running average agency-wide TDS concentration has decreased since mid-2015. As of June 2023, the 12-month running average IEUA agency-wide effluent TDS concentration was 481mgl.

Through analysis of water supply and wastewater data, Watermaster and the IEUA concluded that drought conditions have a meaningful impact on the short-term TDS concentration of the water supplies available to IEUA agencies and that future droughts similar to the 2012-2016 period could lead to short-term exceedances of the 12-month running average IEUA agency-wide effluent TDS concentration. For this reason, in October 2016, Watermaster and the IEUA petitioned the Regional Board to consider modifying the TDS compliance metric for recycled water to a longer-term averaging period. The Regional Board agreed that an evaluation of the compliance metric was warranted and directed Watermaster and the IEUA to develop a technical scope of work to support the adoption of a longer-term averaging period for incorporation into the Basin Plan. The proposed technical scope of work to support a Basin Plan amendment to revise the recycled water compliance metric was submitted to the Regional Board in May 2017. The proposed scope of work which was approved by the Regional Board includes the following tasks:

- Develop numerical modeling tools (R4, Hydrus 2D, MODFLOW, MT3D) to evaluate the projected TDS and nitrate concentrations of the Chino Basin.
- Define a baseline (status-quo) scenario and evaluate it with the new modeling tools.
- Define salinity management planning scenarios and evaluate them with the new modeling tools to compare the projected TDS and nitrate concentrations against the baseline scenario.
- Use the results to develop a draft regulatory compliance strategy that includes a longer-term average period for recycled water TDS concentrations.
- Collaborate with the Regional Board to review and finalize the regulatory strategy.
- Support the Regional Board in the preparation of a Basin Plan amendment upon approval of the regulatory strategy.

Watermaster and the IEUA began implementing the scope of work in July 2017 and worked collaboratively with Regional Board staff to review interim work products. In December 2021, Watermaster and the IEUA completed and submitted the documentation of the technical work, *Total Dissolved Solids and Nitrate Concentrations Projections for the Chino Basin*, to the Regional Board Watermaster and the IEUA presented the technical work and received approval from the Regional Board staff in July 2022 to proceed with the work to amend the Basin Plan.

During this reporting period, Watermaster, IEUA, and the Regional Board staff have identified the appropriate regulatory compliance strategy to incorporate the longer-term averaging period into the Basin Plan.

Ambient Groundwater Quality. Pursuant to the maximum-benefit commitment number 9, Watermaster and the IEUA recompute ambient TDS and nitrate concentrations for the Chino Basin and Cucamonga GMZs every three years (due by June 30). The re-computation of ambient water quality is performed for the entire Santa Ana River Watershed, and the technical work is contracted, managed, and directed by the Santa Ana Watershed Project Authority's (SAWPA) Basin Monitoring Program Task Force (Task Force). Watermaster and the IEUA have participated in each triennial, watershed-wide ambient water quality determination as members of the Task Force.

In December 2021, the Regional Board amended the Basin Plan (2021 Basin Plan Amendment [R8-2021-0025]) to require the Task Force to complete the next re-computation by October 1, 2023, and, at a minimum, every five years thereafter (unless the Regional Board revises this schedule). The Regional Board is currently preparing an amendment to the Basin Plan to ensure that the ambient water quality computation for GMZs with maximum-benefit SNMPs is consistent with the schedule defined in the 2021 Basin Plan Amendment.

During this reporting period, Watermaster and the IEUA participated in the Task Force effort to compute the 2021 ambient water quality, which covers the 20-year period from 2002 to 2021. As part of this computation, Watermaster and the IEUA provided requested groundwater quality data, inputs on interim findings, and reviewed draft documentations to support the computation of the 2021 ambient water quality.

Program Element 8: Develop and Implement a Groundwater Storage Management Program; and Program Element 9: Develop and Implement a Storage and Recovery Program

Groundwater storage is critical to the Chino Basin stakeholders. The OBMP outlines Watermaster's commitments to investigate the technical and management implications of Local Storage Agreements, improve related policies and procedures, and then revisit all pending Local Storage Agreement applications.

The existing Watermaster/IEUA/MWDSC/Three Valleys Municipal Water District Dry-Year Yield (DYY) program is the only Storage and Recovery Program that is being implemented in the Chino Basin. By April 30, 2011, all DYY program construction projects and a full "put" and "take" cycle had been completed, leaving the DYY storage account with a zero balance. Another DYY cycle began in June 2017 and was completed in June 2022. The DYY storage account balance was zero acre-feet as of June 30, 2022. In response to the heavy precipitation in early 2023, MWDSC began recharging imported water in the Chino Basin in spring 2023. During the reporting period, MWDSC recharged about 7,939 acre-feet of imported water in the Chino Basin through the DYY program.

DYY Water Being Discharged to be Captured at a Basin

Safe Yield Recalculation

The Basin's Safe Yield was initially set by the Judgment at 140,000 acre-feet per year. The Safe Yield was based on the hydrology for the period of 1965 through 1974. Pursuant to the Judgment, the Chino Basin Safe Yield is to be recalculated periodically but not for at least ten years following 1978.

Pursuant to the OBMP Implementation Plan and Watermaster's Rules and Regulations, in year 2010/11 and every ten years thereafter, Watermaster is to recalculate the Safe Yield. The 2011 Safe Yield recalculation began in 2011 and after significant technical and legal process, on April 28, 2017, the Court issued a final order (2017 Court Order), resetting the Safe Yield to 135,000 acre-feet per year effective July 1, 2010.

In July 2018, Watermaster's Engineer began the technical work necessary for the Safe Yield recalculation for 2020 pursuant to the OBMP Implementation Plan using the approved methodology in the 2017 Court Order. After substantial technical process and stakeholder engagement, the Watermaster Board adopted recommendations to the Court to update the Safe Yield for the period 2021 through 2030 to 131,000 acre-feet per year. In July 2020, the Court approved Watermaster's recommendation and reset the Safe Yield to 131,000 acre-feet per year for the period commencing on July 1, 2020 and ending on June 30, 2030.

The 2017 Court Order 1) requires that the Safe Yield be reevaluated no later than June 30, 2025, 2) allows for supplementation of the current Safe Yield Reset methodology, and 3) requires annual collection and evaluation of data regarding cultural conditions of the Chino Basin. The annual data collection and evaluation process includes determining whether "there has been or will be a material change from existing and projected conditions or threatened undesirable results" as compared to the conditions evaluated in the 2020 Safe Yield Recalculation. If evaluation of the data suggests that any of these criteria are met, then Watermaster's Engineer is required to undertake "a more significant evaluation" to model the impacts of the existing and projected cultural conditions on the Chino Basin.

In 2022, Watermaster's Engineer completed a process to supplement the current Safe Yield Reset methodology to address comments received during the peer review process of the 2020 Safe Yield recalculation regarding uncertainty in the groundwater model and the data used in future projections. As a result of this process, which was supported by extensive peer review, Watermaster submitted an updated Safe Yield Reset methodology (2022 Safe Yield Reset methodology) to the Court. The Court approved the 2022 Safe Yield Reset methodology in December 2022.

During the reporting period, Watermaster's Engineer completed the annual data collection and evaluation process covering the period through fiscal year 2021/22 and initiated the process to reevaluate the Safe Yield of the Chino Basin for the period of fiscal year 2021 through 2030. This process includes updating Watermaster's groundwater-flow model and implementing the 2022 Safe Yield Reset methodology.

Program Element 8: Develop and Implement a Groundwater Storage Management Program; and Program Element 9: Develop and Implement a Storage and Recovery Program (Continued)

Groundwater Storage Management

Addendum to PEIR. The original OBMP storage management program consists of managing groundwater production, replenishment, recharge, and storage such that the total storage within the basin lies within the range known as the Safe Storage Capacity (SSC), which is the difference between the Safe Storage[2] and the Operational Storage Requirement[3]. The allocation and use of storage space in excess of the Safe Storage Capacity will preemptively require mitigation: mitigation must be defined, and resources must be committed to mitigation prior to allocation and use.

Water occupying the SSC includes Local Storage Account Water, Carryover Water, and water anticipated to be stored in future groundwater Storage and Recovery programs. This storage management program was evaluated in the OBMP programmatic environmental impact report (PEIR) in 2000.

After the OBMP PEIR, Watermaster and the Watermaster Parties revised the OBMP based on: new monitoring and borehole data collected since 1998, an improved hydrogeologic conceptualization of the basin, new numerical models that have improved the understanding of basin hydrology since 2000, and the need to expand the Chino Basin Desalters (desalters) to the 40,000 acre-feet per year of groundwater production required in the OBMP Implementation Plan. These investigations included a recalculation of the total water in storage in the basin, based on the improved hydrogeologic understanding. The total storage in the Chino Basin for 2000 was estimated to be about 5.9 million acre-feet[4], about 100,000 acre-feet greater than the estimated Safe Storage at the time.

The Watermaster Parties negotiated the Peace II Agreement to implement, among other things, the expansion of the desalters, the dedication of 400,000 acre-feet of groundwater in storage to desalter replenishment (i.e., approved overdraft), and changes in the Judgment to implement the Peace II Agreement. However, the storage management plan was not changed in light of the approved overdraft and the fact that the estimated storage in the basin exceeded the Safe Storage. The IEUA completed and subsequently adopted a supplemental environmental impact report for the Peace II Agreement in 2010.

As basin storage continued to grow following the implementation of the desalters and the Peace II Agreement, Watermaster and the IEUA proposed a temporary increase in the Safe Storage Capacity, which was analyzed through an addendum to the 2000 PEIR. On March 15, 2017, the IEUA adopted an addendum to the 2000 PEIR, increasing the Safe Storage Capacity from 500,000 acre-feet to 600,000 acre-feet for the period July 1, 2017 through June 30, 2021. This temporary increase in Safe Storage Capacity was found to not cause material physical injury (MPI) and/or loss of Hydraulic Control, and it provided Watermaster, with assistance from the Parties, time to develop a new storage management plan and agreements to implement it.

Newly Built Dam to Redirect Water Flow for Capture

2020 Storage Management Plan. In 2019, Watermaster initiated a process with the Watermaster Parties and Board to develop the 2020 Storage Management Plan (2020 SMP) that would update the SMP currently included in the OBMP implementation plan. In that effort, Watermaster prepared a white paper that outlined the need and requirements of the 2020 SMP and presented it to the Watermaster Parties and other interested stakeholders in June 2019. This work built upon the findings of the 2018 Storage Framework Investigation, where Watermaster's Engineer evaluated the use of storage space in the range of 700,000 acre-feet to 1,000,000 acre-feet for potential Storage and Recovery programs. Watermaster and its Engineer published a final SMP report on December 19, 2019. This report was included in the 2020 OBMP Update Report, which the Watermaster Board adopted in full in October 2020. The SMP may be incorporated into the implementation plan for the 2020 OBMP Update.

Local Storage Limitation Solution. The temporary increase in Safe Storage Capacity to 600,000 acre-feet was set to expire on June 30, 2021, after which it would have declined to 500,000 acre-feet absent a new Court-approved storage agreement. At the end of Production Year 2020, the total volume of Managed Storage was about 588,000 acre-feet. Anticipating the expiration of the

[2] Safe Storage is an estimate of the maximum storage in the basin that will not cause significant water quality and high groundwater related problems. Safe Storage was estimated in the development of the OBMP to be about 5.8 million acre-feet based on the then-current understanding of the basin.

[3] The Operational Storage Requirement is the storage or volume in the Chino Basin that is necessary to maintain the Safe Yield. This is an average value with the storage oscillating around this value due to dry and wet periods in precipitation. The Operational Storage Requirement was estimated in the development of the OBMP to be about 5.3 million acre-feet. This storage value was set at the estimated storage in the basin in 1997.

[4] The most recent modeling of the Chino Basin estimates the total water in storage to be about 12 million acre-feet.

Program Element 8: Develop and Implement a Groundwater Storage Management Program; and Program Element 9: Develop and Implement a Storage and Recovery Program (Continued)

temporary increase in Safe Storage, Watermaster Parties recommended that environmental documentation and analysis be developed to cover the use of Managed Storage above 500,000 acre-feet beyond June 30, 2021. The Parties' projected behavior and the operations of the DYY program were called the Local Storage Limitation Solution (LSLS). During fiscal year 2020/21, Watermaster's Engineer completed an investigation to assess the potential MPI for the LSLS using the updated groundwater-flow model that was used to recalculate the Safe Yield. The conclusions of the investigation were that there would be no unmitigable significant adverse impacts attributable to the LSLS. This work supported CEQA documentation to increase the Safe Storage Capacity after June 30, 2021. The LSLS allows the Safe Storage Capacity to increase to 700,000 acre-feet through June 30, 2030, and 620,000 acre-feet from July 1, 2030 through June 30, 2035. The CEQA documentation formed Addendum No. 2 to the OBMP PEIR, which was adopted by the IEUA Board on March 17, 2021. The Court granted Watermaster's motion to implement the LSLS, which became effective on July 1, 2021.

2020 OBMP Update

OBMP implementation began in 2000. By 2019, many of the projects and management programs envisioned in the 2000 OBMP have been implemented. The understanding of the hydrology and hydrogeology of the Chino Basin has improved since 2000, and new water-management issues have been identified that necessitate that the OBMP be adapted to protect the collective interests of the Watermaster Parties and their water supply reliability. For these reasons, the Watermaster, with input from the Parties, prepared a 2020 OBMP Update to set the framework for the next 20 years of basin-management activities.

During 2019, Watermaster convened a collaborative stakeholder process to prepare the 2020 OBMP Update, similar to that the process employed for the development of the 2000 OBMP. The final 2020 OBMP Scoping Report (Scoping Report) was published in November 2019 to document the results of the first four Listening Sessions that Watermaster conducted with the stakeholders. The Scoping Report summarized (1) the need to update the OBMP, (2) the issues, needs, and wants of the stakeholders, (3) the goals for the 2020 OBMP Update, and (4) the recommended scope of work to implement seven stakeholder-defined basin-management activities that could be included in the 2020 OBMP Update.

Through the listening session process, it became apparent that the 2000 OBMP goals remain unchanged, and the nine Program Elements (PEs) defined in the 2000 OBMP are still relevant today as the overarching program elements of a basin management program. Each of the seven activities in the Scoping Report had objectives and tasks that were directly related to one or more of the 2000 OBMP PEs. Based on this finding, the nine PEs defined in the 2000 OBMP were retained for the 2020 OBMP Update. Each of the seven activities were mapped to one of the existing PEs.

In January 2020, the Watermaster published the 2020 OBMP Update Report, which described: (1) the 2020 OBMP Update process; (2) the OBMP goals and new activities for the 2020 OBMP Update; (3) the status of the OBMP PEs and ongoing activities within them; and (4) the recommended 2020 OBMP management plan – inclusive of ongoing and new activities. The management plan will form the foundation for the Watermaster Parties to develop a 2020 OBMP Implementation Plan and the agreements necessary to implement it. After several workshops and comprehensive review and comments by Watermaster Parties, the final 2020 OBMP Update Report was adopted by the Watermaster Board on October 22, 2020.

Additionally, in January 2020, the Watermaster and IEUA (as the lead agency) began preparing a new environmental documentation (PEIR) to support the OBMP Update. The updated PEIR will support decision-making, investment, and grant applications for ongoing and new management actions under the OBMP. Based on input from the Parties, the certification of the PEIR was postponed to a later time. Watermaster and IEUA re-initiated the process to update and certify the PEIR in 2022. Watermaster and IEUA hosted three workshops during September, November, and December 2022 to solicit input from the Watermaster Parties on updates to the OBMP Update's project description and discuss the potential updates. During the reporting period, Watermaster and IEUA continued the process to update the PEIR, including completing the 2023 Storage Framework Investigation to update the 2018 Storage Framework Investigation (see PE 8/9 above) and drafting the PEIR. The draft PEIR is expected to be released for review in the latter half of 2023, with certification expected soon after.

An update to the current OBMP Implementation Plan will facilitate the execution of the management actions included in the 2020 OBMP Update. In March 2020, Watermaster convened a series of "Drafting Sessions" with the Watermaster Parties to develop a 2020 OBMP Implementation Plan Update and an agreement to implement it. Due to the COVID-19 Pandemic, the Chino Basin Parties requested that the Drafting Sessions be put on hold. The Parties decided that the immediate focus for 2020 OBMP implementation would be related to storage management and the LSLS (see above). Two new management activities in the 2020 OBMP Update are kicking off in fiscal year 2023/24: (1) develop a Storage and Recovery Master Plan; and (2) preparation of a Water Quality Management Plan.

Aerial View College Heights and Upland Basins

Aerial View of the Santa Ana River

Managed Aquifer Recharge at a Local Vineyard

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

STAFF REPORT

DATE: September 28, 2023

TO: Board Members

SUBJECT: 2023 Recharge Master Plan Update and Resolution No. 2023-06 (Business Item II.A.)

SUMMARY:

Issue: The 2023 Recharge Master Plan Update (RMPU) is due to be filed with the Court by October 2023 as required by the Peace II Agreement. [Within WM Duties and Powers]

Recommendation: Approve the 2023 RMPU as presented, adopt Resolution No. 2023–06, and direct staff to file with the Court.

Financial Impact: None

Future Consideration
Watermaster Board – September 28, 2023: Approval

ACTIONS:
Appropriative Pool – September 14, 2023: Unanimously recommended to Advisory Committee to recommend to Watermaster Board approval and adoption.
Non-Agricultural Pool – September 14, 2023: Unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to change they deem appropriate.
Agricultural Pool – September 14, 2023: Unanimously recommended to Advisory Committee to recommend to Watermaster Board approval and adoption.
Advisory Committee – September 21, 2023: Unanimously recommended Board approval and adoption.
Watermaster Board – September 28, 2023:

BACKGROUND

Section 8.1 of the Peace II Agreement requires that the Recharge Master Plan will be updated and jointly approved by Watermaster and Inland Empire Utilities Agency (IEUA) as frequently as necessary, not less frequently than every five (5) years, and that Court approval be obtained for such updates. The most recent Recharge Master Plan Update (RMPU) was undertaken in 2018. As such, per Section 8.1 of the Peace II Agreement, an update to the 2018 RMPU is due to be filed with the Court no later than 2023.

To satisfy this requirement, Watermaster, with the assistance of West Yost, began the process of updating the 2023 RMPU in February 2021. Specifically, on April 8, 2021, Watermaster held the first of four 2023 RMPU Steering Committee meetings to obtain input, review, and comment on the 2023 RMPU as it was being developed. The Steering Committee was open to all and met quarterly and resulted in Watermaster hosting a workshop on August 16, 2018 to summarize the document in its entirety and address comments that were received.

Throughout the development of the 2023 RMPU, the Watermaster Board received periodic updates as to the progress made by the Steering Committee.

To meet the deadline to file the 2023 RMPU with the Court, Board approval from Watermaster is necessary. IEUA approved the 2023 RMPU at its Board meeting on September 20, 2023.

DISCUSSION

The 2023 RMPU (Attachment 1) consists of eight sections, developed with input from the Steering Committee.

- Sections 1 and 2 summarize and describe the background and purpose of the RMPU, the changed conditions in the Basin since the 2018 RMPU, including an update on the implementation of the 2013 RMPU, and planning assumptions used in the 2023 RMPU.

- Section 3 describes the basin response to historical recharge activities since the implementation of the OBMP and changes that have occurred since the 2018 RMPU was completed. Information in this section is used to determine the effectiveness of storm and supplemental water recharge activities, as well as inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

- Section 4 establishes planning assumptions for the completion of the 2023 RMPU. Information is used to evaluate the basin response to planning projections and determine the effectiveness or storm and supplemental water recharge activities, as well as inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

- Section 5 describes the basin response to planning projections. The basin response is described in terms of groundwater-level changes, hydraulic balance and control. The information in this section is used to determine the effectiveness of storm and supplemental water recharge activities, as well as inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

- Section 6 describes the need for new recharge capacity through 2045. The need for new recharge capacity is based on a comparison of projected future recharge requirements and physical capacity to achieve the required recharge.

- Section 7 summarizes the Renewal and Replacement Plan. Prior to these efforts, recharge system assets were not included in any Basin wide replacement planning. The Forecast presented in this

chapter can be incorporated into future planning and budgeting so recharge systems assets can be refurbished, rehabilitated, or replaced prior to failure.

In Section 8, conclusions and recommendations based on the previous section's analyses are described.

The conclusions are:

1. Watermaster has access to enough recharge capacity to meet its supplemental recharge obligations through 2045.
2. The historical state of balance of recharge and discharge for MZ1 is consistent with the Peace Agreements.
3. No changes are recommended for the 6,500 AFY supplemental water recharge obligation in MZ1.
4. No change in the prioritization of the recharge locations and amounts to meet the balance of recharge and discharge requirements.
5. The MS4 data collection from Section 5 of the 2013 RMPU Amendment will continue.

The recommendations are:

1. Continue implementation of 2013 RMPU yield enhancement projects.
2. Continue the implementation of the Board-requested recharge project analysis.
3. Develop the scope and budget for the 2028 RMPU in FY 2026/27.
4. Complete the 2028 RMPU in FY 2027/28 and file the 2028 RMPU report with the Court in October 2028.
5. Annually review the time and effort involved in the collection of information on MS4 project implementation and reassess the value of this effort.
6. Develop a plan to collaborate with MS4 permittees to ensure MS4-compliance projects prioritize recharge (as opposed to retention).
7. Refine and implement the Renewal and Replacement plan.

The draft 2023 RMPU was released for review on August 15, 2023, with comments due by August 25, 2023. A response to comments has been included as an Appendix to the final 2023 RMPU.

At the Pool Committee meetings held on September 14, 2023, the Appropriative and Overlying (Agricultural) Pools unanimously recommended the Advisory Committee to recommend to the Watermaster Board to approve, adopt, and file with the Court; the Overlying (Non-Agricultural) Pool unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to changes they deem appropriate.

During its September 21, 2023, meeting the Advisory Committee unanimously recommended to the Board to approve the 2023 RMPU, adopt Resolution 2023-06, and to file the 2023 RMPU with the Court.

ATTACHMENTS
1. 2023 Recharge Master Plan
2. Resolution 2023-06 (Draft)
3. Proposed Court Filing

2023 RMPU
(Can be found in Attachment 2, Exhibit C)
Click on link below to access:
https://cbwm.syncedtool.com/shares/folder/PaauzoQapiZ/?folder_id=453447087

RESOLUTION 2023-06
OF THE
CHINO BASIN WATERMASTER
REGARDING THE ADOPTION OF THE 2023 RECHARGE MASTER PLAN UPDATE

1. **WHEREAS**, in 2000, the Chino Basin Watermaster adopted a Recharge Master Plan which established the technical foundation for the development of the recharge facilities and practices in the Chino Basin; and

2. **WHEREAS**, in 2001, Watermaster, in cooperation with the Inland Empire Utilities Agency ("IEUA"), initiated the Chino Basin Facilities Improvement Project ("CBFIP") which implemented facilities recommendations in the Recharge Master Plan; and

3. **WHEREAS**, in 2006, Watermaster, in cooperation with IEUA, initiated Phase II of the CBFIP in order to implement additional facilities recommendations in the Recharge Master Plan; and

4. **WHEREAS**, on December 21, 2007, the Court approved the Peace II Measures which set forth a modified approach to management of the Chino Basin known as Basin Re-Operation, the ultimate goal of which is the achievement of Hydraulic Control; and

5. **WHEREAS**, Section 8.1 of the Peace II Agreement, the relevant portions for purposes of this Resolution are attached as Exhibit A hereto, included the requirement that the Recharge Master Plan be updated and that each of Watermaster and IEUA approve the updates to the Recharge Master Plan; and

6. **WHEREAS**, pursuant to Section 8.3 of the Peace II Agreement, Watermaster is obligated to make an annual finding that it is in substantial compliance with the Recharge Master Plan, as revised. This requirement exists to ameliorate any long-term risk attributable to reliance upon un-replenished groundwater production by the Desalters, and is a condition on the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft; and

7. **WHEREAS**, pursuant to Section 8.1 of the Peace II Agreement, updates to the Recharge Master Plan must occur as frequently as necessary, but not less frequently than every five years, and must be approved by the Court; and

8. **WHEREAS**, updates to the Recharge Master Plan must account for the new Basin management regime and other changes that occurred since the creation or last update of the Recharge Master Plan; and

9. **WHEREAS**, on June 30, 2010, Watermaster submitted its updated Recharge Master Plan ("2010 RMPU") to the Court; and

10. **WHEREAS**, Watermaster submitted its 2013 Amendment to the 2010 Recharge Master Plan Update ("2013 RMPU") to the Court on November 4, 2013; and

11. **WHEREAS**, on December 13, 2013, the Court issued an order approving the 2013 RMPU, except Section 5 thereof, and on April 25, 2013, the Court issued an Order approving Section 5 of the 2013 RMPU; and

12. **WHEREAS**, Watermaster submitted its 2018 Recharge Master Plan Update ("2018 RMPU") to the Court on October 9, 2018; and

13. **WHEREAS**, on December 28, 2018, the Court issued an order approving the 2018 RMPU; and

14. **WHEREAS,** Watermaster and stakeholders discussed the scoping of the 2023 RMPU at the February and April Pool Committee meetings and the April 15, 2021 Recharge Investigations and Projects Committee ("RIPComm"); and

15. **WHEREAS**, at its November 17, 2022 regular meeting, the Board reviewed an opinion from West Yost Associates ("West Yost") regarding the adequacy of replenishment capacity. The Board adopted the findings in the West Yost report, a copy of which is attached hereto as Exhibit B, which found that, as there is sufficient recharge capacity to meet future replenishment obligations identified in the 2013 RMPU and 2018 RMPU and that if Basin Re-Operation were terminated prior to 2030, that Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, and, accordingly, Watermaster was in substantial compliance with the Recharge Master Plan, as required; and

16. **WHEREAS**, in October 2022, a Recharge Master Plan Update Steering Committee ("Steering Committee"), composed of stakeholders in the Basin, including IEUA, was convened through the RIPComm in order to develop the 2023 Recharge Master Plan Update ("2023 RMPU"), attached hereto as Exhibit C, through a collaborative process. The RIPComm discussed development of the 2023 RMPU at the October 2022, January 2023, and July 2023 meetings. Additionally, a workshop was held on August 22, 2023 in order for stakeholders to participate in the development of the 2023 RMPU; and

17. **WHEREAS**, the 2023 RMPU addresses the elements required by the Court's December 21, 2007 Order Concerning Motion for Approval of Peace II Documents and the Peace II Agreement; and

18. **WHEREAS**, the 2023 RMPU includes: (1) a description of changed conditions in the Basin from those detailed in the 2018 RMPU and planning assumptions for the 2023 RMPU; (2) a description of the Basin's response to the updated conditions in the Basin; (3) an inventory of existing and planned recharge facilities in the Basin that can be compared to the Basin's recharge needs; (4) identification of future needs for recharge capacity in the Basin and a comparison with available recharge capacity; and, (5) recommendations for future activities and an implementation plan for the 2023 RMPU; and

19. **WHEREAS**, the 2023 RMPU also includes a renewal and replacement plan to predict, plan, and fund renewal or replacement of aging recharge assets in response to aging recharge assets and the absence of basin-wide renewal and replacement planning; and

20. **WHEREAS,** the 2023 RMPU also incorporates relevant existing data and analysis from the annual Data Collection and Evaluation reports and the 2020 Safe Yield Recalculation effort, which included additional stakeholder discussions; and

21. **WHEREAS**, IEUA has been an active participant in the 2023 RMPU process and, on _____, 2023, IEUA's Board of Directors approved the 2023 RMPU; and

22. **WHEREAS**, the Watermaster Board has received periodic updates as to the progress made by the RIPComm in the development of the 2023 RMPU.

NOW, THEREFORE, on the basis of the staff reports, expert opinions and substantial evidence presented, Watermaster finds that:

1. There exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.

2. Watermaster and interested parties thoroughly evaluated changed circumstances since the time of the 2018 RMPU and how these changes affect the Recharge Master Plan, and this evaluation is included in Sections 3, 4 and 5 of the 2023 RMPU.

3. Watermaster and interested parties thoroughly evaluated the existing and planned recharge facilities in the Basin as compared to the Basin's recharge needs, and this evaluation is included in Sections 2 and 7 of the 2023 RMPU. Section 7's renewal and replacement plan is a new component of the Recharge Master Plan to address aging recharge assets and the absence of basin-wide renewal and replacement planning.

4. Watermaster and interested parties considered the need for future recharge capacity by comparing the projected future recharge requirements of the Basin and physical capacity to achieve that requirement and concluded that the existing recharge capacity and facilities on which it relies are sufficient until the next Recharge Master Plan update in 2028. This evaluation is included in Section 6 of the 2023 RMPU.

5. Using the information and analysis contained in Sections 1 through 7 of the 2023 RMPU, Watermaster and interested parties developed recommendations and an implementation plan for the 2023 RMPU, which are included in Section 8 of the 2023 RMPU.

6. The development of the 2023 RMPU complies with the requirements for an update to the Recharge Master Plan.

NOW, THEREFORE, BE IT RESOLVED that, on the basis of the staff reports, expert opinions and substantial evidence presented, Watermaster finds that:

1. The 2023 RMPU is based on sound technical analysis and adequately updates the 2018 RMPU in light of changed economic, legislative, and hydrologic conditions within the State of California and in satisfaction of the Peace II Agreement and the Court's Orders.

2. Based upon the 2023 RMPU, there exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU through 2045. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.

3. Watermaster adopts the 2023 RMPU as the guidance document for the further development of the recharge facilities within the Basin.

4. Pursuant to the Peace II Agreement Section 8.1, Watermaster and IEUA will update the Recharge Master Plan not less frequently than once every five years. The Plan will next be updated no later than 2028.

APPROVED by the Advisory Committee this 21st day of September 2023.
ADOPTED by the Watermaster Board on this 28th day of September 2023.

By: _____
Chairman, Watermaster Board

APPROVED:

_____
Chairman, Advisory Committee

ATTEST:

_____
Board Secretary
Chino Basin Watermaster

STATE OF CALIFORNIA)
) ss
COUNTY OF SAN BERNARDINO)

I, Bob G. Kuhn Secretary/Treasurer of the Chino Basin Watermaster, DO HEREBY CERTIFY that the foregoing Resolution being No. 2023-06, was adopted at a regular meeting on the Chino Basin Watermaster Board by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

CHINO BASIN WATERMASTER

_____

Secretary

EXHIBIT A

October 25, 2007

PEACE II AGREEMENT:
PARTY SUPPORT FOR WATERMASTER'S OBMP IMPLEMENTATION PLAN, – SETTLEMENT AND RELEASE OF CLAIMS REGARDING FUTURE DESALTERS

WHEREAS, paragraph 41 of the Judgment entered in *Chino Basin Municipal Water District v. City of Chino* (San Bernardino Superior Court Case No. 51010) grants Watermaster, with the advice of the Advisory and Pool Committees, "discretionary powers in order to implement an Optimum Basin Management Program ("OBMP") for the Chino Basin";

WHEREAS, the Parties to the Judgment executed an agreement resolving their differences and pledging their support for Watermaster actions in accordance with specific terms in June of 2000 ("Peace Agreement");

WHEREAS, Watermaster approved Resolution 00-05, and thereby adopted the goals and objectives of the OBMP, the OBMP Implementation Plan and committed to act in accordance with the terms of the Peace Agreement;

WHEREAS, pursuant to Article IV, paragraph 4.2, each of the parties to the Peace Agreement agreed not to oppose Watermaster's adoption and implementation of the OBMP Implementation Plan attached as Exhibit "B" to the Peace Agreement;

WHEREAS, the Peace Agreement, the OBMP Implementation Plan and the Chino Basin Watermaster Rules and Regulations contemplate further actions by Watermaster in furtherance of its responsibilities under paragraph 41 of the Judgment and in accordance with the Peace Agreement and the OBMP Implementation Plan;

WHEREAS, the Parties to the Peace Agreement made certain commitments regarding the funding, design, construction and operation of Future Desalters;

WHEREAS, after receiving input from its stakeholders in the form of the Stakeholder's Non-Binding Term Sheet, Watermaster has proposed to adopt Resolution 07-05 attached as Exhibit "1" hereto to further implement the OBMP through a suite of measures commonly referred to and herein defined as "Peace II Measures", including but not limited to the 2007 Supplement to the OBMP, the Second Amendment to the Peace Agreement, amendments to Watermater's Rules and Regulations, the purchase and sale of water within the Overlying (Non-Agricultural) Pool and certain Judgment amendments; and

NOW, THEREFORE, in consideration of the mutual promises specified herein and by conditioning their performance under this Agreement upon the conditions precedent set forth in Article III herein, the Watermaster Approval, and Court Order, and for other good and valuable consideration, the Parties agree as follows:

7.5 Allocation of Losses. Any losses from storage assessed as a Leave Behind in excess of actual losses ("dedication quantity") will be dedicated by Watermaster towards groundwater Production by the Desalters to thereby avoid a Desalter replenishment obligation that may then exist *in the year* of recovery. Any dedication quantity which is not required to offset Desalter Production in the year in which the loss is assessed, will be made available to the members of the Appropriative Pool. The dedication quantity will be pro-rated among the members of the Appropriative Pool in accordance with each Producer's combined total share of Operating Safe Yield and the previous year's actual production. However, before any member of the Appropriative Pool may receive a distribution of any dedication quantity, they must be in full compliance with the 2007 Supplement to the OBMP Implementation Plan and current in all applicable Watermaster assessments.

ARTICLE VIII
RECHARGE

8.1 Update to the Recharge Master Plan. Watermaster will update and obtain Court approval of its update to the Recharge Master Plan to address how the Basin will be contemporaneously managed to secure and maintain Hydraulic Control and subsequently operated at a new equilibrium at the conclusion of the period of Re-Operation. The Recharge Master Plan will be jointly approved by IEUA and Watermaster and shall contain recharge estimations and summaries of the projected water supply availability as well as the physical means to accomplish the recharge projections. Specifically, the Plan will reflect an appropriate schedule for planning, design, and physical improvements as may be required to provide reasonable assurance that following the full beneficial use of the groundwater withdrawn in accordance with the Basin Re-Operation and authorized controlled overdraft, that sufficient Replenishment capability exists to meet the reasonable projections of Desalter Replenishment obligations. With the concurrence of IEUA and Watermaster, the Recharge Master Plan will be updated and amended as frequently as necessary with Court approval and not less than every five (5) years. Costs incurred in the design, permitting, operation and maintenance of recharge improvements will be apportioned in accordance with the following principles.

a. Operations and Maintenance. All future operations and maintenance costs attributable to all recharge facilities utilized for recharge of recycled water in whole or in part unfunded from third party sources, will be paid by the Inland Empire Utilities Agency ("IEUA") and Watermaster. The contribution by IEUA will be determined annually on the basis of the relative proportion of recycled water recharged bears to the total recharge from all sources in the prior year. For example, if 35 percent of total recharge in a single year is from recycled water, then IEUA will bear 35 percent of the operations and maintenance costs. All remaining unfunded costs attributable to the facilities used by Watermaster will be paid by Watermaster.

i. IEUA reserves discretion as to how it assesses its share of costs.

ii. Watermaster will apportion its costs among the members of the stakeholders in accordance with Production, excluding Desalter Production.

iii. The operations and maintenance costs of water recharged by aquifer storage and recovery will not be considered in the calculation other than by express agreement.

b. Capital. Mutually approved capital improvements for recharge basins that do or can receive recycled water constructed pursuant to the Court approved Recharge Master Plan, if any, will be financed through the use of third party grants and contributions if available, with any unfunded balance being apportioned 50 percent each to IEUA and Watermaster. The Watermaster contribution shall be allocated according to shares of Operating Safe Yield. All remaining unfunded costs attributable to the facilities used by Watermaster will be paid by Watermaster.

8.2 Coordination. The members of the Appropriative Pool will coordinate the development of their respective Urban Water Management Plans and Water Supply Master Plans with Watermaster as follows.

(a) Each Appropriator that prepares an Urban Water Management Plan and Water Supply Plans will provide Watermaster with copies of their existing and proposed plans.

(b) Watermaster will use the Plans in evaluating the adequacy of the Recharge Master Plan and other OBMP Implementation Plan program elements.

(c) Each Appropriator will provide Watermaster with a draft in advance of adopting any proposed changes to their Urban Water Management Plans and in advance of adopting any material changes to their Water Supply Master Plans respectively in accordance with the customary notification routinely provided to other third parties to offer Watermaster a reasonable opportunity to provide informal input and informal comment on the proposed changes.

(d) Any party that experiences the loss or the imminent threatened loss of a material water supply source will provide reasonable notice to Watermaster of the condition and the expected impact, if any, on the projected groundwater use.

8.3 Continuing Covenant. To ameliorate any long-term risks attributable to reliance upon un-replenished groundwater production by the Desalters, the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft as a component of the Physical Solution, is expressly subject to Watermaster making an annual finding about whether it is in substantial compliance with the revised Watermaster Recharge Master Plan pursuant to Paragraphs 7.3 and 8.1 above.

8.4 Acknowledgment re 6,500 Acre-Foot Supplemental Recharge. The Parties make the following acknowledgments regarding the 6,500 Acre-Foot Supplemental Recharge:

(a) A fundamental premise of the Physical Solution is that all water users dependent upon Chino Basin will be allowed to pump sufficient waters from the Basin to meet their requirements. To promote the goal of equal access to groundwater within all areas and sub-areas of the Chino Basin, Watermaster has committed to use its best efforts to direct recharge relative to production in each area and sub-area of the Basin and to achieve long-term balance between total recharge and discharge. The Parties acknowledge that to assist Watermaster in providing for recharge, the Peace Agreement sets forth a requirement for Appropriative Pool purchase of 6,500 acre-feet per year of Supplemental Water for recharge in Management Zone 1 (MZ1). The purchases have been credited as an addition to Appropriative Pool storage accounts. The water recharged under this program has not been accounted for as Replenishment water.

(b) Watermaster was required to evaluate the continuance of this requirement in 2005 by taking into account provisions of the Judgment, Peace Agreement and OBMP, among all other relevant factors. It has been determined that other obligations in the Judgment and Peace Agreement, including the requirement of hydrologic balance and projected replenishment obligations, will provide for sufficient wet-water recharge to make the separate commitment of Appropriative Pool purchase of 6,500 acre-feet unnecessary. Therefore, because the recharge target as described in the Peace Agreement has been achieved, further purchases under the program will cease and Watermaster will proceed with operations in accordance with the provisions of paragraphs (c), (d) and (e) below.

(c) The parties acknowledge that, regardless of Replenishment obligations, Watermaster will independently determine whether to require wet-water recharge within MZ1 to maintain hydrologic balance and to provide equal access to groundwater in accordance with the provisions of this Section 8.4 and in a manner consistent with the Peace Agreement, OBMP and the Long Term Plan for Subsidence.". Watermaster will conduct its recharge in a manner to provide hydrologic balance within, and will emphasize recharge in MZ1. Accordingly, the Parties acknowledge and agree that each year Watermaster shall continue to be guided in the exercise of its discretion concerning recharge by the principles of hydrologic balance.

(d) Consistent with its overall obligations to manage the Chino Basin to ensure hydrologic balance within each management zone, for the duration of the Peace Agreement (until June of 2030), Watermaster will ensure that a minimum of 6,500 acre-feet of wet water recharge occurs within MZ1 on an annual basis. However, to the extent that water is unavailable for recharge or there is no replenishment obligation in any year, the obligation to recharge 6,500 acre-feet will accrue and be satisfied in subsequent years.

(1) Watermaster will implement this measure in a coordinated manner so as to

facilitate compliance with other agreements among the parties, including but not limited to the Dry-Year Yield Agreements.

(2) In preparation of the Recharge Master Plan, Watermaster will consider whether existing groundwater production facilities owned or controlled by producers within MZ1 may be used in connection with an aquifer storage and recovery ("ASR") project so as to further enhance recharge in specific locations and to otherwise meet the objectives of the Recharge Master Plan.

(e) Five years from the effective date of the Peace II Measures, Watermaster will cause an evaluation of the minimum recharge quantity for MZ1. After consideration of the information developed in accordance with the studies conducted pursuant to paragraph 3 below, the observed experiences in complying with the Dry Year Yield Agreements as well as any other pertinent information, Watermaster may increase the minimum requirement for MZ1 to quantities greater than 6,500 acre-feet per year. In no circumstance will the commitment to recharge 6,500 acre-feet be reduced for the duration of the Peace Agreement.

ARTICLE IX

9.1 Basin Management Assistance. Three Valleys Municipal Water District ("TVMWD") shall assist in the management of the Basin through a financial contribution of $300,000 to study the feasibility of developing a water supply program within Management Zone 1 of the Basin or in connection with the evaluation of Future Desalters. The study will emphasize assisting Watermaster in meeting its OBMP Implementation Plan objectives of concurrently securing Hydraulic Control through Re-Operation while attaining Management Zone 1 subsidence management goals. Further, TVMWD has expressed an interest in participating in future projects in the Basin that benefit TVMWD. If TVMWD wishes to construct or participate in such future projects, TVMWD shall negotiate with Watermaster in good faith concerning a possible "buy-in" payment.

9.2 Allocation of Non-Agricultural Pool OBMP Special Assessment

a. For a period of ten years from the effective date of the Peace II Measures, any water (or financial equivalent) that may be contributed from the Overlying (Non-Agricultural) Pool in accordance with paragraph 8(c) of Exhibit G to the Judgment (as amended) will be apportioned among the members of the Appropriative Pool in each year as follows:

(i)	City of Ontario.	80 af
(ii)	City of Upland	161 af
(iii)	Monte Vista Water District	213 af
(iv)	City of Pomona	220 af
(v)	Marygold Mutual Water Co	16 af
(vi)	West Valley Water District	15 af

EXHIBIT B

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

STAFF REPORT

DATE: November 17, 2022

TO: Advisory Committee and Board Members

SUBJECT: Fiscal Year 2022/23 Annual Finding of Substantial Compliance with the Recharge Master Plan (Consent Calendar Item I.C.)

SUMMARY:

Issue: The Finding is required on an annual basis according to Section 8.3 of the Peace II Agreement. [Normal Course of Business]

Recommendation:
Advisory Committee: Recommend to the Watermaster Board to adopt the finding that Watermaster is in substantial compliance with the Recharge Master Plan.

Board Members: Adopt the finding that Watermaster is in substantial compliance with the Recharge Master Plan.

Financial Impact: There is no financial impact associated with this action.

Future Consideration
Advisory Committee – November 17, 2022: Advice and Assistance
Watermaster Board – November 17, 2022: Adoption

ACTIONS:
Appropriative Pool – November 10, 2022: Unanimously recommended Advisory to recommend Board adoption.
Non-Agricultural Pool – November 10, 2022: Unanimously recommended their representatives to support at Advisory Committee and Board meetings subject to any changes they deem necessary.
Agricultural Pool – November 10, 2022: Unanimously recommended Advisory Committee to recommend Board adoption.
Advisory Committee – November 17, 2022:
Watermaster Board – November 17, 2022:

BACKGROUND

During the period of 2008-2010, Watermaster, in collaboration with the Inland Empire Utilities Agency (IEUA) and Chino Basin Water Conservation District (CBWCD), completed the 2010 Recharge Master Plan Update (RMPU). The RMPU was submitted to the Court in June 2010, and the Court subsequently approved the 2010 RMPU in October 2010. Watermaster has completed the amendment of the 2010 RMPU, pursuant to the Court's order, which the Board adopted in September 2013. The IEUA and Watermaster completed the most recent version of the RMPU in 2018 and will complete the next update before the end of 2023.

Pursuant to Section 8.3 of the Peace II Agreement, Watermaster is obligated to make an annual finding that it is in substantial compliance with the 2018 Recharge Master Plan. This requirement exists to ameliorate any long-term risk attributable to reliance upon un-replenished groundwater production by the Desalters and is a condition on the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft (Re-Operation). Recently, pursuant to Section 6.2(b) of the Peace Agreement, as the amendment is shown in the March 15, 2019 Court Order, the Desalter Replenishment Obligation is now being replenished by the Appropriative Pool through wet or stored water. West Yost (WY) has prepared the attached opinion regarding the adequacy of replenishment capacity, which includes the information that Watermaster needs to make this finding for Fiscal Year 2022-2023.

DISCUSSION

The analysis performed by WY finds that current projections indicate that Watermaster has sufficient recharge capacity to meet the future replenishment obligations based on the knowledge of the basin's conditions in FY 2022-23 and future water management projections provided by the Watermaster Stakeholders. Current analysis indicates that even if Re-Operation were terminated at any time through 2030, Watermaster would be able to immediately increase its replenishment activity and replenish any overproduction in the Basin as required by the Judgment.

The item was presented to the three Pool Committees on November 10, 2022 where it unanimously recommended the Advisory Committee to recommend Board adoption.

ATTACHMENTS

1. October 31, 2022 Letter from West Yost to Watermaster: *Annual Finding of Substantial Compliance with the Watermaster Recharge Master Plan – Fiscal Year 2022-23*

WEST YOST
Water. Engineered.

23692 Birtcher Drive
Lake Forest CA 92630

949.420.3030 phone
530.756.5991 fax
westyost.com

October 31, 2022

Project No.: 941-80-21-45
SENT VIA: EMAIL

Mr. Peter Kavounas
General Manager
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

SUBJECT: Annual Finding of Substantial Compliance with the Recharge Master Plan – Fiscal Year 2022-23

Mr. Kavounas:

At your direction and pursuant to the Peace II Agreement, West Yost has prepared this opinion regarding the adequacy of replenishment capacity in the Chino Basin to support an annual finding of substantial compliance with the Chino Basin Watermaster (Watermaster) Recharge Master Plan (RMP).

In part, Section 7.3 of the Peace II Agreement reads:

> *Re-Operation and Watermaster's apportionment of controlled overdraft will not be suspended in the event that Hydraulic Control is achieved in any year before the full 400,000 acre-feet has been produced so long as: […] Watermaster is in substantial compliance with a Court approved Recharge Master Plan as set forth in Paragraph 8.1 below.*

Review of Section 8.1 of the Peace II Agreement indicates that this compliance relates to the implementation of plans to ensure that Watermaster has enough supplemental water recharge capacity to meet its replenishment obligation after re-operation water is completely exhausted. Section 8.3 of the Peace II Agreement states:

> *To ameliorate any long-term risks attributable to reliance upon un-replenished groundwater production by the Desalters, the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft as a component of the Physical Solution, is expressly subject to Watermaster making an annual finding about whether it is in substantial compliance with the revised Watermaster Recharge Master Plan pursuant to Paragraphs 7.3 and 8.1 above.*

Pursuant to the Peace II Agreement, following the completion of the 2010 Recharge Master Plan Update (RMPU), Watermaster is obligated to make an annual finding that there is enough supplemental water recharge capacity to meet projected replenishment obligations.

This letter report includes the information required by Watermaster to determine if there is enough supplemental water recharge capacity to meet its projected replenishment obligations.

METHODOLOGY

The methodology used to determine if sufficient supplemental wet-water recharge capacity is available to meet projected replenishment obligations is to compare projected replenishment obligations to available supplemental wet-water recharge capacity over the period 2021 through 2050. Supplemental wet-water recharge capacity includes the capacity of spreading basins available for supplemental water recharge and the capacity to inject supplemental water at aquifer storage and recovery (ASR) wells. Figure 1 shows the locations of spreading basins and ASR wells in the Chino Basin. The supplemental water recharge capacity in the Chino Basin is listed in Table 1 by the type of recharge facility. [1,2]

Table 1. Supplemental wet-water recharge capacity in the Chino Basin

Recharge Facility	Recharge Capacity acre-feet per year (afy)
Spreading basins[3]	56,600
ASR wells	5,480
Total	**61,480**

The most recent projections of replenishment obligations were developed in 2022 as part of the *2021 Data Collection and Evaluation* effort for the period of 2022 through 2050. These replenishment obligation projections are based on the Watermaster Parties' (Parties) best estimates of how future water supplies will be used to meet their water demands.

The most recent estimates of supplemental water recharge capacity were developed in 2018 as part of the 2018 RMPU. These estimates will be reviewed and updated as needed in the 2023 RMPU. As of this writing, the supplemental water recharge capacity in the Chino Basin is assumed to be constant through 2050.

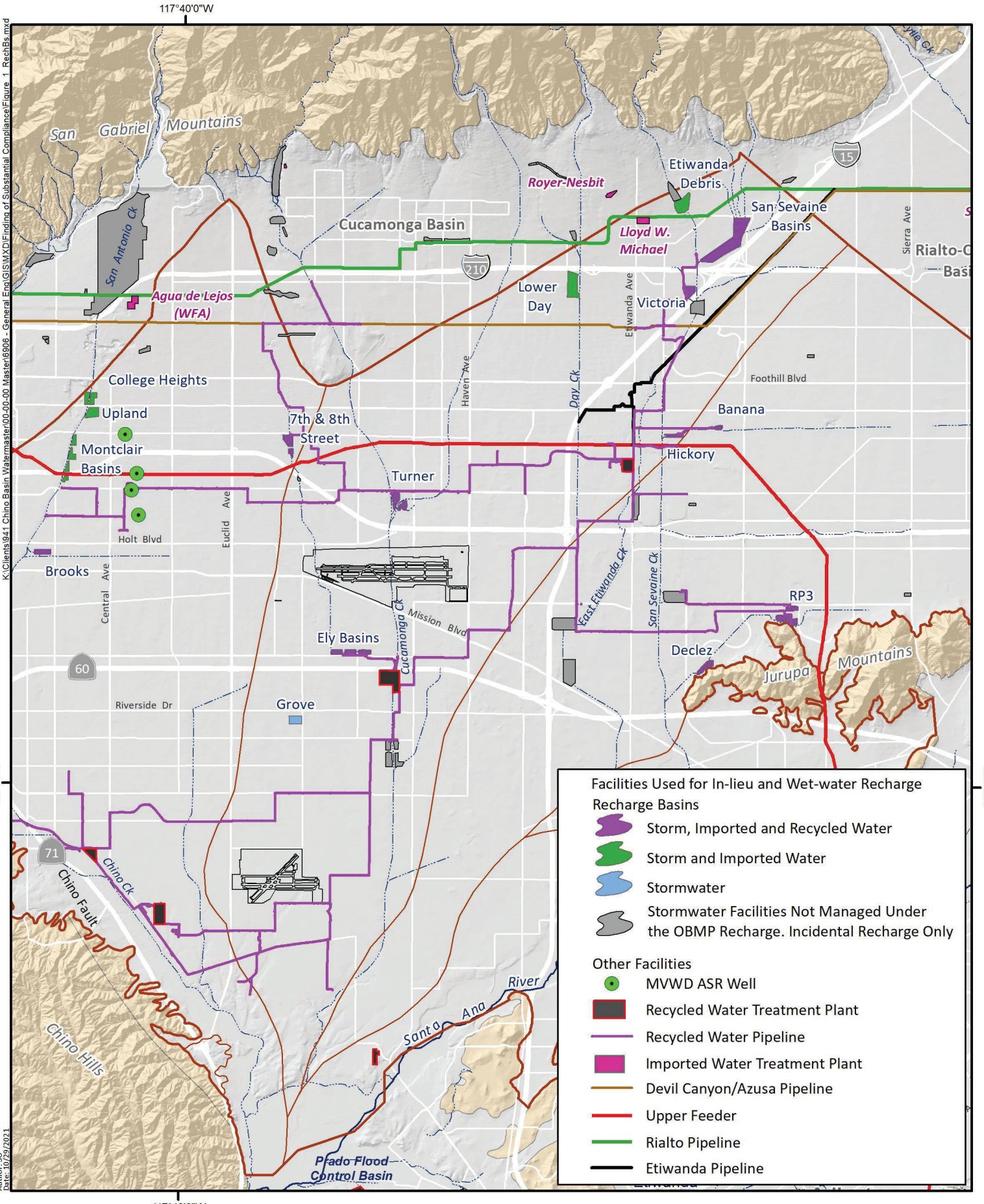
This analysis also considers the potential for certain conditions to impact Watermaster's ability to meet its replenishment obligations, including:

- Reduced availability of imported water
- Suspension of Basin Reoperation
- Contractual requirements of the Dry-Year Yield Program

[1] WEI. (2018). *2018 Recharge Master Plan Update*. October 2018. http://www.cbwm.org/docs/engdocs/2018%20RMPU/20180914_2018_RMPU_final.pdf

[2] For additional technical documentation on the development of wet-water recharge capacity estimates, refer to Section 4 of the *2018 Recharge Master Plan Update*.

[3] This estimate takes into consideration the use of spreading basins for stormwater recharge (*i.e.*, excludes the recharge capacity used for stormwater recharge).



Prepared by:
WEST YOST
Water. Engineered.

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Chino Basin Watermaster
Annual Finding of Substantial Compliance
with the Recharge Master Plan

Groundwater Recharge in the Chino Basin

Figure 1

RESULTS

Table 2 shows the supplemental wet-water recharge capacity [Column *(b)*] and the projected annual replenishment obligation from 2022 to 2050 [Column *(c)*].[4] Comparing Columns *(b)* and *(c)* in Table 2 indicates there is sufficient supplemental wet-water recharge capacity (61,480 afy) to meet the projected wet-water replenishment obligations (up to 2,800 afy).

Analysis Under a Worst-Case Scenario

The worst-case scenario analysis considers the potential for certain conditions that may impact Watermaster's ability to meet its replenishment obligations, including:

- Reduced availability of imported water
- Suspension of Basin Reoperation
- Contractual requirements of the Dry-Year Yield Program

Reduced Availability of Imported Water

The Metropolitan Water District of Southern California (Metropolitan) provides imported water to the Chino Basin area through the Inland Empire Utilities Agency (IEUA). The imported water supplies are not guaranteed to Watermaster because during periods of shortages (when Metropolitan's demands exceed available supplies) Metropolitan may not deliver imported water to the Chino Basin for replenishment. In January 2016, Metropolitan completed its 2015 Integrated Resources Plan (IRP) Update.[5] Metropolitan reported that if its IRP is fully implemented, shortages in Metropolitan supplies will occur approximately 9 percent of the time under 2020 conditions, 4 percent of the time under 2025 conditions, and 0 percent under 2030 conditions. However, as Metropolitan implements the 2015 IRP, modifications to the proposed projects in the IRP may cause additional shortages than previously projected. For instance, in 2019, one of the main projects recommended in the 2015 IRP – the California WaterFix tunnel project (now called the Delta Conveyance Project) – was downsized. As of this writing, construction of this project is not certain. If Metropolitan does not fully implement its 2015 IRP, shortages in Metropolitan supplies are projected to occur about 12 percent of the time under 2020 conditions and up to 80 percent under 2040 conditions.[6]

To be conservative, uncertainty in imported water availability as analyzed by Metropolitan was accounted for in this analysis by assuming that under the 2015 IRP projections, Watermaster will only be able to purchase water imported water for replenishment purposes in one out of every five years (*i.e.,* shortages will occur 80 percent of the time).

---

[4] The 2020 SYR assumes 80 percent of a replenishment obligation is satisfied from storage and 20 percent is satisfied by wet-water recharge via spreading and injection (see Table 7-3 of the 2020 SYR).

[5] Metropolitan Water District of Southern California (2016). Integrated Water Resources Plan: 2015 Update. Report No. 1518. http://www.mwdh2o.com/

[6] These projections were updated as part of the 2020 IRP Update to evaluate four scenarios. Under the worst-case scenario, water shortages are expected to occur7 percent of the time in 2025 and 29 percent of the time in 2045. For more detail, see: Metropolitan Water District of Southern California (2021). Refined Water Supply and Demand Gap Analysis. https://www.mwdh2o.com/media/21085/06222021-irp-6a-presentation.pdf However, the 2015 estimates were used as a worst-case scenario.

Table 2. Supplemental Wet-Water Recharge Capacity, Projected Replenishment Obligation, and Recharge Capacity Required to Meet Replenishment Obligations Under Cumulative Adverse Conditions

FY 2020-2050; acre-feet per year

Fiscal Year (a)	Supplemental wet-water recharge capacity (b)	Projected annual replenishment obligation assumed to be satisfied by wet-water recharge (c)	Recharge capacity required to meet replenishment obligation under cumulative adverse conditions			Excess supplemental wet-water recharge capacity under worst-case scenario (g) = (f) - (b)
			If imported water is available one out of five years (d)	If reoperation were discontinued (e) = (d) + reoperation offset	If DYYP recharge occurs on the same year (f) = (e) + 25,000	
2022		0				
2023		0				
2024		0				
2025		0				
2026		0	0	7,371	32,371	29,109
2027		451				
2028		927				
2029		1,403				
2030		1,880				
2031		1,260	5,922	25,922	50,922	10,558
2032		1,083				
2033		906				
2034		728				
2035		551				
2036	61,480	1,002	4,270	4,270	29,270	32,210
2037		1,453				
2038		1,904				
2039		2,354				
2040		2,805				
2041		1,992	10,508	10,508	35,508	25,972
2042		1,992				
2043		1,992				
2044		1,992				
2045		1,992				
2046		1,992	9,959	9,959	34,959	26,521
2047		1,992				
2048		1,992				
2049		1,992				
2050		1,992				

Suspension of Basin Reoperation

The annual maximum amount of Basin Reoperation water used to meet the replenishment obligation of the Desalters is 12,500 afy through 2030. If Basin Reoperation was discontinued at any time through 2030, the annual maximum replenishment obligation could increase. Table 2 [Column *(e)*] shows the projected recharge capacity required to meet replenishment obligations if Basin Reoperation were discontinued at any point before 2030.

Contractual Requirements of the Dry-Year Yield Program

The IEUA and Watermaster have a contractual requirement with Metropolitan to recharge up to 25,000 afy under the Dry-Year Yield Program (DYYP). The DYYP contract terminates in 2028. Table 2 [Column *(f)*] shows the projected recharge capacity required to meet replenishment obligations and to recharge 25,000 afy for DYYP, assuming DYYP continues after 2028.

Worst-Case Scenario Results

Comparing Columns *(b)* and *(f)* in Table 2 indicates there is sufficient supplemental wet-water recharge capacity (61,480 afy) to meet the maximum projected wet-water replenishment obligation and recharge up to 25,000 afy under the worst-case scenario (up to 50,922 afy).

Other Recharge and Excess Capacity

Some Parties want to utilize wet-water recharge capacity to store supplemental water in the Chino Basin. Table 2 [Column *(g)*] shows the excess supplemental wet-water recharge capacity under the worst-case scenario (*i.e.,* reduced imported water availability, suspension of Basin Reoperation, and DYYP recharge). The minimum excess supplemental wet-water recharge capacity under the worst-case scenario from 2022 to 2050 is projected to be about 10,600 afy. Therefore, this analysis indicates that at least 10,600 afy of wet-water recharge capacity will be available for the Parties to recharge and store supplemental water in the Chino Basin through 2050.

CONCLUSIONS

Watermaster's ability to recharge the Chino Basin with supplemental water is sufficient to meet its projected replenishment obligations, even under conditions of reduced availability of imported water, increased replenishment obligations (*i.e.,* suspension of Basin Reoperation), and/or decreased recharge capacity (*i.e.,* the need to recharge for the DYYP). Additionally, Watermaster can purchase imported surface water when it is available for use in-lieu of groundwater (in-lieu recharge). There is about 17,700 afy of in-lieu recharge capacity available that can be used to meet future replenishment obligations.

Please contact Carolina Sanchez if you have any questions or concerns regarding this opinion.

Sincerely,
WEST YOST

Carolina Sanchez

Carolina Sanchez, PE
Senior Engineer
RCE #85598

EXHIBIT C

2023 Recharge Master Plan Update

PREPARED FOR

Chino Basin Watermaster

PREPARED BY

2023 Recharge Master Plan Update

Prepared for

Chino Basin Watermaster

Project No. 941-80-22-11

Project Manager: Carolina Sanchez, PE	09/22/23 Date
QA/QC Review: Andy Malone, PG	09/22/23 Date

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LIST OF ACRONYMS AND ABBREVIATIONS

af	Acre-Feet
afy	Acre-Feet Per Year
AMP	Asset Management Plan
BASIN	Chino Basin
CBFIP	Chino Basin Facilities Improvement Program
CBWCD	Chino Basin Conservation District
CDA	Chino Basin Desalter Authority
CIM	California Institution for Men
DCE	Data Collection and Evaluation
DCV	Design Capture Volume
DWR	Department of Water Resources
ET	Evapotranspiration
FWC	Fontana Water Company
GLMC	Ground Level Monitoring Committee
JCSD	Jurupa Community Service District
Judgement	Stipulated Judgment
Metropolitan	Metropolitan Water District of Southern California
mgd	Million Gallons Per Day
MVWD	Monte Vista Water District
O&M	Operation and Maintenance
OBMP	Optimum Basin Management Program
Parties	Chino Basin Parties
R&R	Renewal and Replacement
Regional Board	Santa Ana Regional Water Quality Control Board
RMP	Recharge Master Plan
RMPU	Recharge Master Plan Update
RTS	Readiness To Serve
RUL	Remaining Useful Life
SBCFCD	San Bernadino County Flood Control District
SMP	Subsidence Management Plan
SRF	State Revolving Fund
SWP	State Water Project
SWRCB	State Water Resources Control Board
SYR	Safe Yield Recalculation
TAF	Thousand Acre Feet
TDS	Total Dissolved Solids
TVMWD	Three Valley's Municipal Water District
UL	Useful Life
USACE	US Army Corps of Engineers
WEI	Wildermuth Environmental, Inc.
WFA	Water Facilities Authority

CHAPTER 1
Introduction

This chapter describes the background of the recharge master plan (RMP) process and the objectives and requirements of the Recharge Master Plan Update (RMPU). It also provides the report organization that will satisfy the requirements.

1.1 BACKGROUND

Figure 1-1 is a location map of the Chino Basin (Basin). The Basin lies within the counties of Los Angeles, San Bernadino, and Riverside; includes the cities of Chino, Chino Hills, Eastvale, Fontana, Ontario, Pomona, Rancho Cucamonga, Upland, and several other communities; and covers about 235 square miles.

The Basin is an integral part of the regional and statewide water supply system and is one of the largest groundwater basins in Southern California, containing about 12 million acre-feet (af) of water in storage and an unused storage capacity of over 1,000,000 af. Multiple cities and other water-supply entities pump groundwater from the Basin to satisfy all or part of their municipal and industrial demands. Agricultural users also pump groundwater from the Basin.

Production and storage rights in the Basin are defined in the Stipulated Judgment[1] (Judgment), issued in 1978 (Chino Basin Municipal Water District vs. the City of Chino et al. [SBSC Case No. RCV RS51010]). Since that time, the Basin has been sustainably managed as required by the Judgment under the direction of a Court-appointed Watermaster. The Judgment declares that the Safe Yield[2] of the Chino Basin is 140,000 acre-feet per year (afy[3]), which is allocated among three pools of right holders as follows:

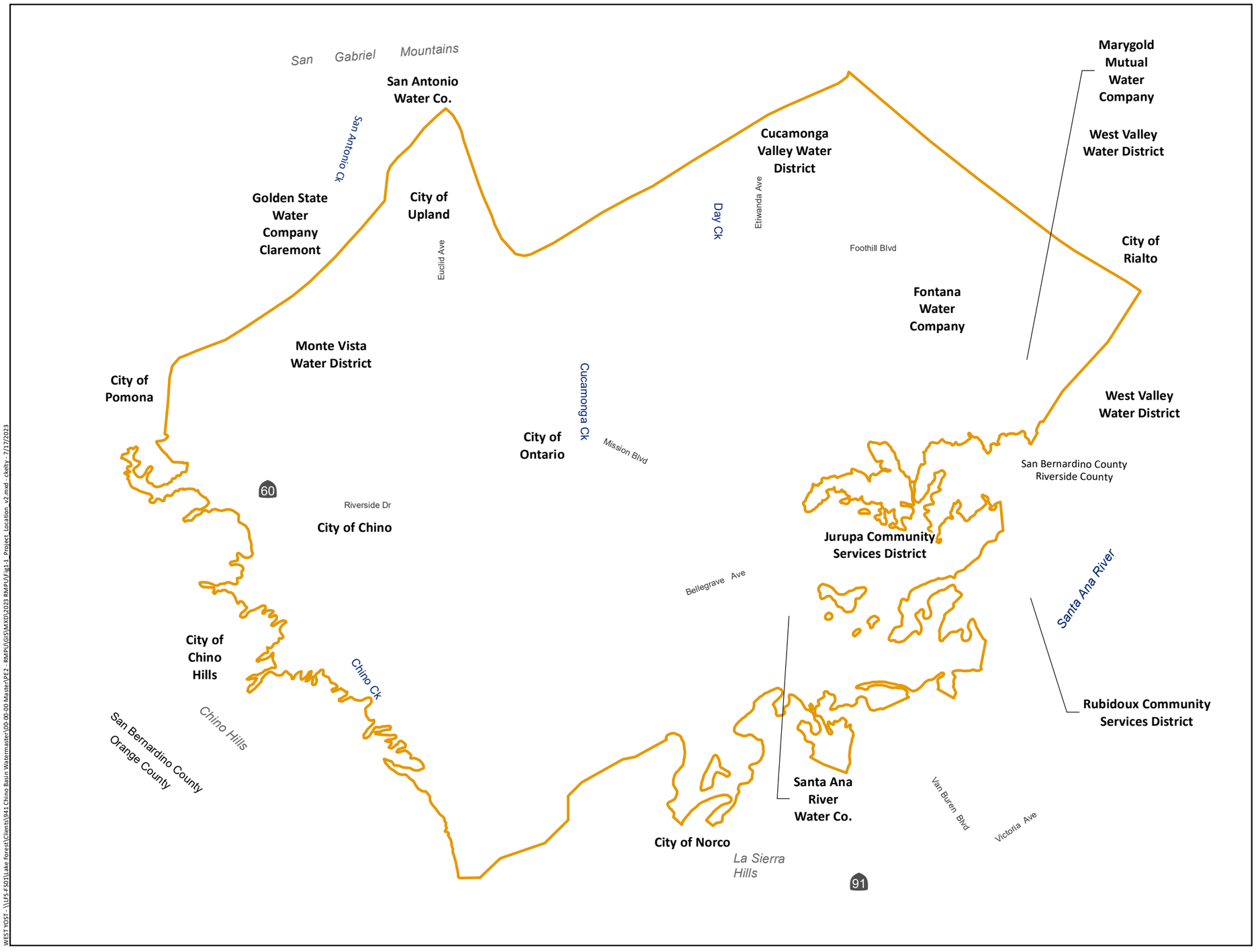
Overlying agricultural pool	82,800 afy
Overlying non-agricultural pool	7,366 afy
Appropriative pool	49,834 afy

A fundamental premise of the Judgment is that all 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. The Judgment also recognizes that there exists a substantial amount of available unused groundwater storage capacity in the Basin that can be utilized for storage and the conjunctive use of supplemental and local waters. Utilization of this storage is subject to Watermaster control and regulation. The Judgment provides that any person or public entity, whether a party to the Judgment or not, 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.

[1] Original judgement in Chino Basin Municipal Water District vs. City of Chino, et al., signed by Judge Howard B. Weiner, Case No. 164327. File transferred August 1989, by order of the Court and assigned new case number RCV51010. The restated Judgement can be found here.

[2] "Safe Yield" is a defined term in the Judgment.

[3] The Safe Yield was recalculated in 2020 to be 131,000 afy for the period of 2021 through 2030.



Service Area Boundaries of Major Water Purveyors (Various Colors)

Chino Basin Hydrologic Boundary

Rivers and Streams

WEST YOST - \\LF5-FSO1\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig1-1_Project_Location_v2.mxd - ckelly - 7/17/2023

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Location of the Chino Basin

Figure 1-1

1.1.1 Optimum Basin Management Program

The Judgment gave Watermaster the authority to develop an optimum basin management program (OBMP) for the Basin, including both water quantity and quality considerations. Watermaster, with direction from the Court, began the development of the OBMP in 1998 and completed it in July 2000 (2000 OBMP). The 2000 OBMP was developed in a public collaborative process, consisting of the development of a set of management goals, the identification of impediments to those goals, and the identification of a series of actions that could be taken to remove the impediments and achieve the management goals. The goals of the 2000 OBMP include:

1. Enhance Basin Water Supplies
2. Protect and Enhance Water Quality
3. Enhance Management of the Basin
4. Equitably Finance the OBMP

The 2000 OBMP consists of nine program elements or initiatives that contain actions that remove the impediments to the goals and enable their achievement. These include:

- Program Element 1 – Develop and Implement Comprehensive Monitoring Program
- Program Element 2 – Develop and Implement Comprehensive Recharge Program
- Program Element 3 – Develop and Implement Water Supply Plan for the Impaired Areas of the Basin
- Program Element 4 – Develop and Implement Comprehensive Groundwater Management Plan for Management Zone 1
- Program Element 5 – Develop and Implement Regional Supplemental Water Program
- Program Element 6 – Develop and Implement Cooperative Programs with the Regional Water Quality Control Board, Santa Ana Region (Regional Board) and Other Agencies to Improve Basin Management
- Program Element 7 – Develop and Implement Salt Management Program
- Program Element 8 – Develop and Implement Groundwater Storage Management Program
- Program Element 9 – Develop and Implement Conjunctive-Use Programs

The Court approved the 2000 OBMP and its implementation agreement, hereafter the Peace Agreement,[4] in October 2000. Each program element contains an implementation plan and schedule. The implementation plan and schedule are included in both the 2000 OBMP report (Wildermuth Environmental, Inc. [WEI], 1999) and the Peace Agreement. The 2000 OBMP implementation plan was updated in 2007 and implemented through the Peace II Agreement. The parties to the Peace Agreement and the Peace II Agreement were bound to implement them and have done so under Court supervision.

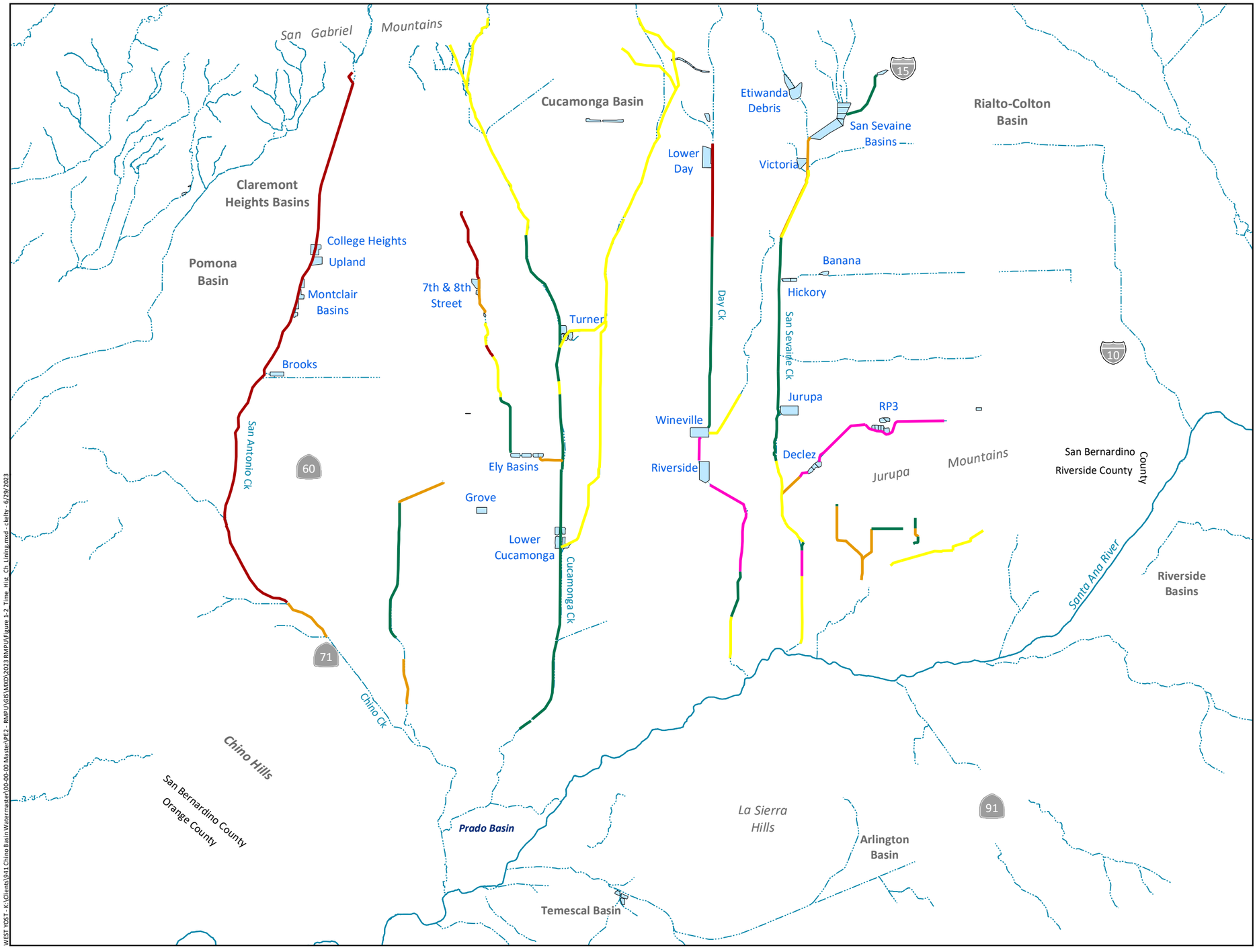
The OBMP was updated in 2020 (2020 OBMPU) which retained the same goals and program elements as the 2000 OBMP. However, the implementation plan for the 2020 OBMPU has not been developed.

[4] The Peace Agreement is located here: http://www.cbwm.org/docs/legaldocs/Peace_Agreement.pdf

1.1.2 Recharge Planning

The IEUA, Watermaster, and many other stakeholders have collaborated to implement the OBMP program elements. *Program Element 2 – Develop and Implement Comprehensive Recharge Program* is fundamental to achieving the first two OBMP goals (1—Enhance Basin Water Supplies and 2—Protect and Enhance Water Quality). Prior to the OBMP, in response to rapid urbanization, the San Bernardino County Flood Control District (SBCFCD) and the US Army Corps of Engineers (USACE) constructed flood control projects that efficiently capture and convey stormwater to the Santa Ana River to reduce potential flooding, effectively eliminating the groundwater recharge that formerly took place in the stream channels and flood plains that cross the Basin. These flood control projects consisted of concrete lining of major drainages across the Basin and the construction of retention basins to temporarily store stormwater and release it in 24 hours or less. Some provisions were made to mitigate the loss of recharge from these flood control projects at that time, but these provisions failed to achieve the groundwater recharge that took place prior to the construction of these flood control projects. Figure 1-2 shows the locations of the major channels that cross the Chino Basin from the San Gabriel Mountains to the Santa Ana River and the time history of their concrete lining. Figure 1-3 shows the time history of stormwater recharge in the channels. The loss in recharge to the Basin due to the construction of the concrete-lined channels is estimated to be about 15,000 afy. Also, there were no mitigation efforts to preserve recharge when land uses were converted from native and agricultural uses (which are highly pervious) to urban uses (which are highly impervious). Concrete lining of the channels and the changes in land uses resulted in a decline in recharge to the Basin, and hence, a decline in the yield of the Basin. Program Element 2 was developed to reverse the loss in recharge and Basin yield.

Capturing and recharging stormwater and dry-weather runoff improves water quality in the Santa Ana River by reducing contributions of metals, nutrients, pathogens, and other constituents of concern, which is a regional benefit to other Santa Ana River Watershed parties and habitat. These contaminants are eliminated during recharge through soil-aquifer treatment processes and thus are not a concern for groundwater-quality degradation. In fact, the total dissolved solids (TDS) and nitrogen concentrations in stormwater recharge are very low, and hence, increasing stormwater recharge lowers the TDS and nitrate concentrations in groundwater.



Time Periods in Which Channel Segments Were Lined

- 1950 - 1959
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999

Groundwater Management Zone (GMZ)

- Chino Basin

Hydrology

- Streams and Flood Control Channels
- Lakes and Flood Control Basins

Geology

Water-Bearing Sediments

- Quaternary Alluvium

Consolidated Bedrock

- Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

Prepared by:

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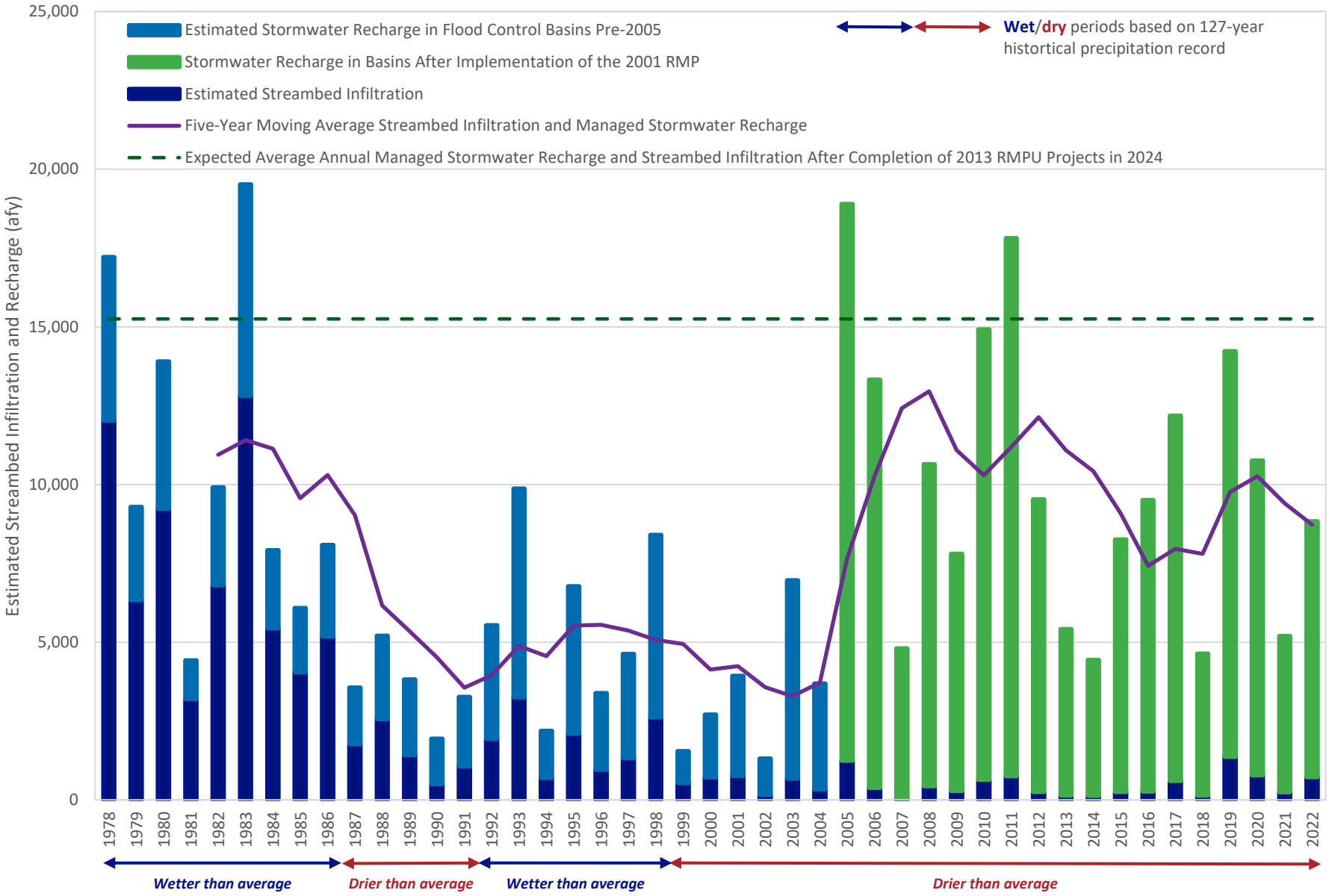
Time History of Channel Lining in the Chino Basin

Figure 1-2

Figure 1-3. Streambed Infiltration and Managed Recharge of Stormwater in the Chino Basin, 1978-2022



1.1.3 Recharge Master Plan Activities and Project Implementation

Watermaster, IEUA, Chino Basin Conservation District (CBWCD), and SBCFCD are partners in conducting recharge in the Chino Basin. The four agencies have an agreement to implement the existing recharge program.[5] Watermaster, IEUA, CBWCD, and SBCFCD completed a recharge master plan in 2001 (2001 RMP) and began its implementation in 2001 with construction occurring between 2004 and 2014. As a result, seventeen existing flood-retention facilities were modified to increase diversion rates, increase conservation storage, and subsequently increase the recharge of stormwater and dry-weather runoff. Two new recharge facilities were also constructed as part of these efforts. Figure 1-4 shows these facilities. Watermaster has permits from the State Water Resources Control Board (SWRCB) to divert surface water to the recharge facilities shown in Figure 1-4, store the recharged water in the Chino Basin, and subsequently recover it for beneficial use.[6] Watermaster holds these permits in trust for all entities that rely on groundwater from the Chino Basin.

The cost of the 2001 RMP recharge improvements was about $60 million, of which about half was grant funded and half was paid by Watermaster and IEUA. Based on monitoring recharge performance and numerical model investigations, the aggregate average annual stormwater and dry-weather runoff recharge due to the implementation of the 2001 RMP is estimated to be about 9,500 afy.

Watermaster, IEUA, CBWCD, and SBCFCD collaborated to develop the 2010 Recharge Master Plan Update and amended it in 2013. The 2010 Recharge Master Plan Update and its 2013 amendment (hereafter, collectively called the 2013 RMPU) were developed in a public, transparent process. The 2013 RMPU contains two types of recharge projects: yield-enhancement and production-sustainability projects. A steering committee was created to assist Watermaster and IEUA in preparing the 2013 RMPU. The steering committee issued a "call for projects" to all entities with an interest in stormwater and dry-weather runoff management and groundwater management in the Basin. The steering committee developed screening criteria to evaluate and rank the recharge projects. In total, 39 yield enhancement projects and nine production sustainability projects were identified and evaluated by the steering committee to determine average annual stormwater recharge and recycled water recharge capacities. The steering committee meetings were open to all stakeholders with an interest in stormwater and dry-weather runoff management and groundwater management in the Chino Basin.

The 2013 RMPU was completed pursuant to a Court order in September 2013 (WEI, 2013), filed with the Court in November 2013, and subsequently approved by the Court in its entirety in April 2014. The 2013 RMPU contains recommendations to construct ten new recharge facilities and an implementation plan to plan, design, and construct them. Table 1-1 lists the 2013 RMPU projects that were recommended for implementation, and Figure 1-4 shows their locations. Since the completion of the 2013 RMPU, the IEUA and Watermaster have executed Task Orders to plan, design, and construct the recommended

[5] Agreement for Operation and Maintenance of Facilities to Implement the Chino Basin Recharge Master Plan. The effective dates of the agreement are from January 23, 2003 to December 31, 2032.

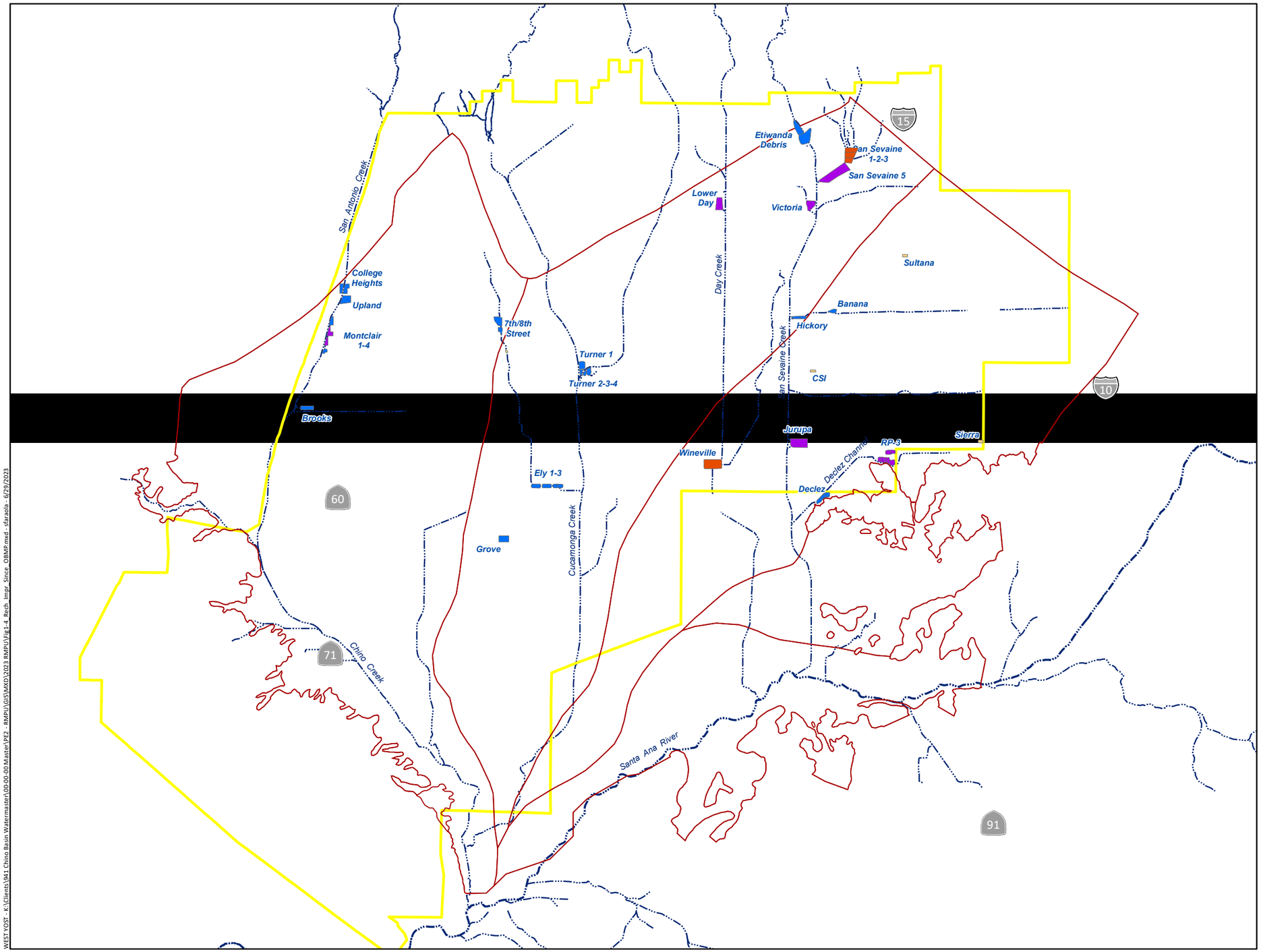
[6] Watermaster holds three permits with the SWRCB for the diversion and recharge of stormwater in trust for the Parties. The SBCFCD is a co-permittee for two of these permits, 19895 and 20753. Each permit defines a maximum diversion limit and the period over which diversions are allowed to occur each year (diversion season): (1) Permit 19895 has a diversion limit of 15,000 acre-feet (af) from November 1 to April 30, (2) Permit 20753 has a diversion limit of 27,000 af from October 1 to May 1, and (3) Permit 21225 has a diversion limit of 68,500 af from January 1 to December 31.

facilities. During planning and preliminary design, the recommended 2013 RMPU projects were substantially refined. Half of the projects were found infeasible and were subsequently not implemented. Table 1-1 lists the 2013 RMPU projects that will be constructed and their expected annual stormwater recharge and supplemental water recharge capacity. With completion of the 2013 RMPU projects, stormwater recharge is projected to increase by 4,800 afy, and recycled water recharge capacity is projected to increase by 7,100 afy. The IEUA has applied for and been awarded grants and low-interest State Revolving Fund (SRF) loans to pay for some of the construction costs. As of this writing (summer 2023), three of the five 2013 RMPU projects have been constructed: Lower Day Basin, Victoria Basin, and San Sevaine Basin improvements. The Wineville/Jurupa/RP3 project is expected to be completed at the end of 2023 and the Montclair Basin project is expected to begin construction in 2024 with an estimated completion in 2024. The construction cost of the 2013 RMPU projects, after savings from grants acquired by IEUA, is expected to be about $30 million, and the expected unit cost of the new stormwater recharge is about $400 per af.[7] For comparison, the cost to purchase untreated State Water Project (SWP) water from the Metropolitan Water District of Southern California (Metropolitan) in 2023 is about $855 per af (including readiness to serve charges).

The 2013 RMPU implementation also included a process to create a database of all known local stormwater and dry-weather runoff management projects implemented through the municipal separate storm sewer system (MS4) permits in the Los Angeles, Riverside, and San Bernardino County parts of the Chino Basin. The project types, physical characteristics, and time histories of maintenance are being stored in a database for periodic review with the intent of incorporating them into the surface water and groundwater models that Watermaster uses for planning (see Chapter 4.3).

Watermaster, IEUA, CBWCD, and SBCFCD collaborated to develop the 2018 RMPU. The 2018 RMPU did not include recommendations to construct new recharge facilities.

[7] Recharge Investigations and Projects Committee Meeting, July 20, 2023.
https://cbwm.syncedtool.com/shares/folder/PaauzoQapiZ/?folder_id=449162369



Spreading Basins in the Chino Basin and Associated Projects

- Projects in the 2001 Recharge Master Plan (2001 RMP)
- Projects in 2013 Amendment to the 2010 Recharge Master Plan Update (2013 RMPU)
- Projects in both 2001 RMP and 2013 RMPU
- Projects considered in 2013 RMPU and deferred to a future RMPU

Watersheds Tributary to Santa Ana River

- San Antonio/Chino Creek
- Cucamonga Creek
- Day Creek
- San Sevaine Creek
- Prado Basin Headlands

- Inland Empire Utilities Agency Service Area Boundary
- Streams & Flood Control Channels
- OBMP Management Zones

WEST YOST - K:\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig1-4_Rech_Impr_Since_OBMP_mxd - sfaraola - 6/29/2023

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Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Recharge Improvements in the Chino Basin Since Implementation of the OBMP and the 2001 RMP

Figure 1-4

Table 1-1. 2013 RMPU Recharge Projects

Project ID	Project Name	Project Benefits as Documented in the 2013 RMPU Report			Project Benefits Based on Project Design Developed During Implementation		
		New Stormwater Recharge (afy)	Recycled Water (afy)	Stormwater Recharge Unit Cost ($/af)	New Stormwater Recharge (afy)	Recycled Water (afy)	Stormwater Recharge Unit Cost ($/af)
14	Turner Basin	66	-	$ 916	Projects did not move to implementation.		
15a	Ely Basin	221	-	$ 981			
17a	Lower San Sevaine Basin	1,221	-	$ 1,239			
18a	CSI Stormwater Basin	81	-	$ 388			
25a	Sierra Basin	64	-	$ 537			
27	Declez Basin	241	-	$ 1,135			
2	Montclair Basin	248	-	$ 415	96	-	$ 1,384
7	San Sevaine Basins	642	1,911	$ 217	669	4,100	$ 384
11	Victoria Basin	43	120	$ 151	75	120	$ 112
12	Lower Day Basin	789	-	$ 242	993		$ 285
23a	2013 RMPU Proposed Wineville PS to Jurupa, Expanded Jurupa PS to RP3 Basin, and 2013 Proposed RP3 Improvements	3,166	2,905	$ 500	2,921	2,905	$ 406
	Total	6,782	4,936	$ 612	4,754	7,125	$ 391

1.2 SCOPE OF RECHARGE MASTER PLAN REQUIRED BY THE PEACE AGREEMENT, PEACE II AGREEMENT, AND COURT ORDERS

This Chapter describes the requirements of the Recharge Master Plans pursuant to the Peace Agreement, Peace II Agreement, and Special Referee's December 2007 Report.

Pursuant to these guiding documents, the general objectives of the RMPU are to:

1. Achieve and maintain long-term balance of recharge and discharge in every area and subarea of the Basin (Peace I Agreement Section 5.1 (e)[8])
2. Avoid material physical injury (MPI) (Peace I Agreement Section 5.1 (e) and Peace II Agreement Article 8.4[9])
3. Ensure there is enough recharge capacity and supplemental water available to meet future replenishment and recharge obligations (Peace I Agreement Section 5.1 (e) and Peace II Agreement Article 8.1, Special Referee's December 2007 Report[10])
4. Protect and enhance the Safe Yield (Peace I Agreement Section 5.1 I and, Special Referee's December 2007 Report Sections VI, VII and VIII)

To meet these objectives, the RMPUs must consider and address recharge requirement projections, the availability of storm and supplemental waters for recharge and replenishment, and the physical means to satisfy these recharge projections. To the extent that new or modified facilities are required to meet the objectives, the RMPUs include a schedule for the planning, design, and construction of recharge improvements.

1.3 ORGANIZATION OF THIS REPORT

This report documents an investigation conducted by the Chino Basin Watermaster (Watermaster) and Inland Empire Utilities Agency (IEUA) pursuant to the Court's direction to update the Recharge Master Plan (RMP) every five years. The 2018 Recharge Master Plan Update (RMPU) was completed on time and submitted to the Court in October 2018. This 2023 RMPU, like past updates, was prepared consistent with the requirements of the Peace Agreement, the Peace II Agreement, the December 2007 Court Order that approved the Peace II Agreement, and the Special Referee's December 2007 Report. The background and objectives of the RMPU are described in Chapters 1.1 and 1.2. The remainder of this report is organized as follows:

> ***Chapter 2 – Existing and Planned Recharge Facilities.*** This chapter provides an inventory of recharge facilities and activities in the Chino Basin since the implementation of the OBMP and the 2001 RMP. It also provides a description of the recharge capacity of the recharge facilities, which can subsequently be compared to the recharge needs discussed in Chapter 5. Existing and planned recharge facilities include spreading basins, aquifer storage and recovery (ASR) wells, and MS4

[8] Peace Agreement

[9] Peace II Agreement

[10] Part of the *Final Report and Recommendations on Motion for Approval of the Peace II Documents*

facilities. In-lieu recharge capabilities exist when the capacity to treat and serve imported water exceeds the imported water demands of the parties that have pumping rights.

Chapter 3 – Basin Response to Historical Recharge Activities. This chapter describes basin response to historical recharge activities since the implementation of the OBMP and changes that have occurred since the 2018 RMPU was completed. The basin response is described in terms of groundwater-level changes, hydrologic balance and hydraulic control. This information is used to determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

Chapter 4 – Planning Projections. This chapter establishes planning assumptions for the completion of the 2023 RMPU. These projections of water supply, recharge, and replenishment are based on the most up to date information available to Watermaster developed through Watermaster's Data Collection and Evaluation efforts (West Yost, 2023). This chapter also describes changes in the availability and cost of replenishment sources. This information is used to evaluate the basin response to planning projections (Chapter 5) and determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

Chapter 5 – Basin Response to Planning Projections. This chapter describes the basin response to the planning projections. The basin response is described in terms of groundwater-level changes, hydrologic balance and hydraulic control. This information is used to determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

Chapter 6 – Future Recharge Capacity Needs to Meet Future Obligations. This chapter identifies future needs for recharge capacity in the Chino Basin and compares the need to the available recharge capacity. Chapter 5 documents the conclusion that the existing recharge strategy, and the facilities on which it relies, are sufficient through 2045.

Chapter 7 – Renewal and Replacement Plan. This chapter presents the renewal and replacement planning effort that was completed for Chino Basin recharge system assets.

Chapter 8 – 2023 Recharge Master Plan. This chapter defines the 2023 RMPU, including the conclusions of the report, recommendations for future activities, and an implementation plan for the 2023 RMPU to meet the RMP objectives.

Chapter 9 – References.

Appendix A – In-Lieu Recharge Calculations for Appropriative Pool Parties. Appendix A details the in-lieu recharge capacity calculations as described in Chapter 2.

Appendix B – Renewal and Replacement Projection Details (10-year period). Appendix B details the renewal and replacement costs by year and asset, for the 10-year period, for all recharge facility assets.

Appendix C – Review Comments and Responses. Appendix C contains comments and responses on the draft 2023 RMPU Report.

The 2023 RMPU was developed through a stakeholder process. Watermaster convened several workshops with the Steering Committee through the Recharge Investigation & Projects Committee (RIPComm) over the course of developing the 2023 RMPU (from October 2022 to August 2023). At these workshops, the important assumptions and interim work products of the RMPU were presented. The presentations developed for these workshops were posted on the Watermaster's website.[11]

As part of the stakeholder process, the development of 2023 RMPU was open to comments by all stakeholders, and all comments were responded to and/or addressed. Appendix C contains the comments and responses.

[11] https://www.cbwm.org/pages/meetings/special_committees/

CHAPTER 2
Existing Recharge Facilities and Activities

This chapter provides an inventory of recharge facilities and activities in the Chino Basin since the implementation of the OBMP and the 2001 RMP. It also provides a description of the recharge capacity of the recharge facilities, which can subsequently be compared to the recharge needs discussed in Chapter 6. Existing and planned recharge facilities include spreading basins, ASR wells, and MS4 facilities. In-lieu recharge capabilities exist when the capacity to treat and serve imported water exceeds the imported water demands of the parties that have pumping rights.

2.1 SPREADING BASINS

Pursuant to the OBMP, Peace Agreement, and other agreements, Watermaster, the IEUA, CBWCD, and SBCFCD completed the 2001 RMP (Black and Veatch, 2001) and constructed spreading basin improvements from 2004 through 2014. These improvements were referred to as the Chino Basin Facilities Improvement Program (CBFIP). Seventeen existing flood retention facilities were modified, and two new spreading facilities were constructed. The waters recharged at these facilities include recycled imported and stormwaters, and dry-weather runoff. Figure 1-4 shows the location of these facilities.

2.1.1 Spreading Basin Description

Table 2-1 lists the spreading basins with the historical average stormwater recharge and supplemental water recharge capacity.[12] From an operational perspective, there are two types of recharge basins within the Chino Basin: conservation and multipurpose basins. Conservation basins do not have a primary flood control function and they are operated to recharge storm and supplemental water. Multipurpose basins are operated primarily for flood control and secondarily for recharging storm and supplemental water.

Table 2-1 shows the average annual storm and supplemental water recharge capacities of the spreading basins based on current conditions. Stormwater recharge varies by year, based on hydrologic conditions, and averaged about 9,200 afy from FY 2004/05 through FY 2021/22. Supplemental water recharge occurs during non-storm periods and the projected supplemental water recharge capacity averages about 56,600 afy.

[12] Appendix A of the 2018 RMPU documents the information and computations were used to estimate the supplemental water recharge capacity (WEI, 2018b).

Table 2-1. Average Stormwater Recharge and Supplemental Water Recharge Capacity Estimates

Recharge Facility	Average Stormwater Recharge FY 2003/04 through FY 2021/22	Supplemental Water Recharge Capacity
	(afy)	
Management Zone 1		
Brooks Street Basin	462	1,658
College Heights Basin - East	63	5,816
College Heights Basin - West		2,064
Montclair Basin 1	952	409
Montclair Basin 2		2,940
Montclair Basin 3		400
Montclair Basin 4		915
Eighth Street Basin	872	3,426
Seventh Street Basin		1,170
Upland Basin	390	891
Subtotal Management Zone 1	*2,739*	*19,689*
Management Zone 2		
Ely	1,217	4,501
Grove Basin	279	-
Etiwanda Debris Basin	183	2,908
Hickory Basin East	303	856
Hickory Basin West		1,420
Lower Day Basin Cell 1	427	983
Lower Day Basin Cell 2		
Lower Day Basin Cell 3		
San Sevaine No. 1	758	114
San Sevaine No. 2		2,869
San Sevaine No. 3		2,226
Turner Basin No. 1	1,335	577
Turner Basin No. 2		227
Turner Basin No. 3		418
Turner Basin No. 4A		981
Turner Basin No. 4B		164
Turner Basin No. 4C		191
Victoria Basin	317	2,279
Subtotal Management Zone 2	*4,819*	*20,713*
Management Zone 3		
Banana Basin	226	1,790
Declez Basin Cell 1	566	1,235
Declez Basin Cell 2		823
Declez Basin Cell 3		770
IEUA RP3 Basin Cell 1	877	4,653
IEUA RP3 Basin Cell 3		3,266
IEUA RP3 Basin Cell 4		3,669
Subtotal Management Zone 3	*1,668*	*16,204*
Totals	9,226	56,606

2.1.2 Historical Recharge Activity

Figure 2-1 shows the estimated annual recharge volume in the Chino Basin by water type since the implementation of the OBMP and the 2001 RMP for the period of 2006 through 2022. Figure 2-1 is based on IEUA's monitoring of the recharge facilities.[13] This information is documented in monthly reports prepared by IEUA and annual reports prepared by Watermaster, the latter of which are submitted to the SWRCB. Prior to 2004, managed stormwater recharge by the CBWCD and incidental recharge at SBCFC's flood control basins averaged about 3,000 afy (see Figure 1-3) (WEI, 2020), and recycled water recharge was about 500 afy.

Since the installation of supervisory control and data acquisition (SCADA) in 2004, data have been tracked for the recharge of all types of water at each spreading basin. Watermaster maintains a database of the monthly recharge volumes by water type and recharge location. Figure 2-1 shows the annual recharge of recycled water, stormwater, and dry-weather runoff since the initiation of the recharge program in FY 2004/05. Table 2-2 is a tabulation of the annual recharge by water type and recharge location for FY 2003/04 through FY 2021/22. Through FY 2021/22, the recharge improvements constructed by Watermaster and the IEUA have enabled them to recharge about 500,000 af of storm and supplemental water into the Chino Basin. During most of this period, stormwater recharge was suppressed by drought and the recycled system was expanding. The amount of storm and recycled water recharge due to the 2001 RMP is expected to increase as the land use converts fully to urban uses.

Recycled water has become a significant portion of annual recharge, increasing from about 50 af in FY 2003/04 to about 15,000 af in FY 2021/22. The sum of stormwater and recycled water recharged in the Chino Basin from FY 2003/04 to FY 2021/22 is about 339,000 af.

The magnitude of imported water recharge fluctuates significantly due to its availability and recharge needs. Historically, imported water recharge has occurred in the Chino Basin for two reasons: replenishment of overproduction and Storage and Recovery projects. Watermaster meets its replenishment obligations by purchasing and recharging imported water from Metropolitan or by purchasing unproduced production rights or Managed Storage from the parties.

[13] Several of Watermaster's permitted points of diversion are not monitored; diversion and recharge at these unmeasured points are estimated using the Wasteload Allocation Model (WLAM).

Figure 2-1 Recharge of Recycled Water, Stormwater, and Dry-Weather Runoff in the Chino Basin Since Implementation of the ORMP and the 2001 Recharge Master Plan

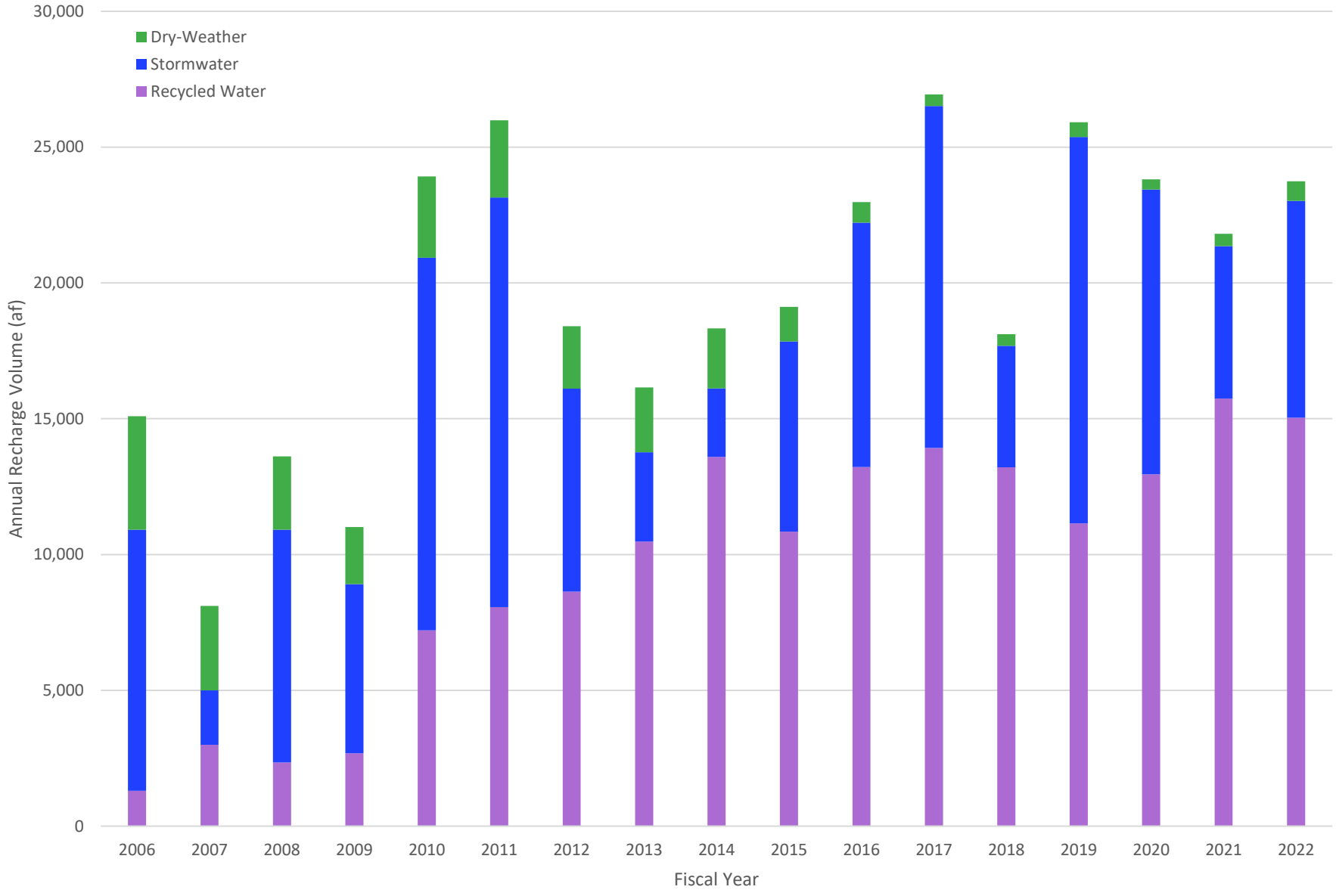


Table 2-2. Summary of Annual Wet-Water Recharge Records in the Chino Basin, afy

MVWD ASR Well				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	0	0	0
2005/2006	0	0	0	0
2006/2007	0	0	0	0
2007/2008	0	0	0	0
2008/2009	0	0	0	0
2009/2010	0	0	0	0
2010/2011	186	0	0	186
2011/2012	889	0	0	889
2012/2013	0	0	0	0
2013/2014	0	0	0	0
2014/2015	0	0	0	0
2015/2016	0	0	0	0
2016/2017	0	0	0	0
2017/2018	2,495	0	0	2,495
2018/2019	891	0	0	891
2019/2020	2,051	0	0	2,051
2020/2021	0	0	0	0
2021/2022	0	0	0	0
Total	6,511	0	0	6,511

College Heights Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	0	0	0
2005/2006	5,326	108	0	5,434
2006/2007	3,125	1	0	3,126
2007/2008	0	172	0	172
2008/2009	0	0	0	0
2009/2010	382	65	0	447
2010/2011	559	593	0	1,152
2011/2012	578	4	0	582
2012/2013	0	0	0	0
2013/2014	0	4	0	4
2014/2015	0	0	0	0
2015/2016	0	0	0	0
2016/2017	2,179	70	0	2,249
2017/2018	7,819	24	0	7,842
2018/2019	1,683	116	0	1,799
2019/2020	1,829	13	0	1,843
2020/2021	509	1	0	509
2021/2022	0	30	0	30
Total	23,989	1,201	0	25,160

Upland Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	100	0	100
2004/2005	0	989	0	989
2005/2006	5,986	214	0	6,200
2006/2007	7,068	195	0	7,263
2007/2008	0	312	0	312
2008/2009	0	274	0	274
2009/2010	0	532	0	532
2010/2011	899	1,308	0	2,207
2011/2012	2,118	222	0	2,340
2012/2013	0	119	0	119
2013/2014	0	95	0	95
2014/2015	0	325	0	325
2015/2016	0	425	0	425
2016/2017	2,575	583	0	3,158
2017/2018	1,547	155	0	1,702
2018/2019	1,217	687	0	1,904
2019/2020	1,132	445	0	1,578
2020/2021	426	127	0	552
2021/2022	0	299	0	299
Total	22,968	7,407	0	30,075

Montclair Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	7582.3	1,730	0	9,312
2004/2005	7,887	3,350	0	11,237
2005/2006	5,579	1,296	0	6,875
2006/2007	10,681	355	0	11,036
2007/2008	0	859	0	859
2008/2009	0	611	0	611
2009/2010	4,592	937	0	5,529
2010/2011	3,672	1,762	0	5,434
2011/2012	11,893	703	0	12,596
2012/2013	0	204	0	204
2013/2014	0	416	0	416
2014/2015	0	411	0	411
2015/2016	0	441	0	441
2016/2017	6,149	1,046	0	7,195
2017/2018	11,253	292	0	11,545
2018/2019	2,279	1,458	0	3,737
2019/2020	6,080	1,096	0	7,176
2020/2021	1,055	333	0	1,388
2021/2022	0	788	0	788
Total	78,703	18,089	0	96,003

Brooks Street Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	550	0	550
2004/2005	0	1,776	0	1,776
2005/2006	2,032	524	0	2,556
2006/2007	1,604	205	0	1,809
2007/2008	0	475	0	475
2008/2009	0	434	1,605	2,039
2009/2010	0	666	1,695	2,361
2010/2011	0	628	1,373	2,001
2011/2012	561	363	836	1,760
2012/2013	0	115	1,505	1,620
2013/2014	0	112	1,308	1,420
2014/2015	0	198	1,011	1,209
2015/2016	0	182	1,215	1,397
2016/2017	188	673	385	1,246
2017/2018	197	81	1,268	1,546
2018/2019	0	824	1,381	2,204
2019/2020	151	568	898	1,616
2020/2021	0	156	933	1,088
2021/2022	67	251	463	782
Total	4,799	8,780	15,875	28,673

7th and 8th Street Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	120	0	120
2004/2005	0	620	0	620
2005/2006	0	1,271	0	1,271
2006/2007	0	640	0	640
2007/2008	0	959	1,054	2,013
2008/2009	0	1,139	352	1,491
2009/2010	6	1,744	1,067	2,817
2010/2011	543	1,583	1,871	3,997
2011/2012	572	1,047	641	2,260
2012/2013	0	751	2,261	3,012
2013/2014	5	441	1,423	1,869
2014/2015	0	841	48	889
2015/2016	0	921	1,470	2,391
2016/2017	18	955	2,271	3,244
2017/2018	1,130	353	1,037	2,520
2018/2019	58	1,363	2,864	4,285
2019/2020	948	623	978	2,549
2020/2021	0	402	738	1,139
2021/2022	270	786	2,082	3,138
Total	3,281	15,773	18,074	37,128

Ely Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	2,000	49	2,049
2004/2005	0	2,010	158	2,168
2005/2006	0	1,531	188	1,719
2006/2007	0	631	466	1,097
2007/2008	0	1,603	562	2,165
2008/2009	0	927	364	1,291
2009/2010	0	1,164	246	1,410
2010/2011	83	1,415	757	2,255
2011/2012	885	1,096	393	2,374
2012/2013	0	568	1,378	1,946
2013/2014	0	548	3,298	3,846
2014/2015	0	1,087	1,751	2,838
2015/2016	0	1,506	1,012	2,518
2016/2017	0	1,378	1,491	2,869
2017/2018	9	715	1,511	2,234
2018/2019	0	1,255	1,388	2,643
2019/2020	100	1,758	2,061	3,919
2020/2021	0	632	1,188	1,820
2021/2022	94	1,306	657	2,057
Total	1,170	23,131	18,918	41,162

Grove Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	0	0	0
2005/2006	0	133	0	133
2006/2007	0	166	0	166
2007/2008	0	326	0	326
2008/2009	0	405	0	405
2009/2010	0	351	0	351
2010/2011	0	431	0	431
2011/2012	0	400	0	400
2012/2013	0	177	0	177
2013/2014	0	258	0	258
2014/2015	0	481	0	481
2015/2016	0	471	0	471
2016/2017	0	363	0	363
2017/2018	0	204	0	204
2018/2019	0	421	0	421
2019/2020	0	321	0	321
2020/2021	0	165	0	165
2021/2022	0	223	0	223
Total	0	5,297	0	5,073

Turner Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	310	1,428	0	1,738
2005/2006	346	2,575	0	2,921
2006/2007	313	406	1,237	1,956
2007/2008	0	1,542	0	1,542
2008/2009	0	1,200	171	1,371
2009/2010	0	2,220	397	2,617
2010/2011	0	2,308	53	2,361
2011/2012	199	1,879	1,034	3,112
2012/2013	0	1,120	176	1,296
2013/2014	0	596	1,565	2,161
2014/2015	0	1,289	948	2,237
2015/2016	0	1,616	1,958	3,574
2016/2017	290	1,667	1,236	3,193
2017/2018	299	695	1,526	2,520
2018/2019	0	1,364	526	1,890
2019/2020	0	1,446	191	1,638
2020/2021	195	829	564	1,588
2021/2022	311	1,192	615	2,117
Total	1,952	24,181	12,197	37,715

Lower Day Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	100	0	100
2004/2005	107	2,798	0	2,905
2005/2006	2,810	624	0	3,434
2006/2007	2,266	78	0	2,344
2007/2008	0	303	0	303
2008/2009	0	168	0	168
2009/2010	3	540	0	543
2010/2011	894	703	0	1,597
2011/2012	1,439	158	0	1,597
2012/2013	0	106	0	106
2013/2014	28	114	0	142
2014/2015	0	341	0	341
2015/2016	0	281	0	281
2016/2017	292	449	0	741
2017/2018	3,033	138	0	3,172
2018/2019	417	601	0	1,018
2019/2020	2,228	288	0	2,516
2020/2021	0	102	0	102
2021/2022	0	216	0	216
Total	13,516	8,108	0	21,408

Etiwanda Debris Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	2,137	0	0	2,137
2005/2006	2,488	20	0	2,508
2006/2007	1,160	0	0	1,160
2007/2008	0	10	0	10
2008/2009	0	28	0	28
2009/2010	7	775	0	782
2010/2011	147	1,213	0	1,360
2011/2012	567	100	0	667
2012/2013	0	33	0	33
2013/2014	0	45	0	45
2014/2015	0	27	0	27
2015/2016	0	83	0	83
2016/2017	281	426	0	707
2017/2018	1,249	59	0	1,308
2018/2019	0	308	0	308
2019/2020	848	191	0	1,040
2020/2021	0	0	0	0
2021/2022	0	158	0	158
Total	8,884	3,476	0	12,202

Victoria Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	0	0	0
2005/2006	0	330	0	330
2006/2007	0	260	0	260
2007/2008	0	427	0	427
2008/2009	0	250	0	250
2009/2010	2	494	0	496
2010/2011	69	461	773	1,303
2011/2012	281	221	665	1,167
2012/2013	0	94	842	936
2013/2014	0	192	1,379	1,571
2014/2015	0	306	931	1,237
2015/2016	0	343	635	978
2016/2017	128	642	1,621	2,391
2017/2018	575	112	793	1,480
2018/2019	0	1,016	1,780	2,796
2019/2020	1,085	352	1,050	2,487
2020/2021	0	148	1,008	1,156
2021/2022	256	367	1,694	2,317
Total	2,395	6,015	13,171	19,265

San Sevaine				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	1,621	2,830	0	4,451
2005/2006	9,172	2,072	0	11,244
2006/2007	5,749	244	0	5,993
2007/2008	0	749	0	749
2008/2009	0	225	0	225
2009/2010	0	993	0	993
2010/2011	1,707	1,049	396	3,152
2011/2012	1,228	436	513	2,177
2012/2013	0	147	575	722
2013/2014	0	162	274	436
2014/2015	0	330	1	331
2015/2016	0	585	0	585
2016/2017	540	785	0	1,325
2017/2018	3,388	305	0	3,693
2018/2019	857	1,170	0	2,027
2019/2020	1,702	1,025	0	2,727
2020/2021	0	444	2,631	3,075
2021/2022	270	847	3,197	4,313
Total	26,232	13,552	7,587	43,904

Hickory Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	197	298	0	495
2005/2006	636	438	586	1,660
2006/2007	212	536	647	1,395
2007/2008	0	949	567	1,516
2008/2009	0	199	46	245
2009/2010	7	700	856	1,563
2010/2011	10	371	776	1,157
2011/2012	515	258	783	1,556
2012/2013	0	199	874	1,073
2013/2014	13	171	1,920	2,104
2014/2015	0	243	2,034	2,277
2015/2016	0	184	575	759
2016/2017	0	142	136	278
2017/2018	1,472	216	1,399	3,087
2018/2019	0	271	181	451
2019/2020	1,056	186	483	1,725
2020/2021	0	150	235	385
2021/2022	78	246	992	1,316
Total	4,196	5,757	13,089	21,726

Banana Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	425	0	425
2005/2006	193	300	529	1,022
2006/2007	783	226	643	1,652
2007/2008	0	278	157	435
2008/2009	0	383	40	423
2009/2010	0	416	898	1,314
2010/2011	0	149	267	416
2011/2012	0	247	1,915	2,162
2012/2013	0	114	670	784
2013/2014	24	87	1,071	1,182
2014/2015	0	197	1,148	1,345
2015/2016	0	365	2,106	2,471
2016/2017	0	166	500	666
2017/2018	485	193	2,131	2,809
2018/2019	0	132	297	429
2019/2020	0	248	877	1,125
2020/2021	0	218	843	1,061
2021/2022	43	145	517	704
Total	1,528	4,289	14,608	19,721

RP-3 Basins				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	0	0	0
2004/2005	0	1,105	0	1,105
2005/2006	0	767	0	767
2006/2007	0	802	0	802
2007/2008	0	511	0	511
2008/2009	0	613	106	719
2009/2010	1	1,902	2,051	3,954
2010/2011	882	2,201	1,799	4,882
2011/2012	1,724	1,339	1,789	4,852
2012/2013	0	994	2,198	3,192
2013/2014	350	717	1,355	2,422
2014/2015	0	1,030	2,968	3,998
2015/2016	0	1,226	3,282	4,508
2016/2017	386	1,437	5,339	7,162
2017/2018	1,153	300	2,960	4,413
2018/2019	0	399	1,110	1,509
2019/2020	379	622	5,649	6,649
2020/2021	0	401	6,664	7,065
2021/2022	301	297	4,200	4,798
Total	4,874	16,365	37,271	58,510

Declez Basin				
Fiscal Year	IW	SW	RW	Total
2003/2004	0	100	0	100
2004/2005	0	19	0	19
2005/2006	0	737	0	737
2006/2007	0	0	0	0
2007/2008	0	730	0	730
2008/2009	0	656	0	656
2009/2010	0	774	0	774
2010/2011	0	877	0	877
2011/2012	0	798	65	863
2012/2013	0	530	0	530
2013/2014	374	341	0	715
2014/2015	0	895	0	895
2015/2016	0	607	969	1,576
2016/2017	99	607	945	1,651
2017/2018	131	574	588	1,294
2018/2019	0	744	1,619	2,363
2019/2020	0	644	765	1,409
2020/2021	0	526	940	1,467
2021/2022	53	588	625	1,266
Total	658	10,747	6,517	16,656

Totals				
Fiscal Year	IW	SW	RW	Total
2003/2004	7,582	4,700	49	12,331
2004/2005	12,259	17,648	158	30,065
2005/2006	34,567	12,940	1,303	48,810
2006/2007	32,960	4,745	2,993	40,698
2007/2008	0	10,205	2,340	12,545
2008/2009	0	7,512	2,684	10,196
2009/2010	5,000	14,273	7,210	26,483
2010/2011	9,650	17,052	8,065	34,767
2011/2012	23,449	9,271	8,634	41,354
2012/2013	0	5,271	10,479	15,750
2013/2014	795	4,299	13,593	18,687
2014/2015	0	8,001	10,840	18,841
2015/2016	0	9,236	13,222	22,458
2016/2017	13,125	11,389	13,924	38,438
2017/2018	36,235	4,417	13,212	53,864
2018/2019	7,401	12,129	11,145	30,675
2019/2020	19,588	9,827	12,953	42,368
2020/2021	2,184	4,633	15,744	22,561
2021/2022	1,742	7,740	15,042	24,524
Total	206,538	175,288	163,589	545,415

2.2 ASR FACILITIES

ASR refers to the process of recharge, storage, and recovery of water in an aquifer. ASR wells function as injection and recovery wells: water that meets drinking water standards is injected into an aquifer and recovered later when needed. JCSD, City of Chino Hills (Chino Hills) and MVWD own ASR wells. The MVWD owns and operates the only active ASR wells in the Chino Basin. These ASR wells (Wells 4, 30, 32, and 33) can recharge up to 5,480 afy and subsequently recover a volume of groundwater equal to the injected water within the same year. Figure 2-2 shows the location of the ASR wells, and Table 2-3 lists the wells and their respective injection and extraction capacities. MVWD typically uses these wells for injection in the seven-month period of October through April and for recovery in the five-month period of May through September. Table 2-2 shows the annual recharge at the ASR wells from FY 2003/04 through FY 2021/22. Since these wells were installed in 2006, the MVWD has recharged a total of 6,511 af. The majority of recharge occurred in FY 2017/18 to FY 2019/20.

2.3 IN-LIEU RECHARGE

In-lieu recharge can occur when a Chino Basin party with pumping rights in the Chino Basin elects to use supplemental water directly in lieu of pumping some or all its rights in the Chino Basin. Normally, this type of in-lieu recharge is classified as carryover water and if unused in the subsequent year is reclassified as excess carryover water in the case of the appropriative pool or water in the local storage account for the overlying non-agricultural pool. In certain cases, in-lieu recharge water is classified as supplemental water recharge (e.g., recharge for the Metropolitan Cyclic Storage Program and DYYP).

2.3.1 Facilities Used to Effectuate In-Lieu Recharge

The facilities used to effectuate in-lieu recharge include surface water treatment plants and conveyance facilities that convey imported water to Chino Basin parties. The IEUA is a wholesaler of imported water from Metropolitan to some of the Chino Basin parties. Three agencies purchase untreated imported water from the IEUA: the Water Facilities Authority (WFA), CVWD, and FWC.

- The WFA treats imported water purchased from the IEUA at the Agua de Lejos treatment plant (WFA plant) and delivers it to the cities of Chino, Chino Hills, Ontario, and Upland, and to the MVWD. Each of these WFA member agencies has a contracted share of the plant's total capacity of 81 million gallons per day (mgd) (90,700 afy).
- The CVWD treats imported water purchased from the IEUA at the Lloyd W. Michael treatment plant. The plant has a capacity of 60 mgd (67,200 afy).[14]
- The FWC treats imported water purchased from IEUA and the San Bernardino Valley Municipal Water District at the Sandhill treatment plant. The Sandhill plant has a total capacity of 29 mgd (32,500 afy).

Pomona receives imported water through the TVMWD. Pomona's capacity to receive imported water from TVMWD is about 6,800 afy.

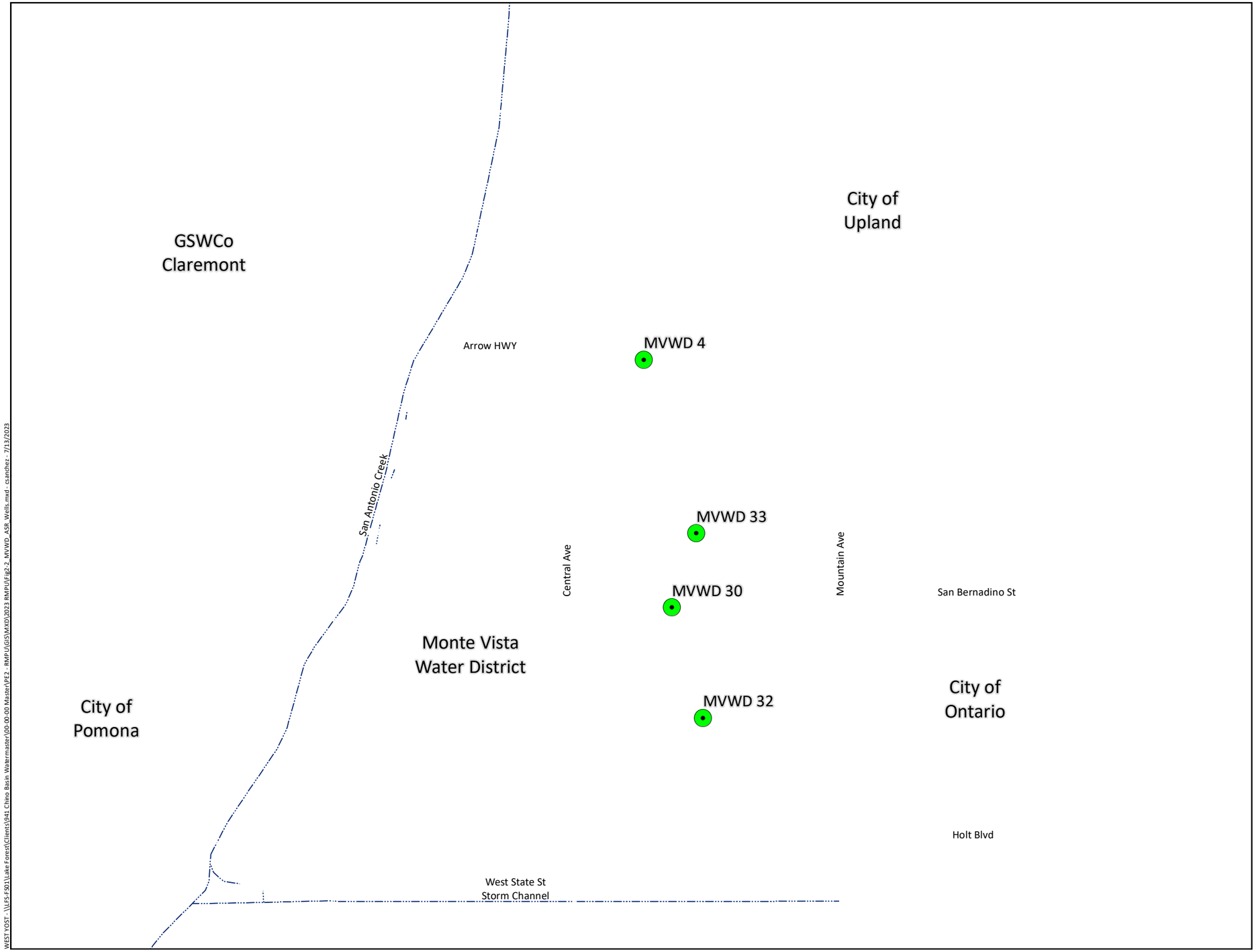
[14] The CVWD stopped treating imported water at its Royer Nesbit plant in 2017 (communication with CVWD staff on August 31, 2023).

Table 2-3. MVWD ASR Injection and Extraction Capacity[1]				
ASR Well	Injection Capacity[2]		Extraction Capacity[2]	
	(gpm)	(afy)	(gpm)	(afy)
MVWD-4	400	645	400	645
MVWD-30	1,000	1,613	2,000	3,226
MVWD-32	1,000	1,613	2,000	3,226
MVWD-33	1,000	1,613	2,000	3,226
Total	3,400	5,484	6,400	10,323

1. All of the existing ASR wells are owned by the Monte Vista Water District (MVWD) with the exception being MVWD-33, which is co-owned by the City of Chino.

2. The injection and extraction capacities assume the wells are operating 24 hours a day for 30 days.

gpm = gallons per minute



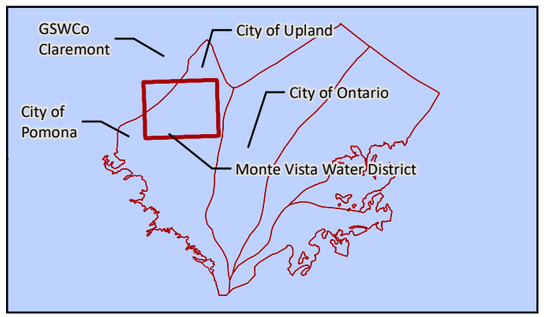
MVWD ASR Well

Streams and Flood Control Channels

Lakes and Flood Control Basins

Water Service Area (various colors)

OBMP Management Zones



WEST YOST - \\LFS-FS01\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig2-2 MVWD ASR Wells.mxd - csanchez - 7/13/2023

Prepared by:

N

0 0.25 0.5 Miles

0 0.5 1 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

MVWD Aquifer Storage and Recovery Wells

Figure 2-2

2.3.2 Historical In-Lieu Recharge Activity

The total in-lieu recharge for the period of FY 1977/78 through FY 2017/18 was about 430,000 af (WEI, 2018b). [15] Since FY 2017/18, an additional 78,000 af of in-lieu recharge has occurred, bringing the total in-lieu recharge over the Judgment period to about 508,000 af.

2.3.3 In-Lieu Capacity

In-lieu recharge capabilities exist when the capacity to treat and serve imported water exceeds the imported water demands of the parties that have pumping rights. The projected in-lieu recharge capacity for each agency with access to imported water was estimated based on planning data compiled for the SYR data collection and evaluation analyses (West Yost, 2023). Each party's in-lieu recharge capacity was limited by the lessor of the following:

- Capacity of treatment plant(s) to treat and serve imported water or party's capacity to receive imported water, less the party's projected imported water demand
- Party's Chino Basin pumping rights
- Party's Chino Basin pumping

The appropriator parties capable of in-lieu recharge include the Cities of Chino, Chino Hills, Ontario, Pomona, and Upland, and the CVWD, FWC and MVWD. Each party's capacity was calculated monthly for planning years 2025, 2030, 2035, 2040, and 2045 based on existing facilities and projected water supplies (see Chapter 4). Table 2-4a shows the estimated annual in-lieu capacities for each of the parties under current conditions. Note that the WFA plant's current sustainable capacity is less than its rated capacity of 81 mgd (90,700 afy) due to solids handling limitations.[16] According to WFA, the current capacity of the WFA plant is about 50 mgd in the summer months and about 25 mgd in the winter months.[17] As shown in Table 2-4a the total in-lieu recharge capacity in the Chino Basin, under the current capacity limitations of the WFA plant, ranges from about 26,700 afy in 2025 to about 29,800 afy in 2040. Table 2-4b shows the in-lieu recharge estimates without the WFA capacity limitations. Without the WFA limitations, the total in-lieu recharge capacity in the Chino Basin ranges from approximately 45,000 afy in 2025 to about 50,200 afy in 2045. Additional details on the estimation of in-lieu recharge capacity are included in Appendix A.

[15] In-lieu recharge from 2013 to 2018 was estimated by comparing imported water deliveries to excess carryover from under-production. The lesser of the two values is assumed to be the amount of in-lieu recharge. In-lieu recharge prior to 2013 was estimated by IEUA and documented in the 2013 RMPU.

[16] Email from Terry Catlin, April 10, 2018.

[17] Email from Van Jew, August 21, 2023.

Table 2-4a. Estimated In-Lieu Recharge Capacities for Appropriative Pool Parties Under Current Conditions (afy)

Appropriative Pool Party	Treatment Plant	Maximum In-Lieu Recharge Capacity				
		2025	2030	2035	2040	2045
CVWD	CVWD	10,250	14,773	16,331	17,630	17,630
Pomona	TVMWD	1,982	1,982	1,982	1,982	1,982
Chino	WFA	131	131	50	50	50
Chino Hills	WFA	2,043	2,075	2,126	2,132	2,137
MVWD	WFA	4,041	3,968	3,863	3,863	3,863
Ontario	WFA	3,416	2,381	1,395	769	769
Upland	WFA	4,813	4,409	3,746	3,412	3,153
Total		26,675	29,718	29,493	29,838	29,585

Note: The WFA plant's current capacity is less than its rated capacity of 81 mgd due to solids handling limitations, therefore it is assumed that parties that receive water from WFA have no in-lieu recharge capacity under current conditions.

Table 2-4b. Estimated In-Lieu Recharge Capacities for Appropriative Pool Parties Under Design Conditions (afy)

Appropriative Pool Party	Treatment Plant	Maximum In-Lieu Recharge Capacity				
		2025	2030	2035	2040	2045
CVWD	CVWD	10,250	14,773	16,331	17,630	17,630
Pomona	TVMWD	1,982	1,982	1,982	1,982	1,982
Chino	WFA	2,611	2,611	1,966	1,966	1,966
Chino Hills	WFA	2,093	2,132	2,196	2,204	2,213
MVWD	WFA	7,461	7,793	8,404	8,666	8,935
Ontario	WFA	15,083	14,140	12,857	11,726	11,726
Upland	WFA	5,743	5,743	5,743	5,743	5,743
Total		45,222	49,174	49,479	49,917	50,194

Note: This assumes the WFA plant capacity is restored to design capacity.

2.4 MS4 FACILITIES

The Court's Order on April 25, 2014 approved Chapter 5 of the 2013 RMPU and ordered Watermaster to compile MS4 project-related information from appropriative pool parties within the Chino Basin in order to compute net new stormwater recharge. Net new stormwater recharge (net new recharge) is defined in the 2013 RMPU (WEI, 2013) as follows:

> "The net new recharge from the implementation of the 2010 MS4 permit is equal to the stormwater recharge caused by the implementation of stormwater management projects pursuant to the MS4 permit minus the decrease in recharge at existing stormwater management facilities minus the incidental deep infiltration of precipitation that would have occurred in the pre-project condition."

This net new stormwater recharge calculation approved by Watermaster and the Court is described in Chapter 5 as follows:

> "Watermaster staff would annually acquire and store electronic versions of MS4 project-related reports and maintenance verification databases. When scoping a future Safe Yield re-determination, Watermaster would use its judgment and discretion to determine if there has been a significant potential increase in MS4 project-related recharge. If judged significant, the Watermaster would explicitly incorporate significant MS4 projects into the modeling and other technical activities required to re-determine Safe Yield. The calibration process for the groundwater model used in the Safe Yield re-determination would be used to refine the MS4 recharge estimates. Net new recharge would be estimated by rerunning the calibration without the new MS4 facilities and comparing both simulations."

On July 31, 2014, Watermaster started its first annual MS4 data request and sent a letter to each appropriative pool party requesting MS4-related information. The annual data request includes:

- Water Quality Management Plan (WQMP) reports
- Design reports
- As-built drawings[18]
- Maintenance verification

Watermaster has continued to request MS4 data each fiscal year since July 31, 2014. The data requests are sent out in July or August, and the data are due in October of each fiscal year.

[18] At the March 19, 2015 RMPU Steering Committee meeting, the Appropriator Parties informed Watermaster that they may not be able to provide as-built drawings. As-built drawings are important to Watermaster because they include what was constructed and the construction completion date. In the absence of as-built drawings, Watermaster requires certification that the facilities were constructed as represented in the WQMP and design reports. Watermaster staff has developed a form that can be used by Appropriator Parties if they cannot furnish as-built drawings for an MS4 or other local storm water management project constructed during and after FY 2011. Finally, Watermaster also requires records of maintenance performed on each constructed MS4 project or other local storm water management projects from the Appropriator Parties.

MS4 projects with WQMP reports submitted to the Watermaster are compiled in a database. West Yost reviews the WQMP reports for projects constructed after FY 2010/11[19] and extracts the following information:

- Location of the MS4 project
- Project's overall drainage area
- Project's total drainage area that flows into constructed infiltration feature(s)[20]
- Design capture volume (DCV)[21] of the constructed infiltration feature(s)

At the end of FY 2020/21, Watermaster analyzed the data compiled in the database. Table 2-5 summarizes the information received by Watermaster up to FY 2020/21, and Figure 2-3 shows the locations of the MS4 projects. Table 2-5 shows that at the end of FY 2020/21, Watermaster had received almost 360 WQMP reports for projects constructed during the period of FY 2010/11 to FY 2020/21, of which 338 were within the Chino Basin. 233 other projects were identified by agencies in their data request but did not provide WQMP reports to Watermaster. Additionally, Watermaster received 89 WQMP reports for projects whose construction completion was uncertain. These were not included in Table 2-5 or Figure 2-3.

2.4.1 Historical MS4 Recharge Activity

Once the projects within the basin were identified, the projects were separated into two categories: projects compliant with MS4 through infiltration features and projects compliant with MS4 through non-infiltration features. A total of 266 of the 338 projects within the Chino Basin were identified as complying with MS4 through MS4 Recharge Capacities infiltration features. These projects have an aggregate drainage area of 3,836 acres.

To prepare a reconnaissance-level estimate of the potential net new recharge of these 266 projects under idealized conditions,[22] West Yost assumed that these projects would create net new recharge at the same expected rate developed during the 2013 RMPU for Chino Fire Station No. 1. Based on this analysis, it was determined that the total reconnaissance-level estimate of net new storm water recharge is 842 afy.

[19] The WQMP approval date was used when the construction date was not available.

[20] Infiltration features are specifically designed to capture and infiltrate storm water runoff to comply with MS4 permits. Infiltration features could include offsite and onsite infiltration basins, infiltration trenches, infiltration pits, underground infiltration, drywells, gravel bedding infiltration, and bioretention with no underdrain.

[21] For San Bernardino and Riverside Counties, design capture volume (DCV) is the volume of storm water runoff resulting from the 85th percentile, 24-hr storm event that the designed infiltration feature is constructed to capture. For LA County, DCV is (1) the 0.75-inch, 24-hour storm event, or (2) the 85th percentile, 24-hour storm event, whichever is greater.

[22] Idealized conditions means that the infiltration feature performs as it was designed, and that maintenance is performed to ensure that the infiltration feature performs as originally designed.

Table 2-5. Summary of Compliance with Section 5 of the 2013 Amendment to the 2010 RMPU for Projects Constructed during FY 2010/11 to FY 2020/21

Appropriative Pool Party	All MS4 Projects		MS4 Projects that Utilize Infiltration Features for MS4 Compliance[1]				Confirmed Approval Date	Confirmed Construction Date	Confirmed Maintenance
	Number of Projects	Total Drainage Area (acres)	Number of Projects	Total Drainage Area (acres)	Design Capture Volume (af)	Reconnaissance Estimate of Stormwater Recharge under Idealized Conditions (afy)			
All MS4 Projects Submitted to Watermaster									
Chino, City of	82	1,557	50	1,251	81	274	50	12	13
Chino Hills, City of [1]	0	0	0	0	0	0	0	0	0
Ontario, City of	92	1,137	86	1,038	92	228	62	74	63
Pomona, City of [2]	10	93	7	67	3	15	4	4	3
Upland, City of	6	23	6	23	1	5	1	6	0
CVWD [2]	55	561	44	284	21	62	10	38	0
FWC	54	545	52	527	46	116	43	54	1
JCSD	28	1,050	19	799	26	175	1	1	5
MMWC	1	3	1	3	0	1	0	1	1
MVWD	22	73	14	60	3	13	15	17	1
Riverside County	0	0	0	0	0	0	0	0	0
San Bernadino County [3, 4]	6	10	3	9	1	2	0	0	0
SAWCo [1]	0	0	0	0	0	0	0	0	0
Total	356	5,053	282	4,062	275	891	186	207	87
Submitted MS4 Projects within the Chino Basin									
Chino, City of	82	1,557	50	1,251	81	274	50	12	13
Chino Hills, City of [1]	0	0	0	0	0	0	0	0	0
Ontario, City of	91	1,134	85	1,034	91	227	62	73	62
Pomona, City of [2]	8	66	5	41	2	9	3	3	2
Upland, City of	6	23	6	23	1	5	1	6	0
CVWD [2]	47	370	38	261	20	57	10	33	0
FWC	47	373	45	354	28	78	38	47	1
JCSD	28	1,050	19	799	26	175	1	1	5
MMWC	1	3	1	3	0	1	0	1	1
MVWD [3]	22	73	14	60	3	13	15	17	1
Riverside County [4, 5]	0	0	0	0	0	0	0	0	0
San Bernadino County	6	10	3	9	1	2	0	0	0
SAWCo [1]	0	0	0	0	0	0	0	0	0
Total	338	4,659	266	3,836	255	842	180	193	85

Notes:

CVWD: Cucamonga Valley Water District
FWC: Fontana Water Company
JCSD: Jurupa Company Services District
af: acre-feet
MMWC: Marygold Mutual Water Company
MVWD: Monte Vista Water District
SAWCo: San Antonio Water Company
afy: acre-feet per year

1. Not required to comply with the court order because their service area is mostly located outside of the Chino Basin boundary.
2. The CVWD informed Watermaster that they are in communication with the City of Rancho Cucamonga, and their data collection is in process.
3. Riverside County provided a GIS database, showing Riverside County's drainage facilities within the Chino Basin, which include all drainage facilities, not just MS4 facilities. The county informed Watermaster that they do not have specific data on MS4 projects and that Watermaster should request MS4 data from the cities within the county.
4. Riverside and San Bernardino Counties prepare annual reports that include a database of all MS4 projects within their jurisdiction. A comparison of these databases to the data submitted to Watermaster indicates that Watermaster has received only a subset of MS4 projects in each Appropriator Party service area. Watermaster cannot use these county databases directly because they do not contain the information required to estimate stormwater recharge.
5. Infiltration features could include offsite or onsite infiltration basins, infiltration trenches, infiltration pits, underground infiltration, drywells, gravel bedding infiltration, and bioretention with no underdrain.
6. For San Bernardino and Riverside Counties, design capture volume (DCV) is the volume of storm water runoff resulting from the 85th percentile, 24-hr storm event that the designed infiltration feature is constructed to capture. For LA County, DCV is either the 0.75-inch, 24-hour storm event, or the 85th percentile, 24-hour storm event, whichever is greater.
7. Estimated based on the assumption that all projects are similar to the Chino Fire Station No. 1 and Training Center MS4 project evaluated in Section 5 of the 2013 Amendment to the 2010 RMPU. Note that because precipitation is expected to increase north of Chino Fire Station No.1 and the majority of MS4 projects submitted to Watermaster are north of the Fire Station, this estimate is conservatively low. Idealized conditions mean that the infiltration feature performs as it was designed and that maintenance is performed to ensure that the infiltration feature performs as originally designed.

San Gabriel Mountains

San Antonio Water Co.

San Antonio Ck

Golden State Water Company Claremont

City of Upland

Euclid Ave

Cucamonga Valley Water District

Day Ck

Etiwanda Ave

Foothill Blvd

Marygold Mutual Water Company

West Valley Water District

City of Rialto

Fontana Water Company

Monte Vista Water District

City of Pomona

Cucamonga Ck

City of Ontario

Mission Blvd

60

Riverside Dr

City of Chino

San Bernardino County
Riverside County

West Valley Water District

Jurupa Community Services District

Bellegrave Ave

Santa Ana River

City of Chino Hills

Chino Ck

Chino Hills

San Bernardino County
Orange County

Rubidoux Community Services District

Santa Ana River Water Co.

Van Buren Blvd

Victoria Ave

City of Norco

La Sierra Hills

91

WEST YOST - \\JFS-FSO1\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig2-3_MS4toWatermaster_v2.mxd - delty - 7/17/2023

MS4 Compliance Through

Infiltration Features
Infiltration features could include offsite or onsite infiltration basins, infiltration trenches, infiltration pits, underground infiltration, drywells, gravel bedding infiltration, and bioretention with no underdrain.

Non-Infiltration Features
Non-infiltration features could include pervious pavement, vegetated swales, retention basins, and biotreatment.

Chino Fire Station No. 1
See Footnote 7 in Table 4-6.

MS4 Project Outside of Chino Basin Boundary
Note: Only projects with a known project completion and readily available project location information have been plotted. 86 projects with infiltration features and 32 projects with non-infiltration features have been completed, but no location information has been provided. Additionally, 227 projects are missing key project information required to document available information on MS4 compliance measures.

Service Area Boundaries of Major Water Purveyors (Various Colors)

Chino Basin Hydrologic Boundary

Rivers and Streams

Prepared by:

0 2 4 Miles

0 4 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

MS4 Projects Submitted to Watermaster
FY 2010/11 through FY 2021/22

Figure 2-3

2.4.2 Deficiencies in MS4 Facilities Documentation and Reporting

To determine the completeness of Watermaster's MS4 projects database, it was compared to the WQMP Inventories from the NPDES Phase I MS4 Permit Annual Report FY 2014 (SBCFCD, 2015) prepared by San Bernardino and Riverside Counties.[23] This comparison indicated that Watermaster had received a subset of MS4 projects from each of the appropriative pool parties. In addition, few appropriative pool parties submitted the documentation required by Chapter 5 of the 2013 RMPU. 53 percent (180 out of 338 MS4 projects within the Chino Basin) of the submitted MS4 projects have confirmed WQMP approval dates, 57 percent (193 out of 338 MS4 projects within the Chino Basin) have documentation on the project construction dates, and 25 percent (85 out of 338 MS4 projects within the Chino Basin) have documentation on the maintenance performed.

The main conclusions and recommendations given the analysis summarized in Table 2-5 were:

- The appropriative pool parties have not provided a comprehensive dataset of the projects within their service area.
- Watermaster does not have all the data required to compute the net new recharge created by these projects.[24]
- There is potential for at least 840 afy of net new recharge if these projects are maintained to perform as originally designed.

Watermaster continues to collect and analyze MS4 data to determine if there has been a significant potential increase in MS4-project related recharge. If judged significant, and if the data deficiencies are addressed, Watermaster will explicitly incorporate significant MS4 projects into the modeling and other technical activities required to recalculate Safe Yield; the calibration process for the groundwater model used in the Safe Yield recalculation would be used to refine the MS4 recharge estimates. Watermaster will continue to update Figure 2-3 and Table 2-5 to document available information on MS4 compliance measures.

2.5 PLANNED RECHARGE FACILITIES CURRENTLY BEING IMPLEMENTED

The 2013 RMPU contained recommendations to improve 10 recharge facilities and an implementation plan for planning, design, and construction. Since completion of the 2013 RMPU, the IEUA and Watermaster have entered into agreements to plan, design, and construct five of the recommended facility improvements. Table 1-1 lists the 2013 RMPU projects that could be constructed, their expected annual stormwater recharge, and their supplemental water recharge benefits. With completion of these

[23] Watermaster can only use the WQMP Inventory from the NPDES Phase I MS4 Permit FY 2014 Annual Report to estimate the number of MS4 projects in San Bernardino and Riverside Counties. Watermaster cannot use the Inventory to determine the new net storm water recharge because the inventory does not contain the information required to estimate storm water recharge.

[24] Per Section 5 of the 2013 RMPU, the Steering Committee recommended that, if the Appropriator Parties do not consistently provide data to Watermaster or if the submitted data are incomplete, Watermaster compute net new recharge using the method described in Alternative 2 in Section 5 of the 2013 RMPU. In this alternative, the net new recharge from determining Safe Yield would be automatically incorporated into the Safe Yield, and the direct estimation of net new recharge would not be made.

2013 RMPU projects, stormwater recharge is projected to increase by 4,800 afy, and recycled water recharge capacity is projected to increase by 7,100 afy.

2.6 SUMMARY OF EXISTING AND PLANNED RECHARGE CAPACITY

Table 2-6 summarizes the existing recharge capacity (2023 conditions), the recharge capacity expected when the 2013 RMPU projects are online in 2024, and the expected recharge capacity based on 2023 conditions if the WFA treatment plant capacity is restored to its original design capacity. The supplemental water recharge capacity is about 88,680 afy in 2023 and will not change after the planned 2013 RMPU projects are online.

Table 2-6. Estimated Recharge Capacities in the Chino Basin (afy)				
Water Type	Recharge Type	2023 Conditions	2023 Conditions after 2013 RMPU Recharge Projects Are Completed	2023 Conditions Plus Current Recommended 2013 RMPU Projects and Restoration of WFA Capacity
Stormwater	Average Stormwater Recharge in Spreading Basins	9,600	14,700	14,700
	Average Expected Recharge of MS4 Projects	840	840	840
	Subtotal	*10,440*	*15,540*	*15,540*
Supplemental Water	Spreading Capacity for Supplemental Water	56,600	56,600	56,600
	ASR Injection Capacity	5,480	5,480	5,480
	In-Lieu Recharge Capacity	26,600	26,600	45,200
	Subtotal	*88,680*	*88,680*	*107,280*
	Total	99,120	104,220	122,820

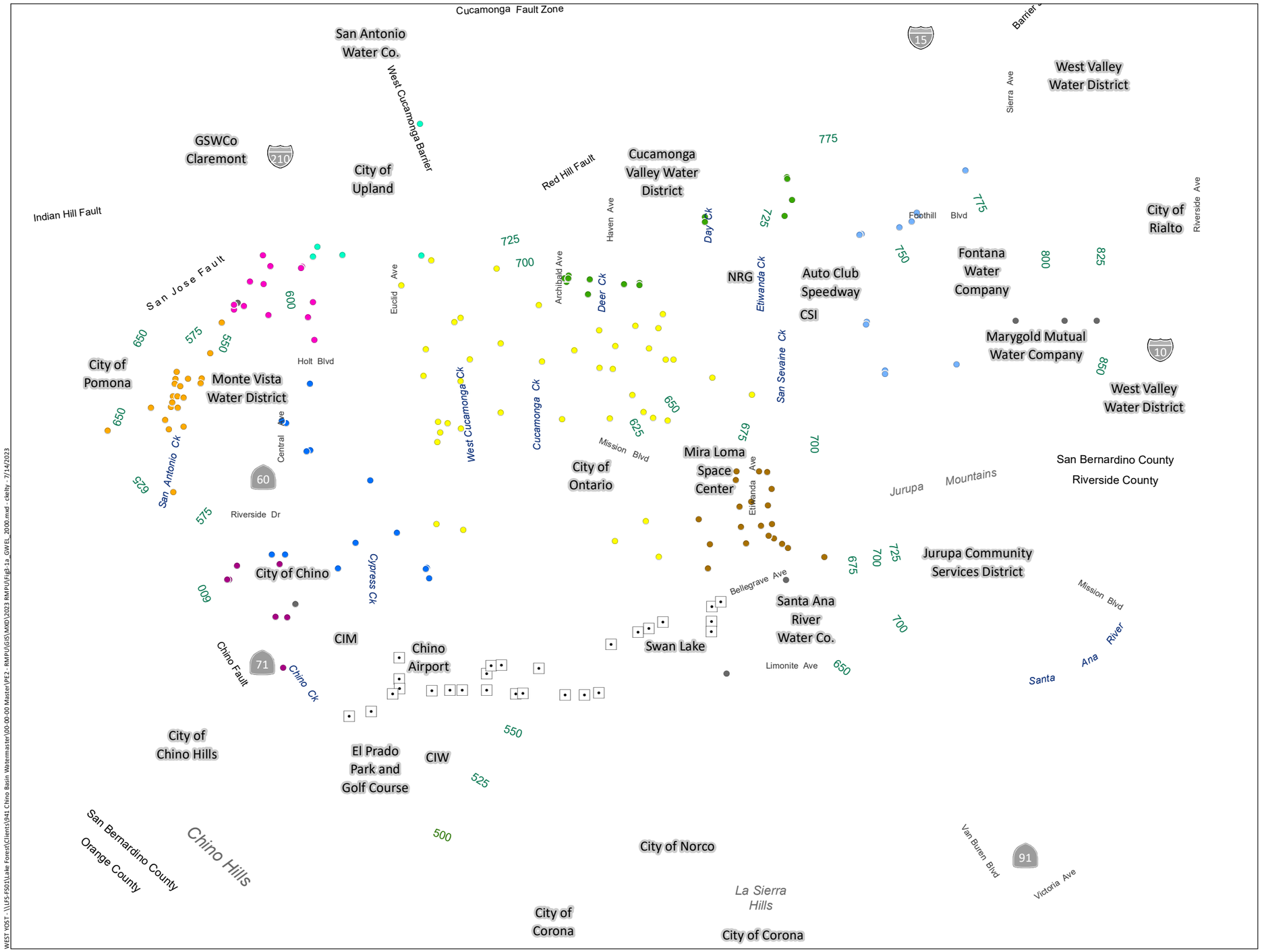
CHAPTER 3
Basin Response to Historical Recharge Activities

This chapter describes basin response to historical recharge activities since the implementation of the OBMP and changes that have occurred since the 2018 RMPU was completed. The basin response is described in terms of groundwater-level changes, hydrologic balance and hydraulic control. This information is used to determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

3.1 GROUNDWATER-LEVEL CHANGES

Figures 3-1a, 3-1b, and 3-1c are groundwater-elevation contour maps for the shallow aquifer system for spring 2000, 2018, 2022, respectively, based on measured data. The main observations and conclusions drawn from these maps are:

- Groundwater generally flows from higher to lower elevations, with flow perpendicular to the equal-elevation contours. These maps show that groundwater generally flows in a south-southwest direction from the northern parts of the basin toward the Prado Basin in the south (an area of shallow groundwater discharge to the land surface and the Santa Ana River). This general pattern of groundwater flow has been consistent over the period of OBMP implementation.
- In 2000, there were notable pumping depressions in the groundwater surface that interrupted the general patterns groundwater flow in the vicinity of the wells fields of the Monte Vista Water District (MVWD), City of Pomona, and the Jurupa Community Services District's (JCSD). The Peace Agreement requirement to recharge 6,500 afy of supplemental water in MZ1 was, in part, meant to address the pumping depression in MZ1 (Peace II Agreement Article 8.4). Pumping at the Chino Basin Desalter Authority's (CDA) wells had not yet begun as of July 2000, so groundwater flow was in the southern portion of the basin was uninterrupted towards the Prado Basin (i.e., areas of groundwater discharge).
- By 2018, the pumping depression in the MVWD and Pomona well fields was shallower but remained. Pumping at the CDA well fields had commenced in 2000 and increased significantly by 2018. As a result, a new pumping depression in the groundwater surface developed from the northern part of the JCSD service area extending southwest to California Institution for Men (CIM), indicating the achievement of hydraulic control across the southern portion of the basin.
- By 2022, groundwater levels changed slightly, but the depressions in the groundwater surface, directions of groundwater flow, and hydraulic gradients remain similar to 2018.



WEST YOST - \\US-FSO1\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig3-1a_GWEL_2000.mxd - ckelly - 7/14/2023

Hydraulic Head Contours (July 2000)
(ft above mean sea-level)

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain

Approximate Location of Groundwater Barrier

Prepared by:

0 2 4 Miles
0 3 6 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Contours - Shallow Aquifer, 2000
Chino Basin Groundwater Model - Spring 2000

Figure 3-1a

WEST YOST - \\JFS-FSO1\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\Fig8-1b_GWEL_2018.mxd - clelty - 7/14/2023

500 Hydraulic Head Contours (July 2018)
(ft above mean sea-level)

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

N

0 2 4 Miles

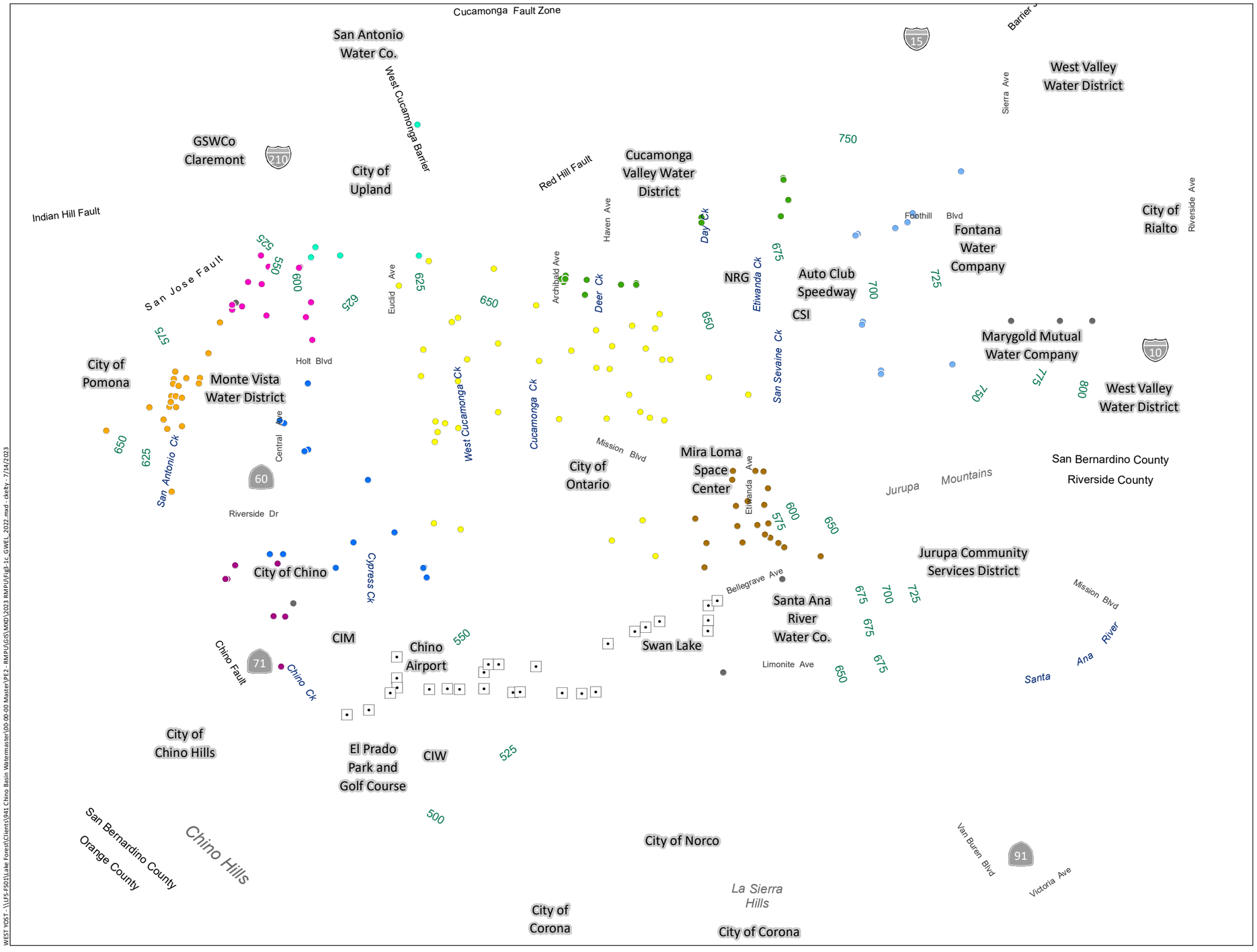
0 3 6 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Contours - Shallow Aquifer, 2018
Chino Basin Groundwater Model - Spring 2018

Figure 3-1b



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Hydraulic Head Contours (July 2022)
(ft above mean sea-level)

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

0 2 4 Miles
0 3 6 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Contours - Shallow Aquifer, 2022
Chino Basin Groundwater Model - Spring 2022

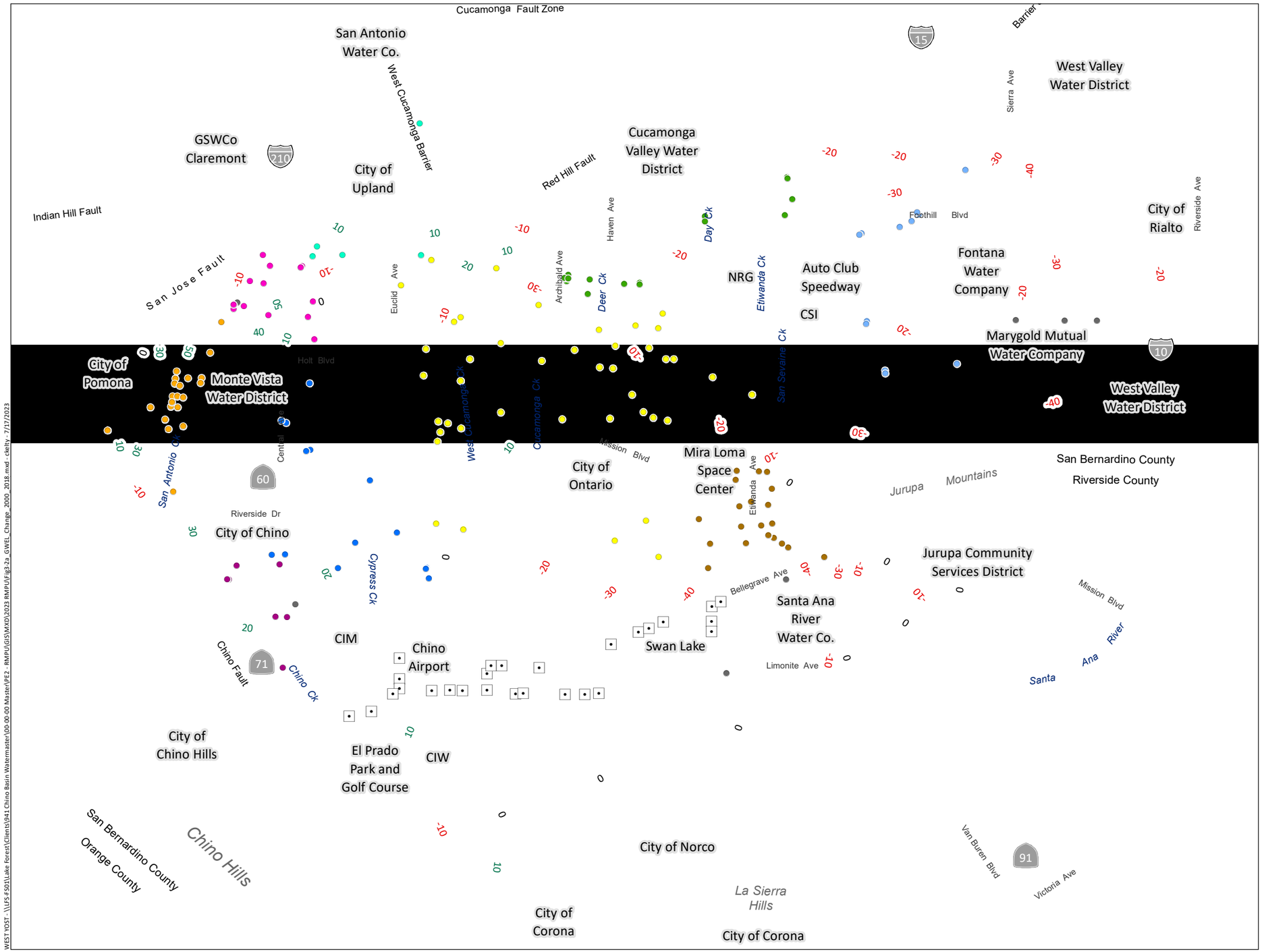
Figure 3-1c

Figures 3-2a, 3-2b, and 3-2c show the changes in groundwater elevation between 2000 and 2018, between 2018 and 2022, and between 2000 and 2022, respectively. The following are the main observations and conclusions from these maps:

- From 2000 to 2018:
  - Generally, groundwater levels decreased in the eastern portion of the basin and generally increased in the western part of the basin.
  - Groundwater levels declined by as much as 40 feet within parts of the JCSD service area, across the eastern portion of the CDA well field, and within the Fontana Water Company (FWC) service area.
  - Groundwater levels increased in the western part of the basin by about 10 to 50 feet.
- From 2018 to 2022, groundwater levels continued to change in the same general patterns as occurred from 2000-2018.
- From 2000 to 2022:
  - Generally, groundwater levels decreased in the eastern portion of the basin and generally increased in the western part of the basin.
  - Groundwater levels declined by as much as 50 feet in the northeast portion of the basin within the FWC and CVWD service areas.
  - Groundwater levels increased in the western part of the basin by about 10 to 40 feet.

One of the goals of the OBMP was to use recharge to increase groundwater levels in MZ1 to ensure sustainable pumping and minimize the occurrence of land subsidence. A primary goal of the Peace II Agreement was to achieve hydraulic control of the southern portion of the Basin through CDA pumping. Figures 3-2a, 3-2b, and 3-2c demonstrate progress towards achieving these goals.

Currently, subsidence is occurring across Northwest MZ1 and northern MZ2. Therefore, Watermaster recommends that recharge continue to be prioritized in MZ1 and to update its Subsidence Management Plan to address the ongoing subsidence that is occurring in these areas.



Contour of Positive Hydraulic Head Change (ft)
July 2000 to July 2018

Contour of Negative Hydraulic Head Change (ft)
July 2000 to July 2018

Hydraulic Head Change (ft) *July 2000 to July 2018*

100+ **Increase**

0

Decrease 100-

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

N

0 2 4 Miles

0 3 6 Km

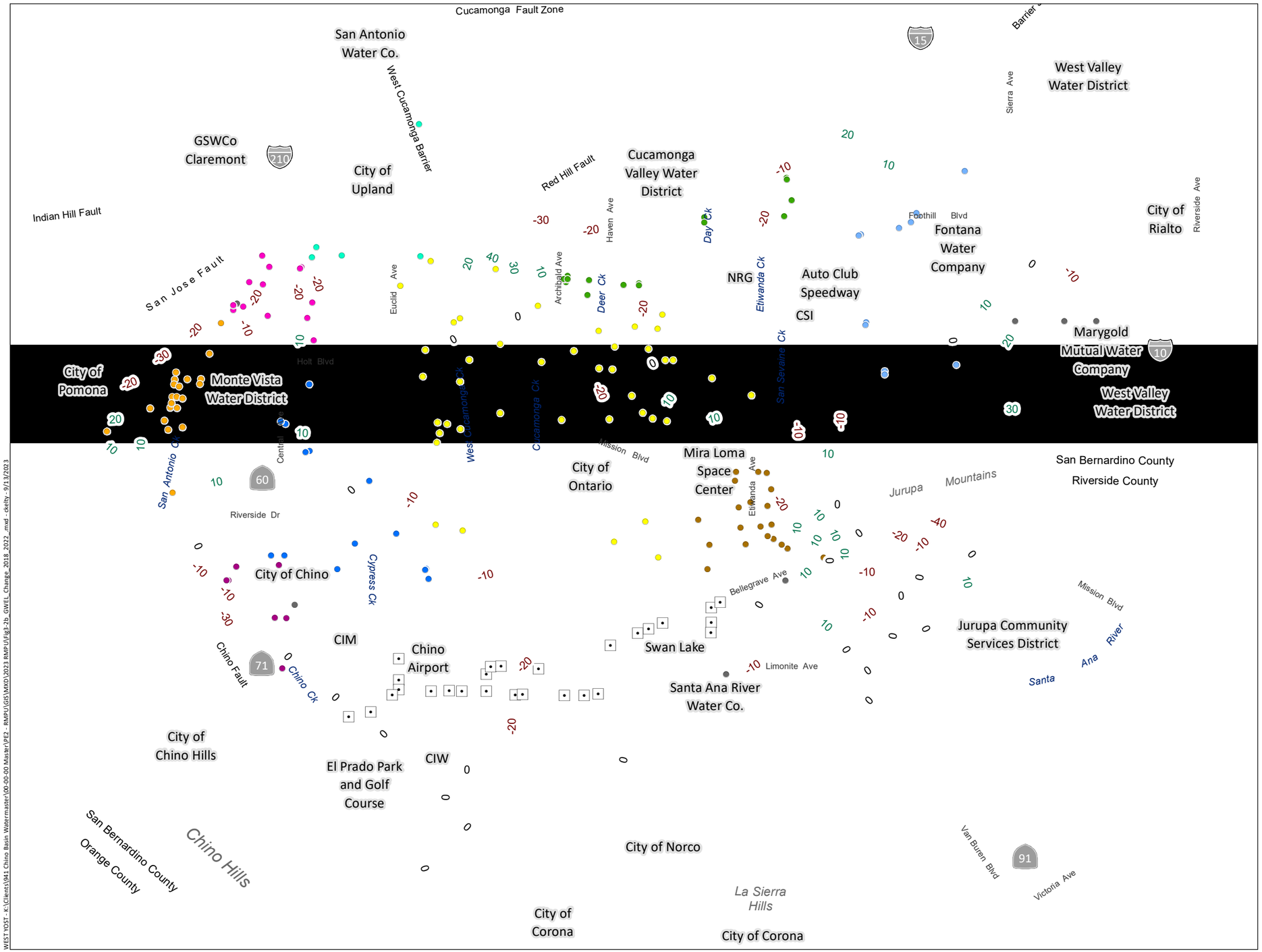
Prepared by:

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Change - 2000 to 2018
Chino Basin Groundwater Model - July 2000-2018

Figure 3-2a



Contour of Positive Hydraulic Head Change (ft)
Spring 2018 to Spring 2022

Contour of Negative Hydraulic Head Change (ft) or No Change
Spring 2018 to Spring 2022

Hydraulic Head Change (ft) *Spring 2018 to Spring 2022*

100+ Increase

0

100- Decrease

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

Area Not Included in the Change Calculation Due to a Lack of Groundwater-level Data

WSA Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

N

0 2 4 Miles

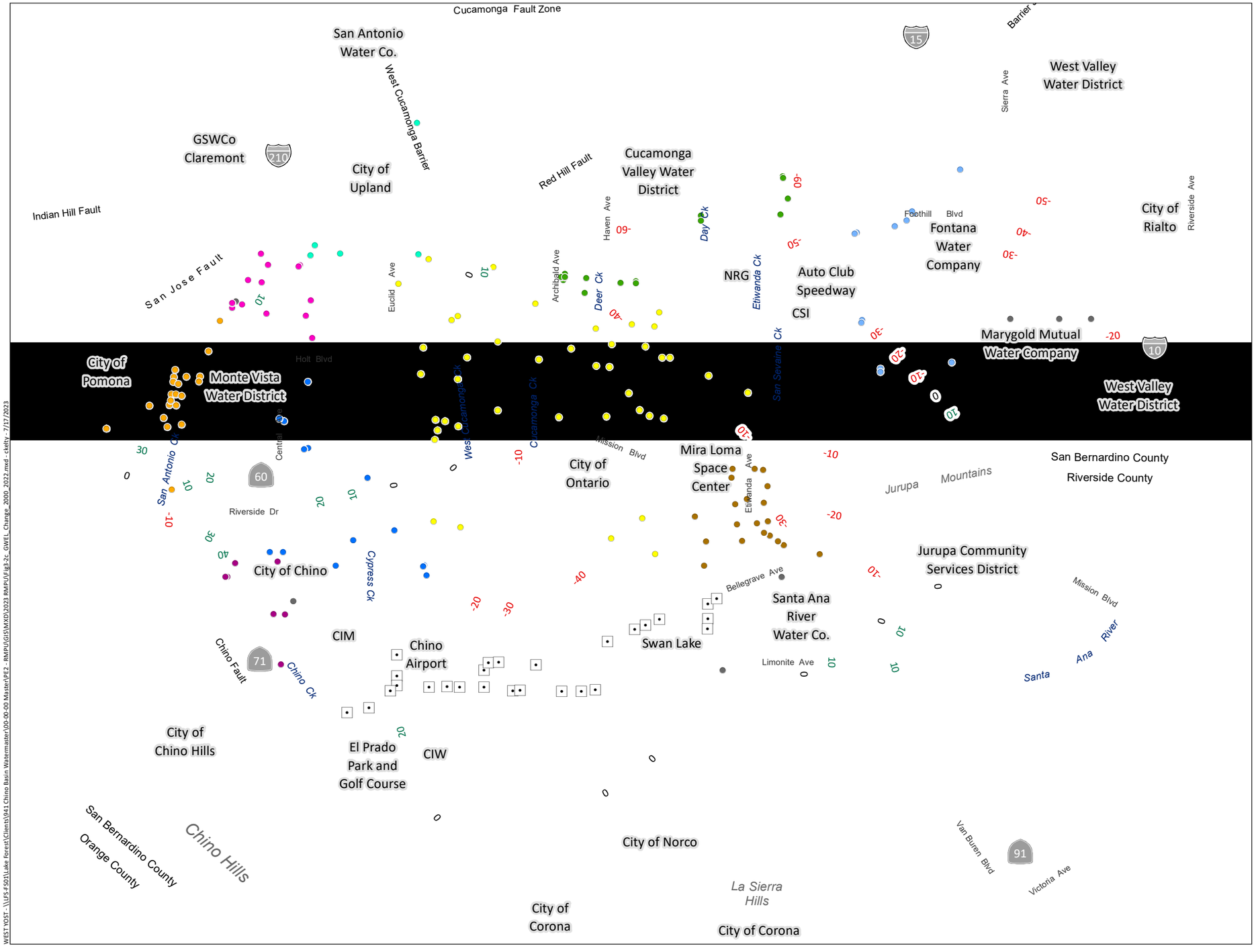
0 3 6 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Change - 2018 to 2022
Chino Basin Groundwater Model - Spring 2018-2022

Figure 3-2b



WEST YOST - \\LF5-F401\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig3-2c_GWEL_Change_2000_2022.mxd - ckelly - 7/17/2023

Contour of Positive Hydraulic Head Change (ft)
Spring 2000 to Spring 2022

Contour of Negative Hydraulic Head Change (ft) or No Change
Spring 2000 to Spring 2022

Hydraulic Head Change (ft) *July 2000 to July 2022*

100+ Increase
0
100- Decrease

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

Area Not Included in the Change Calculation Due to a Lack of Groundwater-level Data

WSA Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

N

0 2 4 Miles

0 3 6 Km

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Change - 2000 to 2022
Chino Basin Groundwater Model - Spring 2000-2022

Figure 3-2c

3.2 HYDROLOGIC BALANCE

Table 3-1 shows the time history of the hydrologic balance for MZ1, MZ2, and MZ3, based on groundwater model simulations of historical data for the period of fiscal 2000/01 through 2021/22. The term hydrologic balance refers to total recharge minus the total discharge: if positive, the storage will be increasing in a MZ, and if negative, it will be decreasing.

The cumulative balance of recharge and discharge in MZ1 from FY 2000/01 through 2021/22 is positive (storage increased) at 7,500 af, averaging about 340 afy. In contrast, the cumulative balances of recharge and discharge in MZ2 and MZ3 from FY 2000/01 through 2021/22 were about -127,800 af and -137,200 af, respectively (storage declining), averaging about -5,800 afy and -6,200 afy, respectively.

The historical decline in storage is due to:

- the 5,000 afy of controlled overdraft permitted in the Judgment (through 2017),
- reoperation and other water in storage dedicated to offset the desalter replenishment obligation permitted in the Peace II Agreement; and
- the likely use of Managed Storage to offset the desalter replenishment obligation.

The existence of controlled overdraft permitted by the Judgment and the Peace II Agreement means that it is impossible to maintain a balance of recharge and discharge in each MZ if the controlled overdraft is pumped: the balance has to be negative in some MZs and storage will decline. The physical decline in storage permitted in the Peace II Agreement is required to achieve hydraulic control (WEI, 2007).

The historical state of the balance of recharge and discharge for MZ1 is consistent with the Peace Agreements. As stated previously, Watermaster has an obligation pursuant to Chapter 8.4 of the Peace II Agreement to recharge 6,500 afy of supplemental water in MZ1 for the duration of the Peace Agreement (until June 30, 2030). Table 3-2 shows the time history of supplemental water recharge in MZ1, MZ2, MZ3 from FY 2000/01 through fiscal 2021/22. From FY 2000/01 through fiscal 2021/22, the cumulative supplemental water recharge in MZ1 has exceeded the cumulative obligation for supplemental water recharge by about 53,082 af (or 2,412 afy).

Table 3-1. Historical Change in Storage in MZ1, MZ2, and MZ3								
	MZ1		MZ2		MZ3		Total	
Fiscal Year	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2001	-549	-549	-14,006	-14,006	-14,566	-14,566	-29,121	-29,121
2002	-2,484	-3,033	-12,595	-26,600	-10,723	-25,289	-25,801	-54,922
2003	-5,016	-8,049	-12,672	-39,273	-12,539	-37,828	-30,227	-85,149
2004	-363	-8,412	-11,759	-51,031	-11,863	-49,691	-23,985	-109,134
2005	6,260	-2,152	-1,649	-52,680	-11,795	-61,485	-7,184	-116,318
2006	19,159	17,007	8,022	-44,658	-1,208	-62,694	25,973	-90,345
2007	15,633	32,640	-4,584	-49,243	-2,077	-64,771	8,972	-81,373
2008	-13,845	18,796	-11,518	-60,760	-12,461	-77,231	-37,824	-119,196
2009	-12,582	6,214	-15,312	-76,072	-12,196	-89,427	-40,090	-159,286
2010	-8,243	-2,030	-10,770	-86,843	-8,343	-97,770	-27,357	-186,643
2011	9,607	7,577	2,609	-84,234	2,454	-95,316	14,670	-171,973
2012	5,127	12,704	4,258	-79,977	2,258	-93,058	11,642	-160,331
2013	-10,855	1,848	-9,620	-89,597	-7,254	-100,312	-27,730	-188,061
2014	-13,918	-12,070	-7,031	-96,628	-12,035	-112,347	-32,984	-221,045
2015	-7,954	-20,024	-4,160	-100,787	-3,425	-115,772	-15,539	-236,584
2016	3,556	-16,468	-12,543	-113,331	-2,501	-118,274	-11,488	-248,072
2017	14,488	-1,980	-1,221	-114,551	-2,591	-120,864	10,677	-237,396
2018	15,725	13,745	5,216	-109,336	-1,774	-122,638	19,167	-218,229
2019	4,669	18,414	6,995	-102,340	-3,185	-125,823	8,479	-209,750
2020	4,103	22,517	-3,851	-106,191	2,917	-122,906	3,169	-206,580
2021	-7,934	14,583	-13,084	-119,276	-4,236	-127,143	-25,255	-231,835
2022	-7,092	7,491	-8,482	-127,757	-10,061	-137,204	-25,635	-257,470
Average	341		-5,807		-6,237		-11,703	

Table 3-2. Historical Supplemental Water Recharge in MZ1, MZ2, and MZ3

Fiscal Year	Supplemental Water Recharge (af)			
	MZ1	MZ2	MZ3	Total
2001	6,530	500	0	7,030
2002	6,500	505	0	7,005
2003	6,499	185	0	6,684
2004	7,582	49	0	7,631
2005	7,887	4,530	0	12,417
2006	18,923	16,226	722	35,870
2007	22,477	12,050	1,426	35,953
2008	1,054	1,129	157	2,340
2009	1,957	535	192	2,684
2010	7,742	1,518	2,950	12,210
2011	9,103	5,664	2,948	17,715
2012	18,088	8,502	5,493	32,083
2013	3,766	3,845	2,868	10,479
2014	2,736	8,477	3,175	14,388
2015	1,059	5,666	4,116	10,841
2016	2,685	4,180	6,357	13,222
2017	13,766	4,791	8,518	27,076
2018	26,746	15,253	7,471	49,470
2019	10,372	5,148	3,026	18,546
2020	14,067	10,804	8,236	33,107
2021	3,660	5,821	8,448	17,928
2022	2,883	8,163	5,739	19,010
Total	196,082	123,539	71,841	393,688

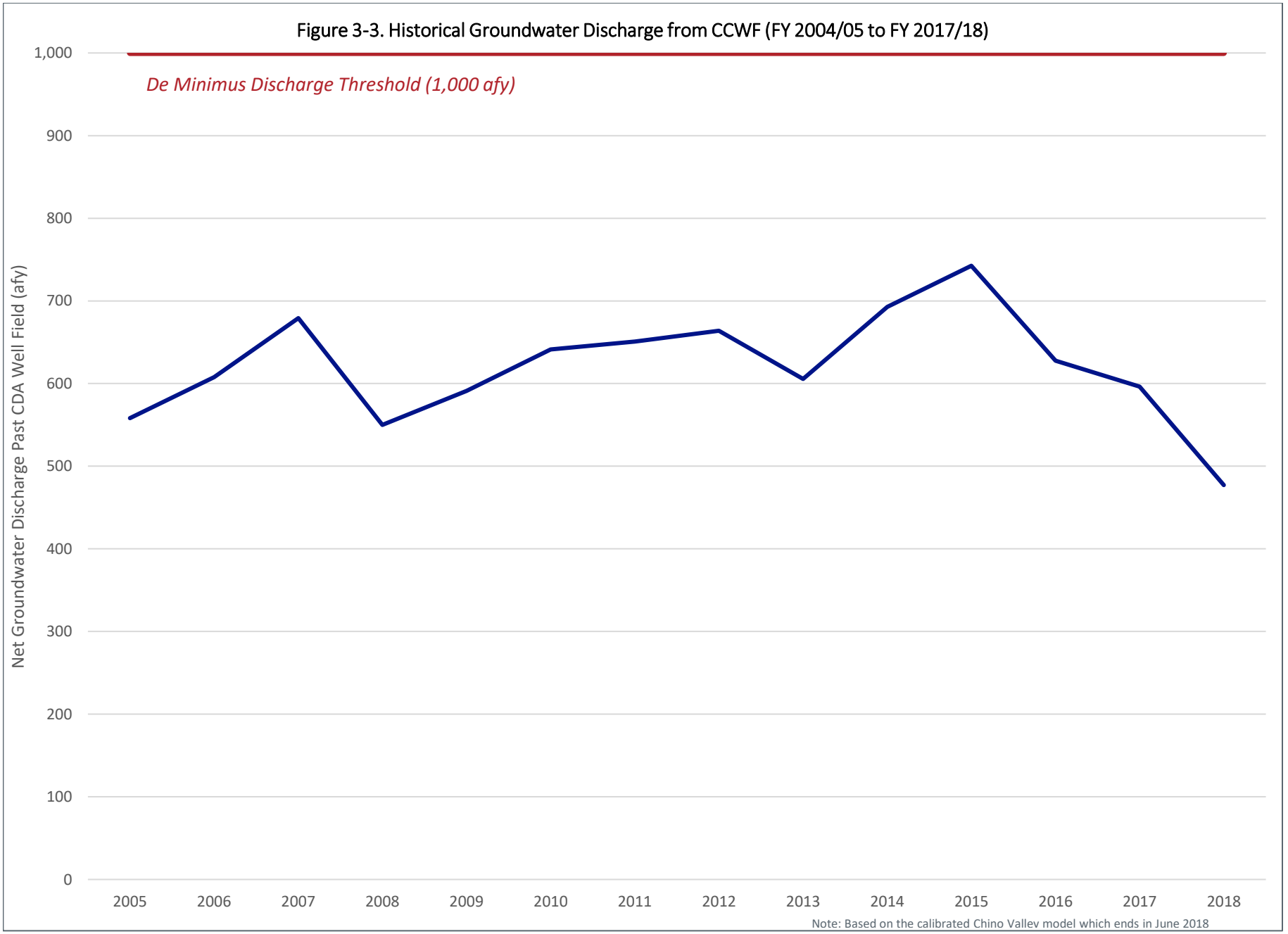
3.3 HYDRAULIC CONTROL

The attainment of hydraulic control is demonstrated through mapping of groundwater-elevation data that all groundwater north of the CDA well field is captured by the CDA well field (total hydraulic containment standard) or through groundwater modeling that the groundwater discharge past the CDA well field is, in aggregate, less than 1,000 afy (de minimis standard). The Regional Board has agreed that compliance with the de minimis standard will be determined from the results of periodic calibrations of the Watermaster groundwater-flow model and interpretations of the calibration results.

Mapping of groundwater-elevation data shows that groundwater is discharging past the CDA well field in the area between the Chino Hills and CDA well I-20. Figure 3-3 is a time-history chart that shows the historical volume of groundwater discharge across the line of control from 2005 to 2018 based on modeling estimates (WEI, 2020). Over this period, the groundwater discharge across the line of control ranges from 170 to 740 afy, averages 560 afy, and is always less than the *de minimis* discharge threshold of 1,000 afy. Hydraulic control has been maintained through 2018 as shown in Figure 3-3 and through 2022 as demonstrated in the Chino Basin OBMP Maximum Benefit Annual Reports.[25]

[25] https://www.cbwm.org/pages/reports/engineering/

Figure 3-3. Historical Groundwater Discharge from CCWF (FY 2004/05 to FY 2017/18)



CHAPTER 4
Planning Projections

This chapter establishes planning assumptions for the completion of the 2023 RMPU. These projections of water supply, recharge, and replenishment are based on the most up to date information available to Watermaster developed through Watermaster's Data Collection and Evaluation efforts (West Yost, 2023). This chapter also describes changes in the availability and cost of replenishment sources. This information is used to evaluate the basin response to planning projections (Chapter 5) and determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

4.1 PROJECTED WATER DEMANDS AND SUPPLIES

In May 2020, the Watermaster performed the *2020 Safe Yield Recalculation*[26] (2020 SYR) which utilized computer-simulation groundwater-flow modeling to calculate the water budget of the Chino Basin under a future planning scenario. The 2020 SYR planning scenario was based on the planning work reported in the *2018 Storage Framework Investigation* and the *2020 Storage Management Plan*, the water demands and water supply plans provided by the Watermaster Parties, planning hydrology that incorporates climate change impacts on precipitation and evapotranspiration (ET_0), and assumptions regarding future cultural conditions and replenishment obligations.

Work completed since the 2020 SYR has helped refine and develop recommendations related to recharge that inform the 2023 RMPU. Pursuant to the April 28, 2017 Court Order on the Safe Yield of the Chino Basin[27], Watermaster annually collects, evaluates, and develops reports on data regarding cultural conditions in the Chino Basin. Cultural conditions include, but are not limited to, land use, water use practices, production, and facilities for the production, generation, storage, recharge, treatment, or transmission of water. In these reports, Watermaster compares actual data and updated projections to the data and assumptions that were used in the 2020 SYR. Watermaster recently completed the second annual report on *Data Collection and Evaluation – Fiscal Year 2021/2022* (DCE Report) which documents the required data collection and evaluation through Fiscal Year 2021/22 (West Yost, 2022).

Figure 4-1 shows the projected aggregate water demand developed for several current and past planning studies including: the DCE Report, 2020 SYR, 2018 Storage Framework Investigation (WEI, 2018a), 2013 Safe Yield Recalculation (WEI, 2015), Peace II (WEI, 2009), and OBMP development (WEI, 1999). The projected aggregate demands for the DCE Report are less than those projected in the prior planning investigations. Total water demand is projected to grow from about 330,000 afy in 2020 to about 395,000 afy by 2040. The projected growth in water demand by the Appropriative Pool parties drives the increase in water demands as several parties are projected to serve new urban water demands caused by the conversion of agricultural and vacant land uses to urban.

Figure 4-2 and Table 4-1 show the projected water supplies for the Watermaster Parties based on the projected aggregate water demand and supply plan for all Chino Basin parties updated by the Parties in 2022 (West Yost, 2023). Table 4-1 also shows the projected demands for the 2020 SYR, which are about one percent higher than the DCE Report. The impacts of the difference between the planning projections are described in Chapter 5.4.

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[26] *2020 Safe Yield Recalculation* (WEI 2020).

[27] Orders for Watermaster's Motion Regarding the 2015 Safe Yield Reset Agreement, Amendment of Restated Judgment, Paragraph 6, Superior Court for the County of San Bernardino (2017).

Table 4-1. Projected Aggregate Water Supply for Watermaster Parties and the CDA (afy)					
Water Source	2025	2030	2035	2040	2045
Chino Basin Groundwater	150,800	164,500	175,000	186,600	186,900
Non-Chino Basin Groundwater	62,800	64,800	66,600	68,600	70,400
Local Surface Water	17,100	17,100	17,100	17,100	17,100
Imported Water from Metropolitan	92,900	95,900	99,800	102,500	103,000
Other Imported Water	3,300	3,400	3,500	3,500	3,500
Recycled Water for Direct Reuse	25,900	27,900	29,200	30,800	31,300
Total	352,800	373,600	391,200	409,100	412,200
2020 SYR Total	358,000	376,400	396,200	416,600	

Figure 4-1. Comparison of Aggregate Water Demands in the Chino Basin for Various Planning Investigations

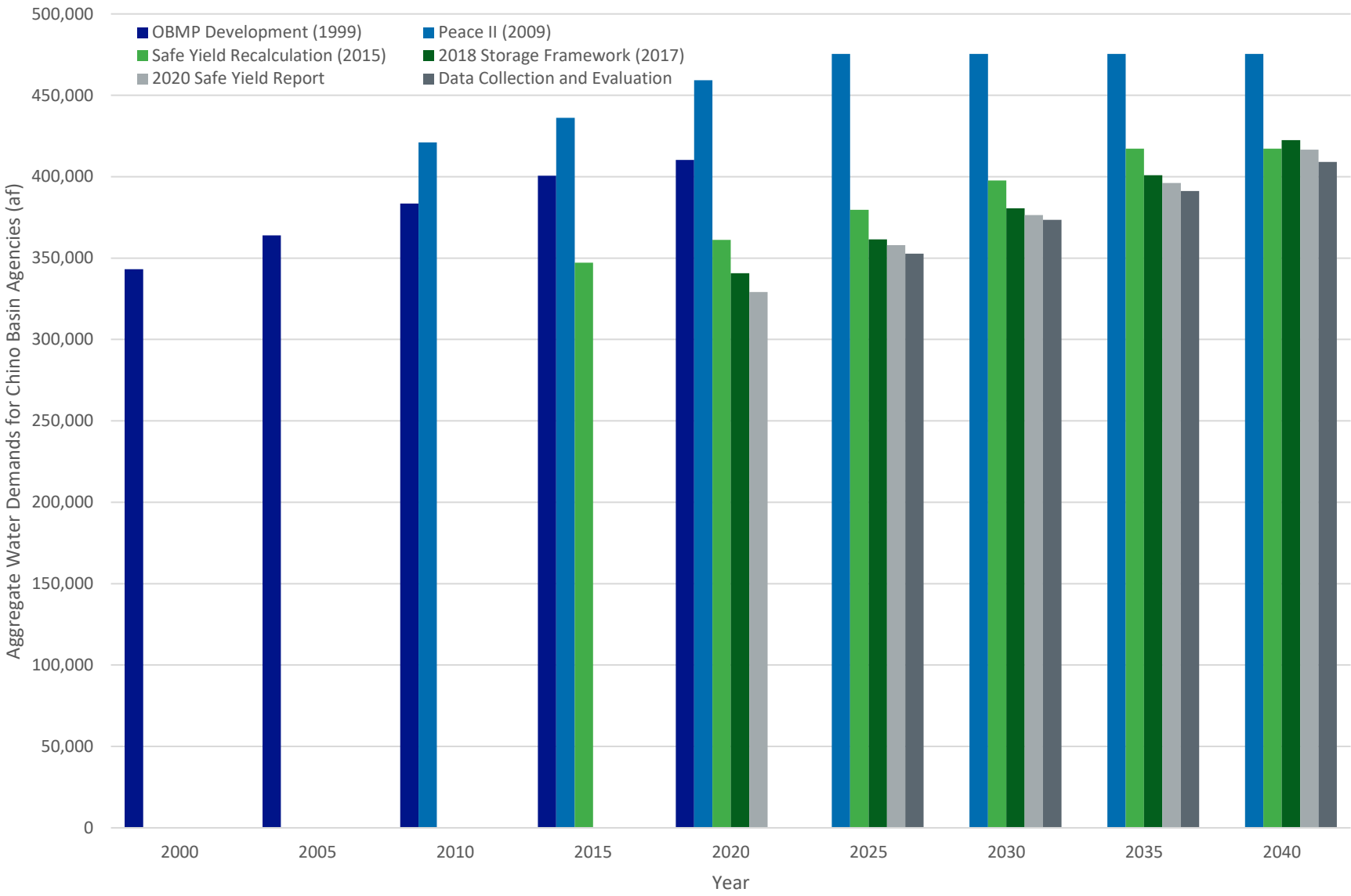
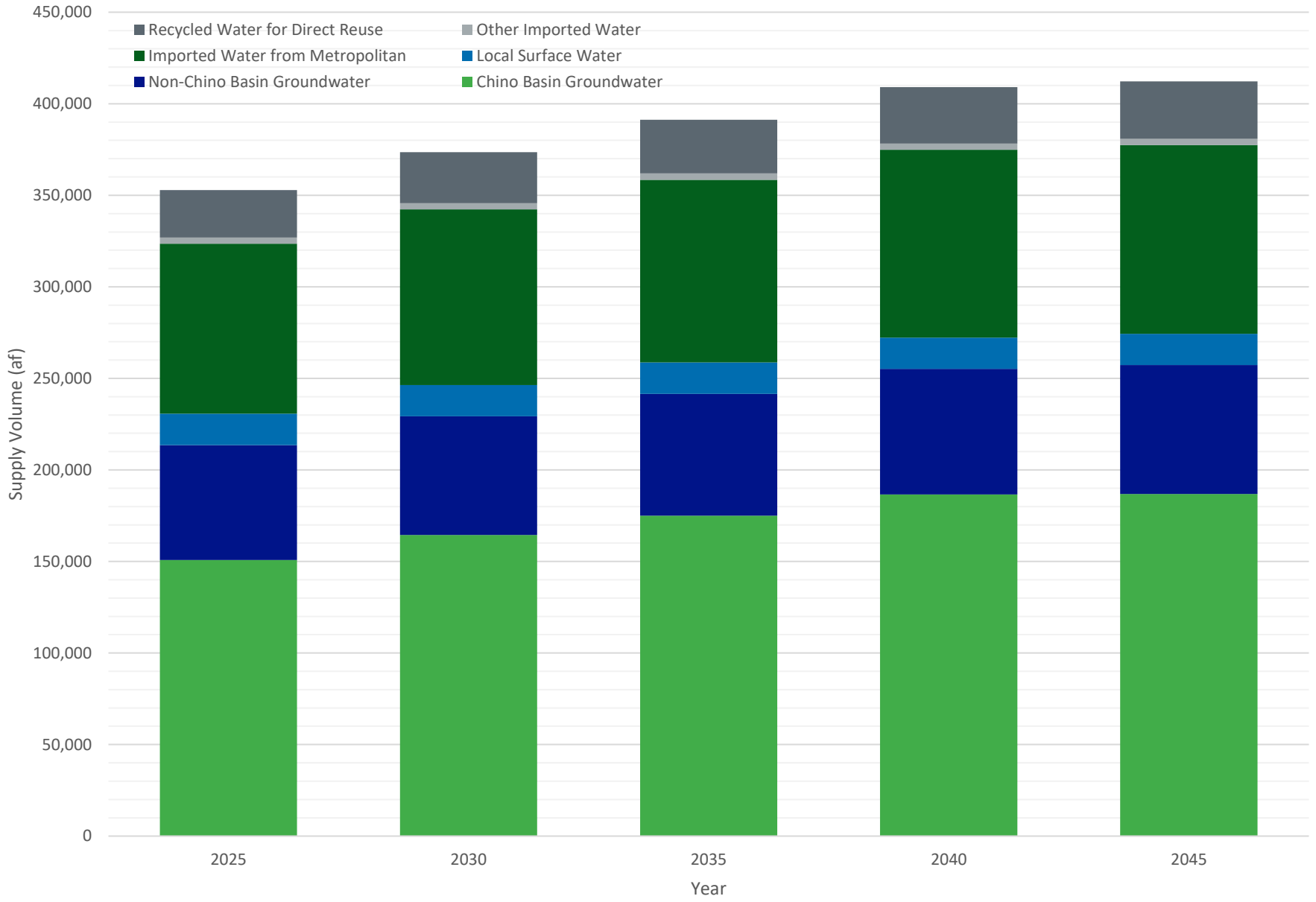


Figure 4-2. Aggregate Water Supply Plan for Chino Basin Parties



4.2 PROJECTED RECHARGE OF RECYCLED WATER

The IEUA has been recharging recycled water in the Chino Basin in various amounts since it acquired all municipal wastewater plants in the 1970s. Starting in the mid-1970s, the IEUA abandoned most of its recycled water recharge activities and discharged its treated effluent to the Santa Ana River. At the start of the OBMP in 2000, the IEUA was recharging about 500 afy of recycled water in the Basin. Beginning in 2005, the IEUA started a new program to increase the recharge of recycled water. Currently, the IEUA uses its recycled water for direct use, groundwater recharge, and discharges to Chino and Cucamonga Creek, which are tributaries to the Santa Ana River. Table 4-2 shows the IEUA's projected recycled water recharge by recharge facility, through 2035. Recycled water recharge is projected to increase to about 16,420 afy and remain constant thereafter.[28]

For the foreseeable future, the IEUA projects that it will recharge at least 3,490 afy of recycled water in MZ1. Using an obligation of 6,500 afy, this yields a residual MZ1 recharge obligation of 3,010 afy of imported water recharge through 2030.

4.3 PROJECTED REPLENISHMENT OBLIGATION AND RECHARGE OF IMPORTED WATER TO SATISFY IT

Figure 4-3 shows the projected replenishment obligations from 2023 through 2045. The replenishment obligations are calculated by comparing the projected groundwater pumping from the Chino Basin to the available pumping rights. Available pumping rights include safe yield, reoperation water use to offset the desalter replenishment obligation and recycled water recharge. Figure 4-3 also shows the 6,500 afy supplemental water recharge obligation for MZ1 through 2030. For this effort, it is assumed that a portion of the MZ1 recharge obligation is met through recharge from replenishment obligations.

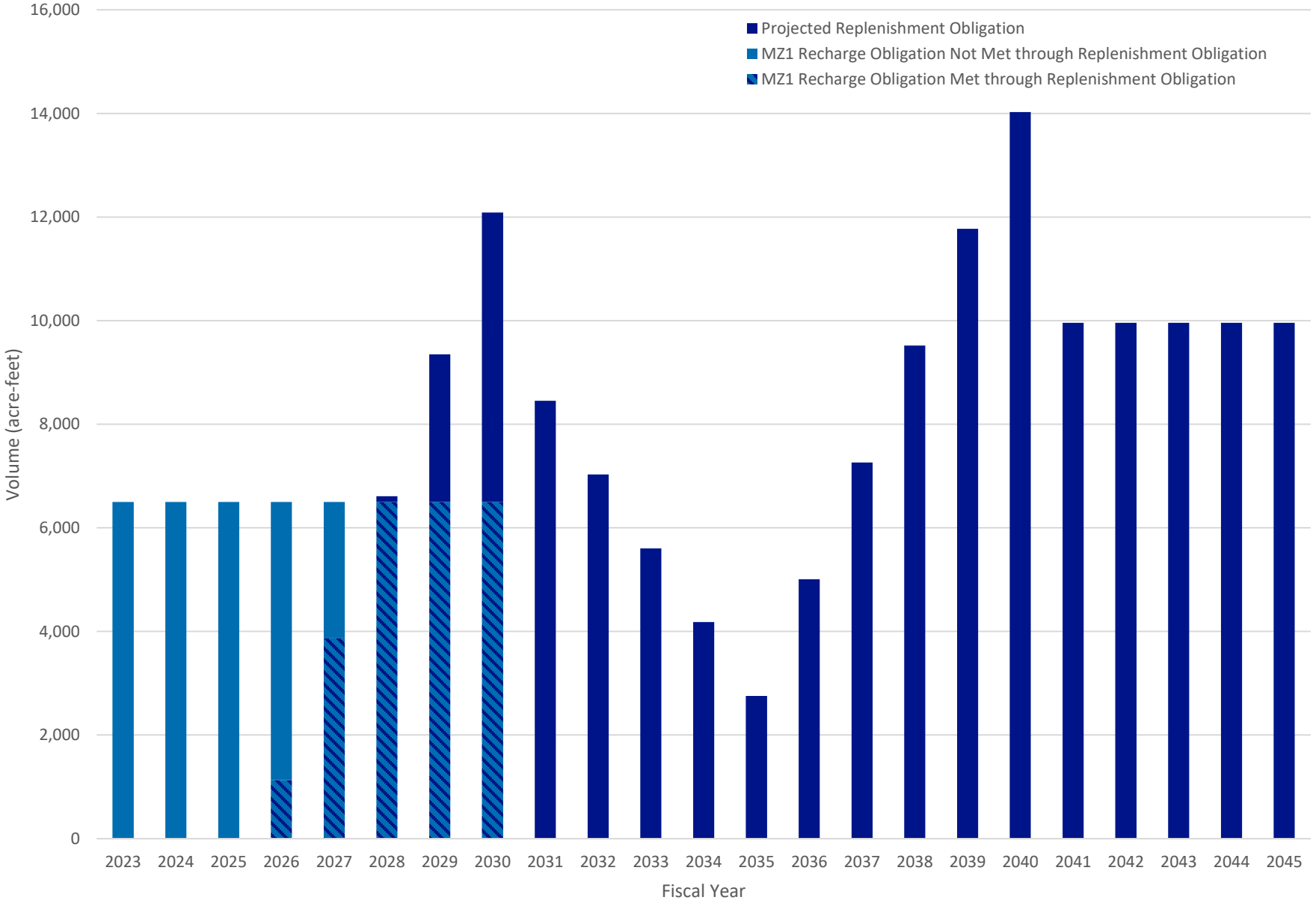
Through 2045, the maximum annual replenishment obligation occurs in 2040 at about 14,000 afy. The Parties project that 90 percent of a replenishment obligation is satisfied from storage and 10 percent is satisfied by wet-water recharge via spreading and injection based (West Yost, 2023). Thus, the projected annual replenishment obligation assumed to be satisfied by wet-water recharge is less than the total obligation.

[28] Note that this represents the annual average expected recycled water recharge. However, the value can fluctuate depending on hydrologic conditions.

Table 4-2. Recycled Water Recharge Projections, 2023-2045	
Basin	Recycled Water Recharge Projections[1]
Brooks Street Basin	2,000
College Heights Basins	0
Montclair Basins 1-4	0
Seventh and Eighth Street Basins	1,490
Upland Basin	0
Subtotal Management Zone 1	3,490
Ely Basins	1,100
Grove Basin	0
Etiwanda Debris Basin	0
Hickory Basin	1,650
Lower Day Basin	0
San Sevaine Basins 1-5	840
Turner Basins 1-2	360
Turner Basins 3-4	750
Victoria Basin	1,530
Subtotal Management Zone 2	6,230
Banana Basin	1,050
Declez Basin	1,250
IEUA RP3 Ponds	4,400
Subtotal Management Zone 3	6,700
Total	16,420

Notes:
1 - Source - Andy Campbell, IEUA, February 2022.

Figure 4-3. Projected Annual Supplemental Water Replenishment and Recharge Requirements, 2023-2045



4.4 MANAGED STORAGE

"Managed Storage" as used herein refers to the total water held in storage accounts plus carryover water. Pursuant to the Judgment, Watermaster levies and collects assessments each year in amounts sufficient to purchase replenishment water to replace overproduction by a Party or Parties during the preceding year. Overproduction occurs when an Appropriative Pool or Overlying Non-Agricultural Pool party's annual production exceeds its production rights. Parties within the Appropriative Pool and Overlying Non-Agricultural Pool can transfer stored water and/or unused Safe Yield rights within their respective pool, with Watermaster approval, to minimize their individual replenishment obligations or for other reasons. Parties in both pools can use water in their Managed Storage accounts to satisfy their replenishment obligations. After the completion of a fiscal year, Watermaster compiles pumping and transfer records from all parties to determine replenishment obligations for the year.

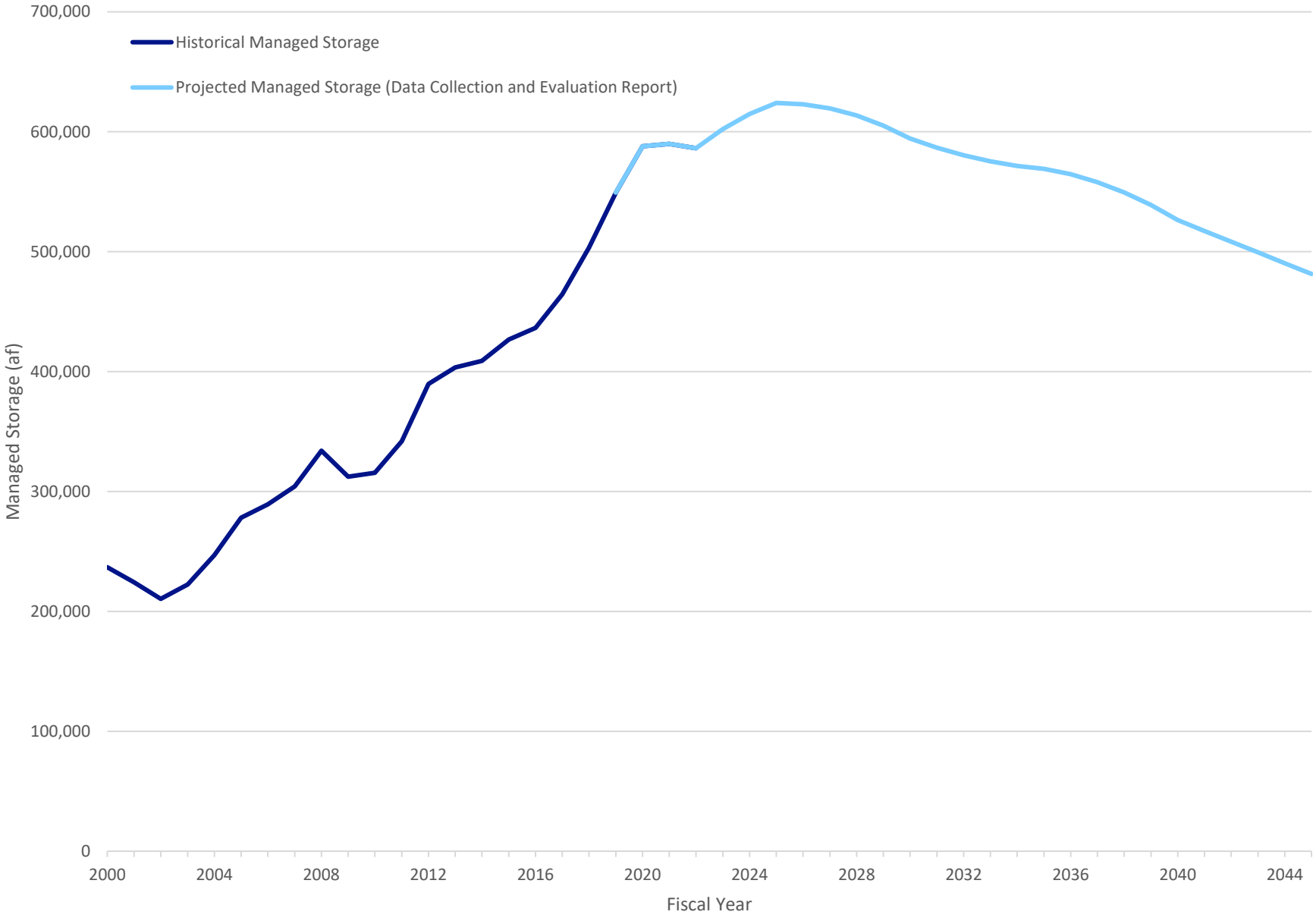
Managed storge can also be used for Storage and Recovery programs. Metropolitan's DYYP is a groundwater Storage and Recovery Program where supplemental water is stored in the Chino Basin during surplus years and extracted during years when the availability of supplemental water is limited or as otherwise determined by Metropolitan. The DYYP was developed jointly by the Watermaster, IEUA, Three Valleys Municipal Water District (TVMWD)), and Metropolitan. The DYYP has a maximum storage capacity of 100,000 af with maximum puts (water added into storage) of 25,000 afy and maximum takes (water extracted from storage) of 33,000 afy. The term of the DYYP agreement expires in 2028. As of June 2022, there is a zero balance in the DYYP storage account. The nexus of the DYYP to the 2023 RMPU is that the DYYP uses existing supplemental water recharge capacity in the basin.

Some of the Watermaster parties are contemplating other Storage and Recovery Programs in the Chino Basin. As of this writing, these other programs are not definitive enough to include in this report. The nexus of these other storage programs to the 2023 RMPU is that they may use existing supplemental water recharge capacity in the basin.

Figure 4-4 shows historical and projected changes in managed storage for the period of July 1, 2000 through June 30, 2050. Managed storage is projected to peak at 657,000 af in 2031 and decline to about 455,000 af by 2050. The difference between historical and projected managed storage in fiscal years 2019 through 2022 is due to differences between actual pumping and managed recharge and the 2020 SYR projections.[29]

[29] For additional details, refer to the *Data Collection and Evaluation Report for Fiscal Year 2021/2022* (West Yost, 2023)

Figure 4-4. Historical and Projected Managed Storage in the Chino Basin (2001 to 2045)



4.5 RECHARGE AND REPLENISHMENT WATER SOURCES, AVAILABILITY, AND COST

Watermaster has historically met its replenishment obligations through the purchase and recharge of SWP water from the IEUA which it obtains from Metropolitan and/or the purchase of stored water from appropriative pool parties. This report documents the availability and includes cost estimates for Metropolitan's water. Metropolitan does not differentiate between sources for its rate structure, however, availability varies between sources. Thus, the availability analysis is based on SWP water, instead of Metropolitan's full water portfolio which includes CRA, recycled, and local waters.

Table 4-4 summarizes the projected cost of imported water for untreated direct and replenishment uses. The cost to purchase water for replenishment is projected to increase over time by about five to seven percent per year from about $855 per af in 2023 to about $1,512 per af in 2032. This cost projection includes Metropolitan's projected Tier 1 and Readiness-to-Serve (RTS) charges and excludes Metropolitan's Capacity charge and the IEUA's administrative cost. This cost projection is based on Metropolitan's Biennial Budget for Fiscal Years 2022/23-2023/24[30] which adopted water rates for calendar years 2023 through 2032, recent historical water purchase information from the IEUA, and projected water purchases developed in Watermaster's Storage Framework Investigation. This cost projection does not include the projected cost of the California WaterFix tunnel project.

In December 2021, the Department of Water Resources (DWR) published the *Draft State Water Project Delivery Capability Report 2021*, which describes the likelihood of water delivery of a given amount of SWP Table A water. Over the past 10 years (from 2011-2020), annual Table A deliveries have not exceeded 3,100 thousand acre-feet (TAF). According to the report, there is a 23 percent likelihood that more than 3,000 TAF/year of Table A water will be delivered under the current estimates. For the purposes of the 2023 RMPU, it has been assumed that Watermaster will be able to purchase water from Metropolitan for replenishment purposes in one out of five years (20 percent of the time). The implications of these shortage assumptions are discussed in Chapter 6.1 of this report.

Additional sources of supplemental water that could be used for replenishment or other recharge programs include:

- Imported water from Metropolitan
- Groundwater and surface water supplies in the Santa Ana Watershed that can be supplied to the Chino Basin directly through existing or new conveyance facilities or by exchange
- Recycled water from the Western Riverside County Regional Wastewater Authority plant located in the Chino Basin
- Groundwater and surface water supplies from the Central Valley, conveyed to the Chino Basin through imported water conveyance facilities
- Groundwater and surface water supplies from the Colorado River Basin conveyed to the Chino Basin through Metropolitan facilities

The availability and cost of all other supplemental water sources are unknown at this time.

[30] Biennial Budget – FY 2022/23 and 2023/24, including Ten-Year Financial Forecast and Resolutions, under Budget, Rates & Charges. See pdf page 226 for Ten-Year Forecast. https://www.mwdh2o.com/budget-finance/

Table 4-3. Projected Cost to Purchase Imported Water from Metropolitan Water District of Southern California (Metropolitan) Excluding Capacity and Metropolitan Member Agency Imposed Charges

Year	Tier 1	Readiness to Serve (RTS) Charges						Total Metropolitan Imported Water Cost
		Metropolitan System-Wide RTS Charge	RTS Cost					
			IEUA Share of Metropolitan Water Purchased[1]	Projected 10-yr Rolling Average of Metropolitan Purchases[1, 2]	Annual IEUA Share of RTS	Projected Water Purchases[2]	RTS Unit Cost	
	($/af)	($/y)		(afy)	($/y)	(afy)	($/af)	($/af)
2023	$ 855	$ 154,000,000	4.01%	59,498	$ 6,181,000.00	69,908	$ 88.42	$ 943
2024	$ 903	$ 167,000,000	4.01%	60,587	$ 6,702,000.00	73,940	$ 90.64	$ 994
2025	$ 972	$ 167,000,000	4.06%	61,275	$ 6,781,000.00	77,971	$ 86.97	$ 1,059
2026	$ 1,037	$ 167,000,000	4.06%	63,182	$ 6,781,000.00	78,135	$ 86.79	$ 1,124
2027	$ 1,110	$ 167,000,000	4.16%	67,823	$ 6,948,000.00	78,300	$ 88.74	$ 1,199
2028	$ 1,190	$ 178,000,000	4.16%	71,445	$ 7,405,000.00	78,464	$ 94.37	$ 1,284
2029	$ 1,272	$ 187,000,000	4.16%	72,371	$ 7,780,000.00	78,629	$ 98.95	$ 1,371
2030	$ 1,350	$ 193,000,000	4.26%	73,911	$ 8,222,000.00	78,793	$ 104.35	$ 1,454
2031	$ 1,434	$ 194,000,000	4.26%	75,146	$ 8,265,000.00	79,010	$ 104.61	$ 1,539
2032	$ 1,512	$ 209,000,000	4.26%	75,903	$ 8,904,000.00	79,226	$ 112.39	$ 1,624

Notes:
These cost projections are estimates based on assumptions for future Tier 1 costs, RTS charges, and IEUA purchases from Metropolitan.
They are based on Metropolitan's Biennial Budget for Fiscal Years 2022/23-2023/24 which adopted water rates for calendar years 2023 through 2032, recent historical water purchase information from the IEUA, and projected water purchases developed in Watermaster's Storage Framework investigationInvestigation. This cost projection does not include the projected cost of the California WaterFix tunnel project.

1 - Estimates were provided by John Russ on February 2, 2023.
2 - Imported water purchases based on historical purchases and 2020 UWMP imported water projections.

CHAPTER 5
Basin Response to Planning Projections

This chapter describes the basin response to the planning projections. The basin response is described in terms of groundwater-level changes, hydrologic balance and hydraulic control. This information is used to determine the effectiveness of storm and supplemental water recharge activities in achieving OBMP goals and to inform Watermaster's decision on the location and magnitude of future supplemental water recharge.

5.1 PROJECTED GROUNDWATER-LEVEL RESPONSE

Future changes in groundwater levels under the 2020 SYR planning scenario were projected from July 2018 through June 2050. Figures 5-1a through 5-1d show the projected changes in groundwater levels for 2018 through 2030, 2030 through 2040, 2040 through 2050, and 2018 through 2050, respectively. Recall from Figure 4-4, mentioned above, that the managed storage peaks during the planning period in 2031 and declines thereafter. Managed storage roughly parallels the total storage in the Basin. The increasing managed storage through 2029 can be observed in the change in groundwater levels in Figure 5-1a, and the subsequent decline in managed storage can be seen in Figures 5-1b and 5-1c. The trends in groundwater level changes by period are as follows:

- From 2018 to 2030, groundwater levels are projected to:
  - decrease in the western part of the basin by up to 10 feet in the MVWD service area
  - decrease in southern part of the basin by about 10 feet in the vicinity of the CDA well field
- From 2030 to 2040, groundwater levels are projected to:
  - decrease by about 10 feet or more in the Ontario, FWC, CVWD, and JCSD service areas
  - remain largely unchanged across the rest of the Basin
- From 2040 to 2050, groundwater levels are projected to:
  - decrease by about 10 feet or more in the Ontario, FWC, CVWD, and JCSD service areas
  - remain largely unchanged across the rest of the Basin
- Cumulatively, from 2018 to 2050, groundwater levels are projected to:
  - decrease by about 10-25 feet across the eastern portion of the Basin, including the services areas of FWC, CVWD, JCSD, and eastern Ontario
  - decrease by about 10 feet or more across the western portion of the Basin, including the services areas of the Pomona, Upland, Chino, MVWD, and western Ontario
  - remain largely unchanged in the southernmost portion of the Basin, including along the Santa Ana River and Prado Basin

These changes in groundwater levels can influence the occurrences and magnitudes of land subsidence and/or pumping sustainability challenges.

Contour of Hydraulic Head Change (ft) Positive Change
July 2018 to July 2030

Contour of Hydraulic Head Change (ft) Negative Change
July 2018 to July 2030

Head Change (ft) *July 2018 to July 2030*

40 — Increase

0

40 — Decrease

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Groundwater Elevation Change – Layer 1
2020 SYR1 Groundwater Model from 2018 to 2030

Figure 5-1a

Prepared by:

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

WEST YOST - \\LFS-F901\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig5-1a_GWEL Change_2018_2030.mxd - csanchez - 7/13/2023

Contour of Hydraulic Head Change (ft) Positive Change
July 2030 to July 2040

Contour of Hydraulic Head Change (ft) Negative Change
July 2030 to July 2040

Hydraulic Head Change (ft) *July 2030 to July 2040*

40 — Increase

0

-40 — Decrease

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Concealed
- Location Approximate
- Location Uncertain
- Approximate Location of Groundwater Barrier

Groundwater Elevation Change – Layer 1
2020 SYR1 Groundwater Model from 2030 to 2040

Figure 5-1b

Prepared by:

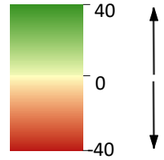
Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Contour of Hydraulic Head Change (ft) Positive Change
July 2040 to July 2050

Contour of Hydraulic Head Change (ft) Negative Change
July 2040 to July 2050

Hydraulic Head Change (ft) *July 2040 to July 2050*



Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Groundwater Elevation Change – Layer 1
2020 SYR1 Groundwater Model from 2040 to 2050

Figure 5-1c

Contour of Hydraulic Head Change (ft) Positive Change
July 2018 to July 2050

Contour of Hydraulic Head Change (ft) Negative Change
July 2018 to July 2050

Hydraulic Head Change (ft) *July 2018 to July 2050*

40 — Increase

0

-40 — Decrease

Appropriative Pool Pumping Wells

- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Chino Desalter Wells

Streams & Flood Control Channels

Flood Control & Conservation Basins

WSA — Water Service Area

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

Prepared by:

Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

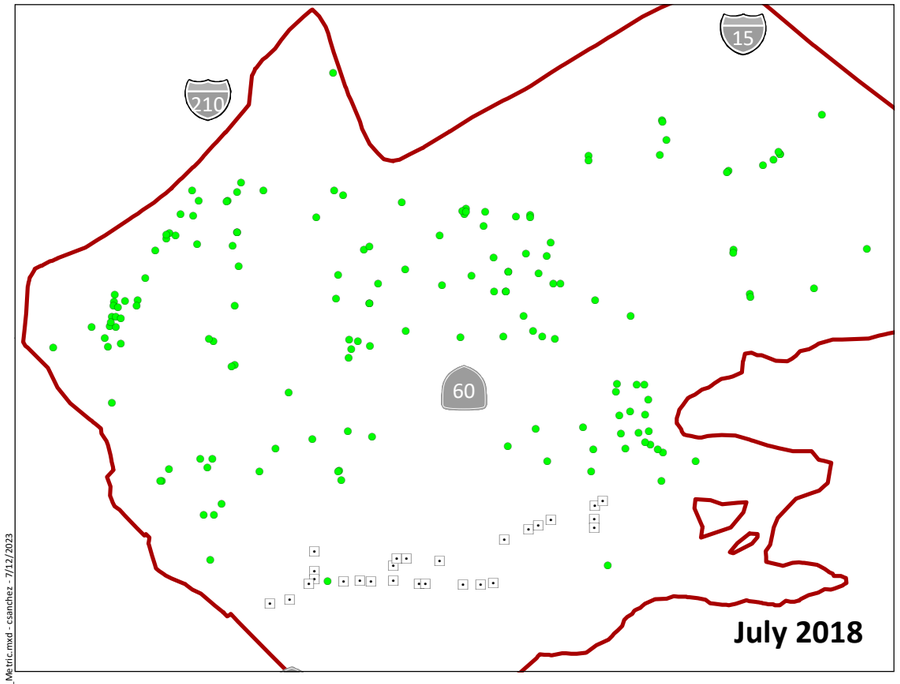
Groundwater Elevation Change – Layer 1
2020 SYR1 Groundwater Model from 2018 to 2050

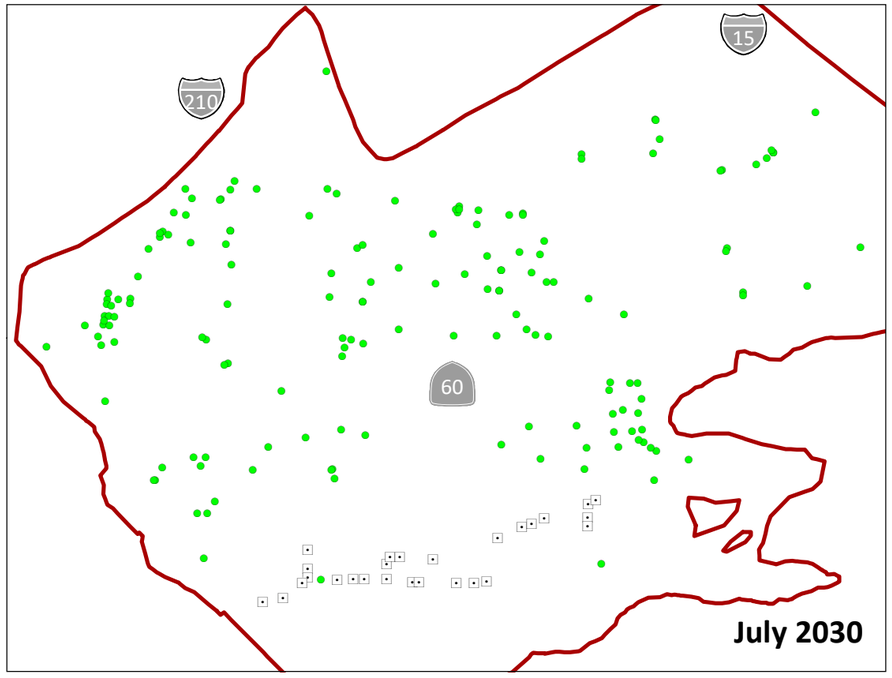
Figure 5-1d

5.1.1 New Land Subsidence

Historically, portions of the Basin have experienced aquifer-system compaction and associated land subsidence, which has caused damage to the land surface and its overlying infrastructure. These areas include most of MZ1 and the western portion of MZ2. The land subsidence was caused by the historical lowering of groundwater levels due to groundwater pumping (WEI, 2017). During subsidence, the pressure heads in fine-grained sediment layers are greater than the heads in surrounding course-grained sediments, which causes the pore water within the fine-grained layers to discharge into the coarse--grained layers with an immediate reduction in thickness of the fine-grained layers. Due to post-Judgment and post-OBMP decreases in pumping and increases in groundwater levels, long-term trends of land subsidence in the Basin have slowed but have not stopped. Watermaster has developed and implements a Subsidence Management Plan to guide pumping and recharge activities in the Basin to minimize or abate the future occurrence of land subsidence. Presently, the Watermaster is updating the Subsidence Management Plan to specifically address an acute area of land subsidence occurring in Northwest MZ1.

In this report, “new land subsidence” refers to land subsidence caused by lowering of groundwater levels below historical low groundwater levels in areas that are susceptible to land subsidence (i.e., in MZ1). Historical groundwater-level data and model-estimated historical groundwater levels were reviewed to develop a map of historical low groundwater levels across MZ1. This groundwater-level surface was used to assess the potential for new land subsidence, assuming no new land subsidence occurs if groundwater levels are maintained above the historical low groundwater levels (referred to as the constraint surface). Figure 5-2 shows the current (2018) and projected groundwater levels (as estimated by the 2020 SYR model) relative to the new land subsidence constraint surface for MZ1. Areas shown in white or blue identify where groundwater levels are above the constraint surface and new land subsidence is unlikely to occur. Areas that are pink or red identify where groundwater levels are lower than the constraint surface and new land subsidence is projected to occur. Review of the maps indicate that projected groundwater elevations are above the constraint surface except for two small areas centered on wells where groundwater pumping can be modified to ensure no new land subsidence. Therefore, Watermaster recommends that recharge continue to be prioritized in MZ1 and to update its Subsidence Management Plan to address the ongoing subsidence that is occurring in these areas.





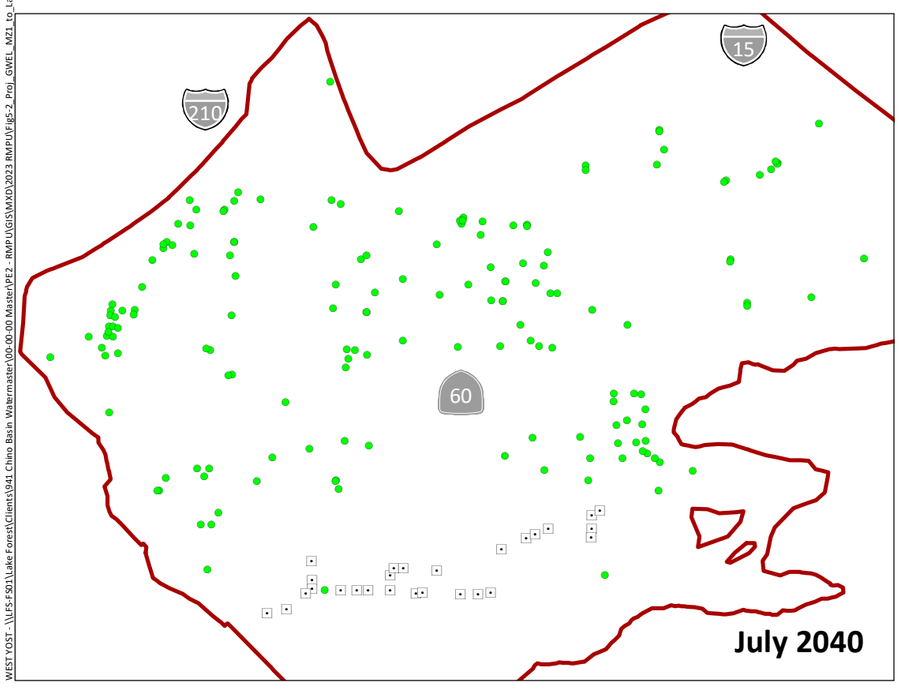
Projected Groundwater Level Minus Subsidence Metric (ft)

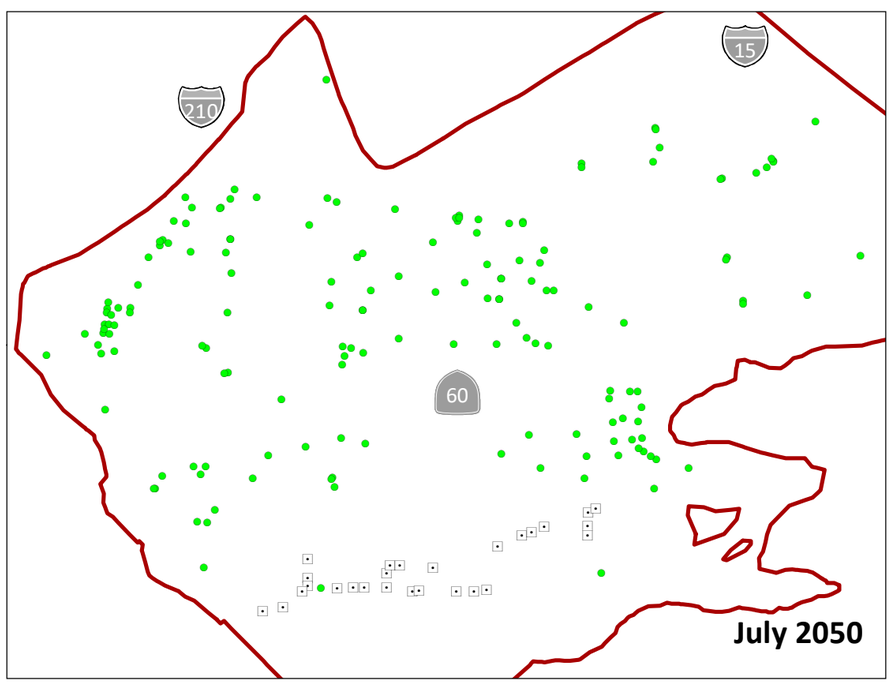
- -60 to -40
- -40 to -20
- -20 to 0
- 0 to 20
- 20 to 40
- 40 to 60
- 60 to 80
- 80 to 100
- 100 to 200
- 200 to 400

Chino Desalter Wells

Appropriative Pool Pumping Wells

MODFLOW Groundwater Flow Model Boundary (Active Model Domain)





WEST YOST - \\LF5-F901\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig5-2_Proj_GWEL_MZ1_to_L

Prepared by:

0 4 8 Miles

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Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Evaluation of Potential for Future Land Subsidence 2018-2050
Compared to New Land Subsidence Metric

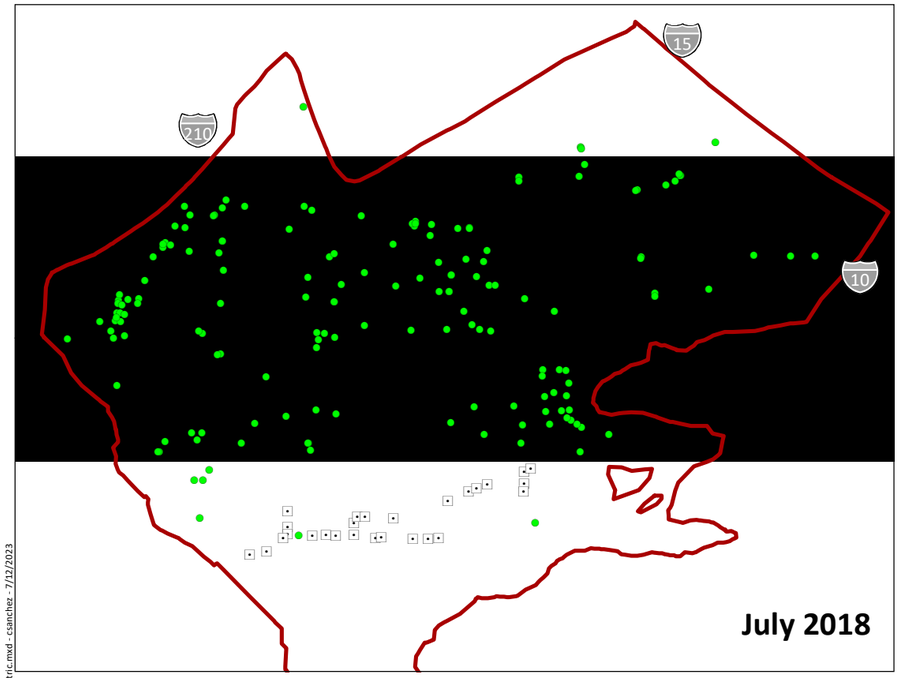
Figure 5-2

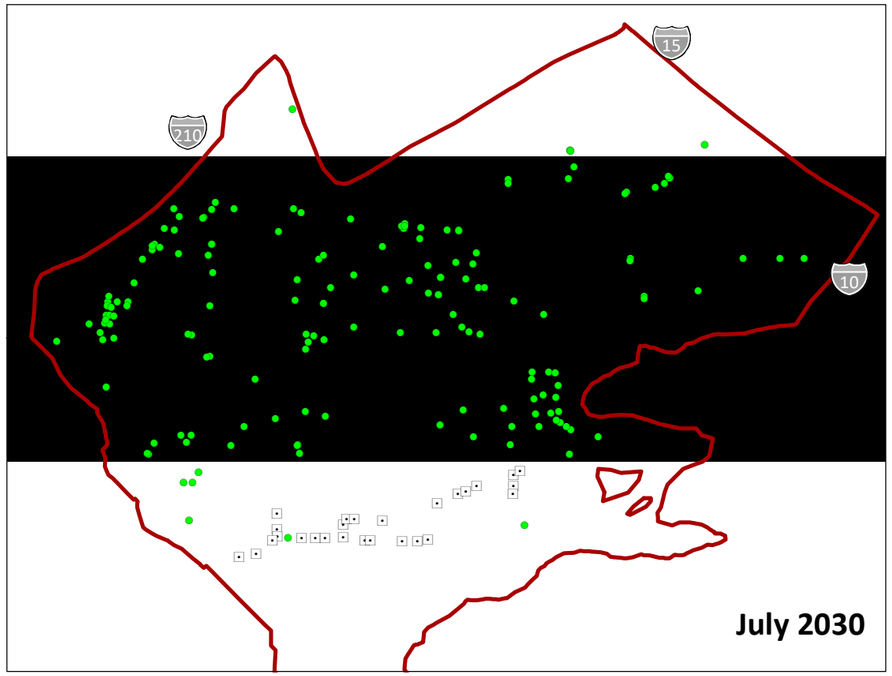
5.1.2 Pumping Sustainability

The term pumping sustainability, as used herein, refers to the ability to pump water from a specific well at a desired production rate, given the groundwater level at that well, and its specific well construction and equipping details. It has no nexus to the Judgment or Peace Agreements. "Pumping sustainability metrics" are defined for each well by the well owner and are updated periodically. Groundwater pumping at a well is presumed to be sustainable if the model-projected groundwater levels at that well location are above the well's pumping sustainability metric. If the groundwater level falls below the sustainability metric, the owner will either need to lower the pumping equipment in their well or reduce the well's pumping rate.

During the development of the OBMP, the parties that pump groundwater from MZ1 expressed concern that more recharge was required for sustainable pumping. To address the concern, the Peace Agreement provided for 6,500 afy of supplemental water recharge in MZ1 (discussed above). Pumping sustainability in MZ3 in the JCSD and CDA well fields was a concern expressed during the development of the 2013 RMPU.

Pumping sustainability was evaluated in the 2020 SYR report, and this work is incorporated into the 2023 RMPU. Parties provided Watermaster the maximum depth to groundwater required to maintain sustainable pumping rates for each of their wells. A constraint surface was created by interpolating these values at wells across the Basin. Pumping sustainability is a concern if groundwater levels fall below the pumping sustainability constraint surface. Figure 5-3 shows a series of maps that describe the time history of current (2018) and projected groundwater levels relative to the pumping sustainability constraint surface across the Chino Basin. White to dark blue areas represent where groundwater levels are projected to be above the pumping sustainability constraint surface. Pink to red areas represent where groundwater levels are projected to be below the pumping sustainability constraint surface. Groundwater levels are projected to be above the sustainability surface through 2050 over most of the Basin except for the CDA and JCSD well fields and two wells in the FWC service area. Groundwater levels are projected to decline in these areas during 2018-2050 which could increase the pumping sustainability challenges at these wells over time.





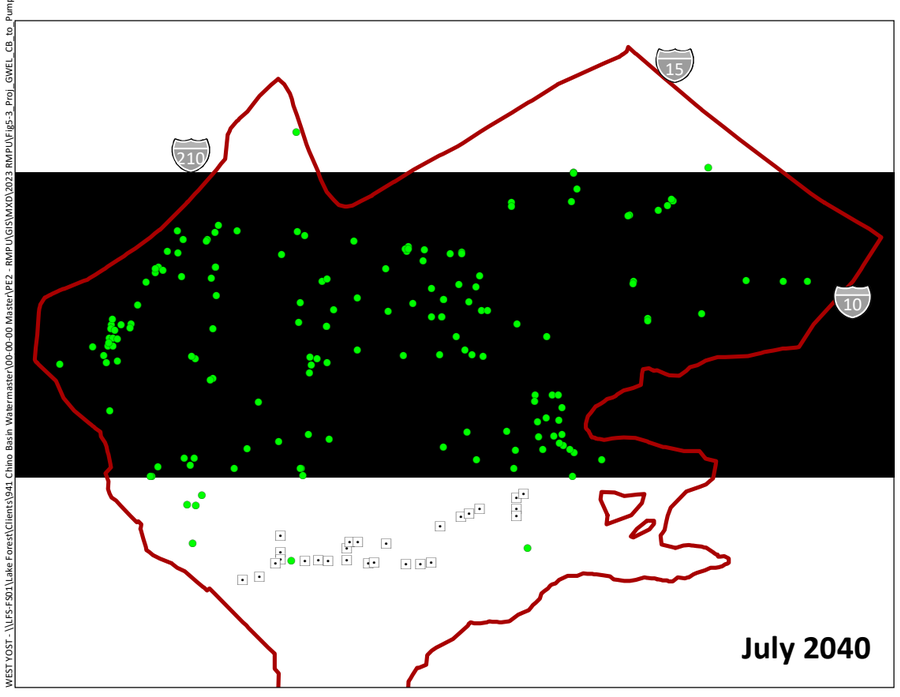
Pumping Sustainability Metric (ft)

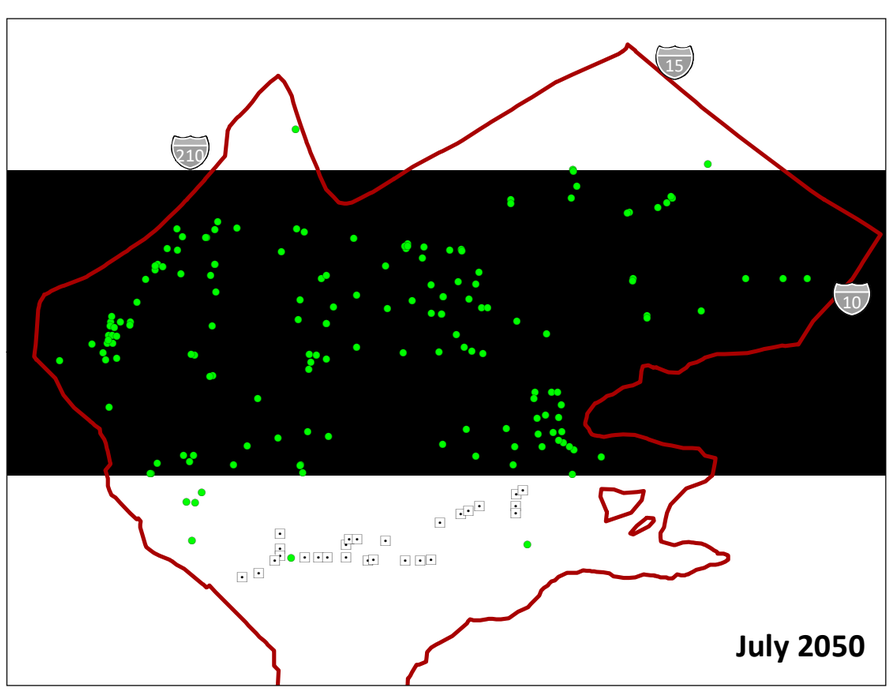
- -60 to -40
- -40 to -20
- -20 to 0
- 0 to 20
- 20 to 40
- 40 to 60
- 60 to 80
- 80 to 100
- 100 to 200
- 200 to 400

Chino Desalter Wells

Appropriative Pool Pumping Wells

MODFLOW Groundwater Flow Model Boundary (Active Model Domain)





WEST YOST - \\LFS-F901\Lake Forest\Clients\941 Chino Basin Watermaster\00-00-00 Master\PE2 - RMPU\GIS\MXD\2023 RMPU\Fig5-3_Proj_GWEL_CB_to_Pum

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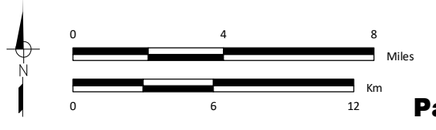


Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Evaluation of Potential for Future Pumping Sustainability Challenges 2018-2050
Compared to Sustainability Metric

Figure 5-3

5.2 PROJECTED HYDROLOGIC BALANCE

Table 5-1 shows the time history of the hydrologic balance for MZ1, MZ2, and MZ3, based on groundwater model simulations of historical data for the period of fiscal 2000/01 through 2021/22 and for planning scenario 2020 SYR for the period fiscal of 2022/2023 through 2029/2030 (West Yost, 2021). The cumulative balance of recharge and discharge in all MZs is expected to decline between 2023 and 2030.

As described in Chapter 3.2, the existence of controlled overdraft permitted by the Judgment and the Peace II Agreement means that it is impossible to maintain a balance of recharge and discharge in each MZ if the controlled overdraft is pumped: the balance has to be negative in some MZs and storage will decline. The physical decline in storage permitted in the Peace II Agreement is required to achieve hydraulic control (WEI, 2007).

The cumulative balance of recharge and discharge in MZ1 is expected to decline from about 7,500 af in 2023 to about -3,500 in 2030. Therefore, Watermaster recommends that recharge be prioritized in MZ1.

5.3 PROJECTED HYDRAULIC CONTROL

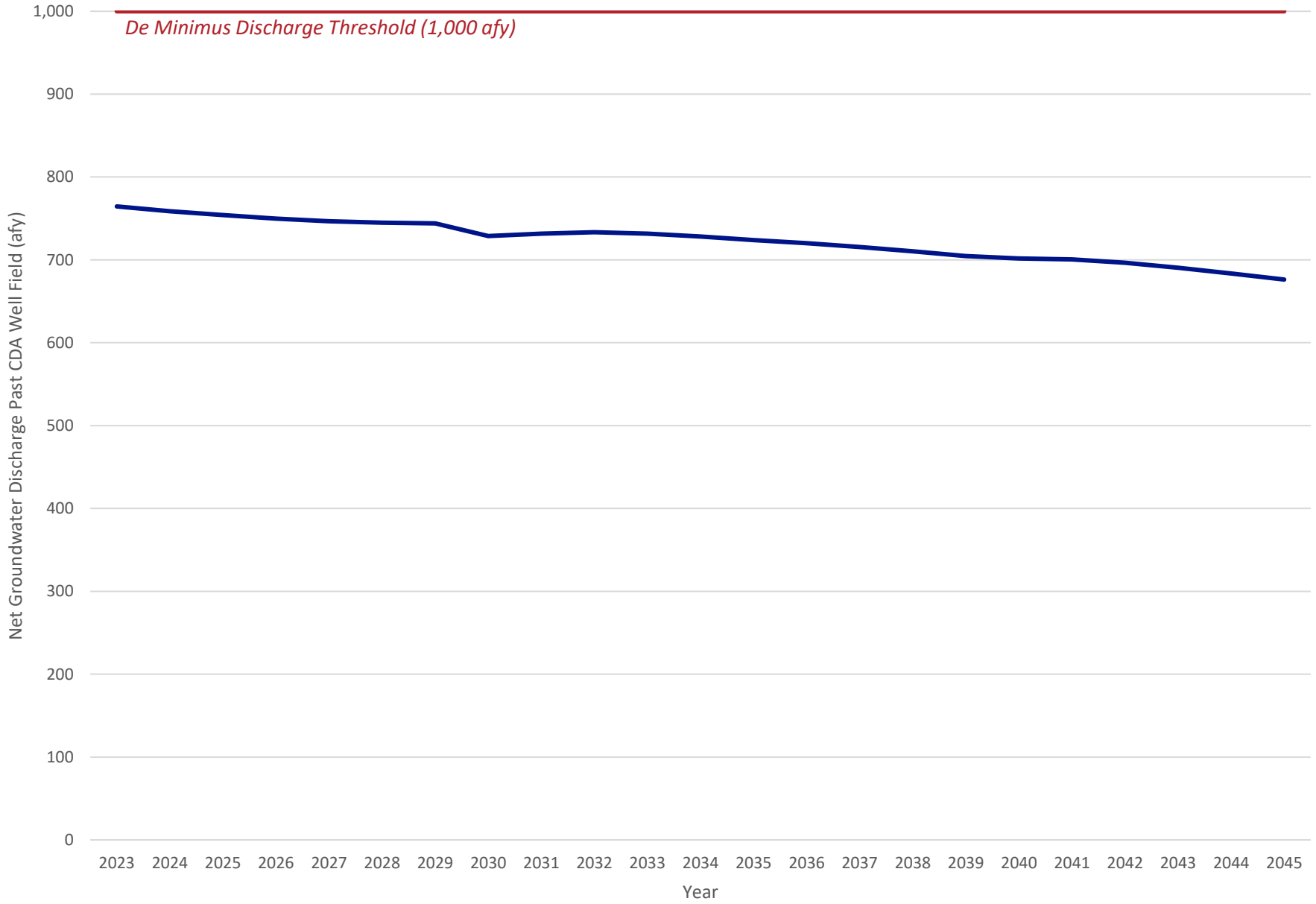
Figure 5-4 shows the current (2018) and projected groundwater discharge past the CDA well field as estimated by the 2020 SYR model under the 2020 SYR planning scenario. The figure shows that groundwater discharge past the CDA well field is projected to be less than 1,000 afy through 2045, and hence, hydraulic control is projected to be maintained under the 2020 SYR planning scenario.

Table 5-1. Historical and Projected Change in Storage in MZ1, MZ2, and MZ3

Fiscal Year	MZ1		MZ2		MZ3		Total	
	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
2001	-549	-549	-14,006	-14,006	-14,566	-14,566	-29,121	-29,121
2002	-2,484	-3,033	-12,595	-26,600	-10,723	-25,289	-25,801	-54,922
2003	-5,016	-8,049	-12,672	-39,273	-12,539	-37,828	-30,227	-85,149
2004	-363	-8,412	-11,759	-51,031	-11,863	-49,691	-23,985	-109,134
2005	6,260	-2,152	-1,649	-52,680	-11,795	-61,485	-7,184	-116,318
2006	19,159	17,007	8,022	-44,658	-1,208	-62,694	25,973	-90,345
2007	15,633	32,640	-4,584	-49,243	-2,077	-64,771	8,972	-81,373
2008	-13,845	18,796	-11,518	-60,760	-12,461	-77,231	-37,824	-119,196
2009	-12,582	6,214	-15,312	-76,072	-12,196	-89,427	-40,090	-159,286
2010	-8,243	-2,030	-10,770	-86,843	-8,343	-97,770	-27,357	-186,643
2011	9,607	7,577	2,609	-84,234	2,454	-95,316	14,670	-171,973
2012	5,127	12,704	4,258	-79,977	2,258	-93,058	11,642	-160,331
2013	-10,855	1,848	-9,620	-89,597	-7,254	-100,312	-27,730	-188,061
2014	-13,918	-12,070	-7,031	-96,628	-12,035	-112,347	-32,984	-221,045
2015	-7,954	-20,024	-4,160	-100,787	-3,425	-115,772	-15,539	-236,584
2016	3,556	-16,468	-12,543	-113,331	-2,501	-118,274	-11,488	-248,072
2017	14,488	-1,980	-1,221	-114,551	-2,591	-120,864	10,677	-237,396
2018	15,725	13,745	5,216	-109,336	-1,774	-122,638	19,167	-218,229
2019	4,669	18,414	6,995	-102,340	-3,185	-125,823	8,479	-209,750
2020	4,103	22,517	-3,851	-106,191	2,917	-122,906	3,169	-206,580
2021	-7,934	14,583	-13,084	-119,276	-4,236	-127,143	-25,255	-231,835
2022	-7,092	7,491	-8,482	-127,757	-10,061	-137,204	-25,635	-257,470
2023	-2,888	4,603	-288	-128,045	1,281	-135,923	-1,895	-259,365
2024	-2,230	2,373	94	-127,951	1,136	-134,787	-1,000	-260,365
2025	-1,324	1,049	215	-127,736	1,247	-133,540	138	-260,227
2026	-1,209	-160	-123	-127,860	930	-132,610	-402	-260,630
2027	-1,134	-1,294	-378	-128,238	255	-132,355	-1,257	-261,887
2028	-1,060	-2,355	-950	-129,187	-546	-132,901	-2,556	-264,443
2029	-917	-3,272	-1,021	-130,208	-1,426	-134,327	-3,364	-267,807
2030	-208	-3,480	-1,188	-131,396	-1,927	-136,254	-3,322	-271,129
Average (2023-2030)	-1,371		-455		119		-1,707	

Gray cells indicate projections from 2020 SYR1 as documented in the 2020 Safe Yield Recalculation Report (WEI, 2020).

Figure 5-4. Evaluation of Future Maintenance of Hydraulic Control (2023-2045)



5.4 DATA COLLECTION AND EVALUATION FINDINGS RELATED TO THE RMPU

As described in Chapter 4.1 Watermaster recently completed the DCE Report which describes and documents the required data collection and evaluation through Fiscal Year 2021/22 (West Yost, 2022). In these reports, Watermaster compares actual data and updated projections to the data and assumptions that were used in the 2020 SYR Projection. These datasets are compared to "[e]valuate prudent management discretion to avoid or mitigate undesirable results including, but not limited to, subsidence, water quality degradation, and unreasonable pump lifts."[31] Several findings of the DCE Report are related to the recharge master planning process as follows:

- The actual data (FY 2018/19 through FY 2021/22) and updated projections (FY 2022/23 through FY 2029/30) for groundwater pumping indicate that pumping in the Chino Basin is higher than the 2020 SYR assumptions
- The increase production has the potential for undesirable results related to increased risk of new land subsidence in Northwest MZ1 and pumping sustainability challenges near the JCSD well field
- This finding further emphasizes the need to direct recharge in these areas or employ alternative groundwater management projects/programs to support groundwater levels in these areas

Currently, the JCSD can operate its wells at the desired production rates.[32] While the findings of the DCE Report indicate the potential for pumping sustainability challenges in the JCSD well field, the precise nature of the future pumping sustainability challenges is unknown. In the forthcoming reevaluation of the Safe Yield that will be completed in FY 2024/25 (2025 Safe Yield Reevaluation), Watermaster will update the groundwater-flow model to simulate multiple future water supply plans and climate scenarios. The results of this effort will be used to define the extent and causes of pumping sustainability challenges in the Chino Basin and improve the ability to identify precise and effective actions to mitigate pumping sustainability challenges, building on prior studies.[33]

[31] 2017 Court Order, p. 17

[32] Conversation with Bryan Smith, June 2023.

[33] A study documented in the 2013 RMPU (WEI, 2013) evaluating the potential mitigation actions for pumping sustainability challenges in the JCSD well field suggested that "reducing production or relocating production away from the JCSD well field is more hydraulically efficient than recharge," but that recharge measurably improved pumping sustainability in the JCSD well field.

CHAPTER 6
Recharge Capacity Needs to Meet Future Obligations

This chapter of the report describes the need for new recharge capacity. The need for new recharge capacity is based on a comparison of projected future recharge requirements and physical capacity to achieve the required recharge. As with all planning projections, uncertainty increases with longer horizons. This report focuses on the recharge capacity needs through 2045.

6.1 FUTURE RECHARGE AND REPLENISHMENT PROJECTIONS

Chapter 4 describes the updated projected water demands, water supply plans, and associated replenishment obligations. Independent of replenishment obligations, Watermaster is obligated to recharge at least 6,500 afy of supplemental water in MZ1 through 2030 per the Peace II Agreement. A portion of the 6,500 afy of supplemental water obligation is projected to be satisfied through recycled water recharge. The remainder of the water that must be recharged in MZ1 can also be used to satisfy a replenishment obligation. The sum of the projected replenishment obligation and the additional supplemental water that must be recharged in MZ1 (through 2030) is Watermaster's total projected recharge obligation.

Figure 4-3 shows Watermaster's projected total recharge obligations from 2023 through 2045 based on the DCE Report. Through 2045, the maximum annual replenishment obligation is about 3,800 afy. The Parties project that 90 percent of a replenishment obligation is satisfied from storage and 10 percent is satisfied by wet-water recharge via spreading and injection based on the Data Collection and Evaluation Report for Fiscal Year 2021/2022 (West Yost, 2023). Thus, the projected annual replenishment obligation assumed to be satisfied by wet-water recharge is less than the total obligation. Table 6-1 shows the:

- Projected annual replenishment obligation
- Projected annual replenishment obligation assumed to be satisfied by wet-water recharge
- Projected annual recharge obligation in MZ1
- Projected recharge requirements (*i.e.,* the maximum of the two items above, which assumes that the MZ1 recharge obligation is partly met through the recharge from replenishment obligations)

The maximum projected total recharge requirement is about 4,200 afy, and it's expected to occur in 2030.

6.1.1 Availability of Supplemental Water for Replenishment

Chapter 4.2 described the amount of recycled water available – about 16,420 afy of recycled water is projected to be available currently and through 2045. Chapter 4.5 described the availability of imported water to meet Watermaster's recharge and replenishment obligations. For the purposes of the 2023 RMPU, it has been assumed that Watermaster will be able to purchase water from Metropolitan for replenishment purposes in one out of five years (20 percent of the time).

Table 6-1. Supplemental Wet-Water Recharge Capacity, Projected Replenishment Obligation, and Recharge Capacity Required to Meet Replenishment Obligations Under Cumulative Adverse Conditions

FY 2020-2045; acre-feet per year

Fiscal Year (a)	Projected annual replenishment obligation (b)	Projected annual replenishment obligation assumed to be satisfied by wet-water recharge (c) = 0.1*(b)	Projected annual recharge obligation in MZ1 (d)	Projected total recharge requirements (e) = max (c) or (d)	Supplemental wet-water recharge capacity (f)	Recharge capacity required to meet replenishment obligation under cumulative adverse conditions			Excess supplemental wet-water recharge capacity under worst-case scenario (i) = (h) - (e)
						If imported water is available one out of five years (f)	If reoperation were discontinued (g) = (f) + reoperation offset	If DYYP recharge occurs on the same year through 2028 (h) = (g) + 25,000	
2023	0	0	3,010	3,010					
2024	0	0	3,010	3,010					
2025	0	0	3,010	3,010		15,050	27,470	52,470	19,790
2026	1,129	113	3,010	3,010					
2027	3,869	387	3,010	3,010					
2028	6,608	661	3,010	3,010					
2029	9,348	935	3,010	3,010					
2030	12,088	1,209	3,010	3,010		15,050	43,354	43,354	28,906
2031	8,454	845	0	845					
2032	7,029	703	0	703					
2033	5,604	560	0	560					
2034	4,180	418	0	418	72,260				
2035	2,755	275	0	275		2,802	2,802	2,802	69,458
2036	5,009	501	0	501					
2037	7,264	726	0	726					
2038	9,518	952	0	952					
2039	11,772	1,177	0	1,177					
2040	14,027	1,403	0	1,403		4,759	4,759	4,759	67,501
2041	9,959	996	0	996					
2042	9,959	996	0	996					
2043	9,959	996	0	996					
2044	9,959	996	0	996					
2045	9,959	996	0	996		4,979	4,979	4,979	67,281

(b) Assumes 90 percent of a replenishment obligation is satisfied from storage and 10 percent is satisfied by wet-water recharge via spreading and injection based on the Data Collection and Evaluation Report for Fiscal Year 2021/2022 (West Yost, 2023)

(c) The total obligation to MZ1 is 6,500 afy. 3,490 afy is projected to be recharged in MZ1 with recycled water per IEUA.

(e) Supplemental wet-water recharge capacity is assumed to be the total supplemental water recharge capacity in 2023 conditions per Table 2-6 (88,680 af) minus the capacity expected to be used for recycled water (16,420 af).

6.1.2 Future Recharge Capacity Requirements for Supplemental Water

Requirements for future supplemental water recharge capacity are estimated by assessing the future supplemental water recharge projections in the context of the availability of supplemental water for recharge. Recycled water is assumed 100-percent reliable, and therefore the recharge capacity requirement to recharge recycled water is equal to its projected supply. The Metropolitan supply is assumed to be 20 percent reliable therefore, the recharge capacity required to meet recharge and replenishment obligations with imported water supplied by Metropolitan is five times the projected recharge and replenishment requirement. Figure 6-1 shows the supplemental water recharge capacity available at spreading basins (less that used for recycled water recharge), in-lieu recharge capacity, and ASR recharge capacity as a stacked bar chart—the total supplemental capacity being the sum of these recharge capacities (72,260 af). Figure 6-1 also shows the time history of the supplemental water recharge capacity required to recharge imported water from Metropolitan under cumulative adverse conditions:

- If imported water is available one out of five years (*i.e.,* 20 percent of the time)
- If reoperation were discontinued (*i.e.*, if there is not reoperation water to offset the desalter replenishment obligation)
- If DYYP recharge occurs on the same year (additional 25,000 af of capacity required)

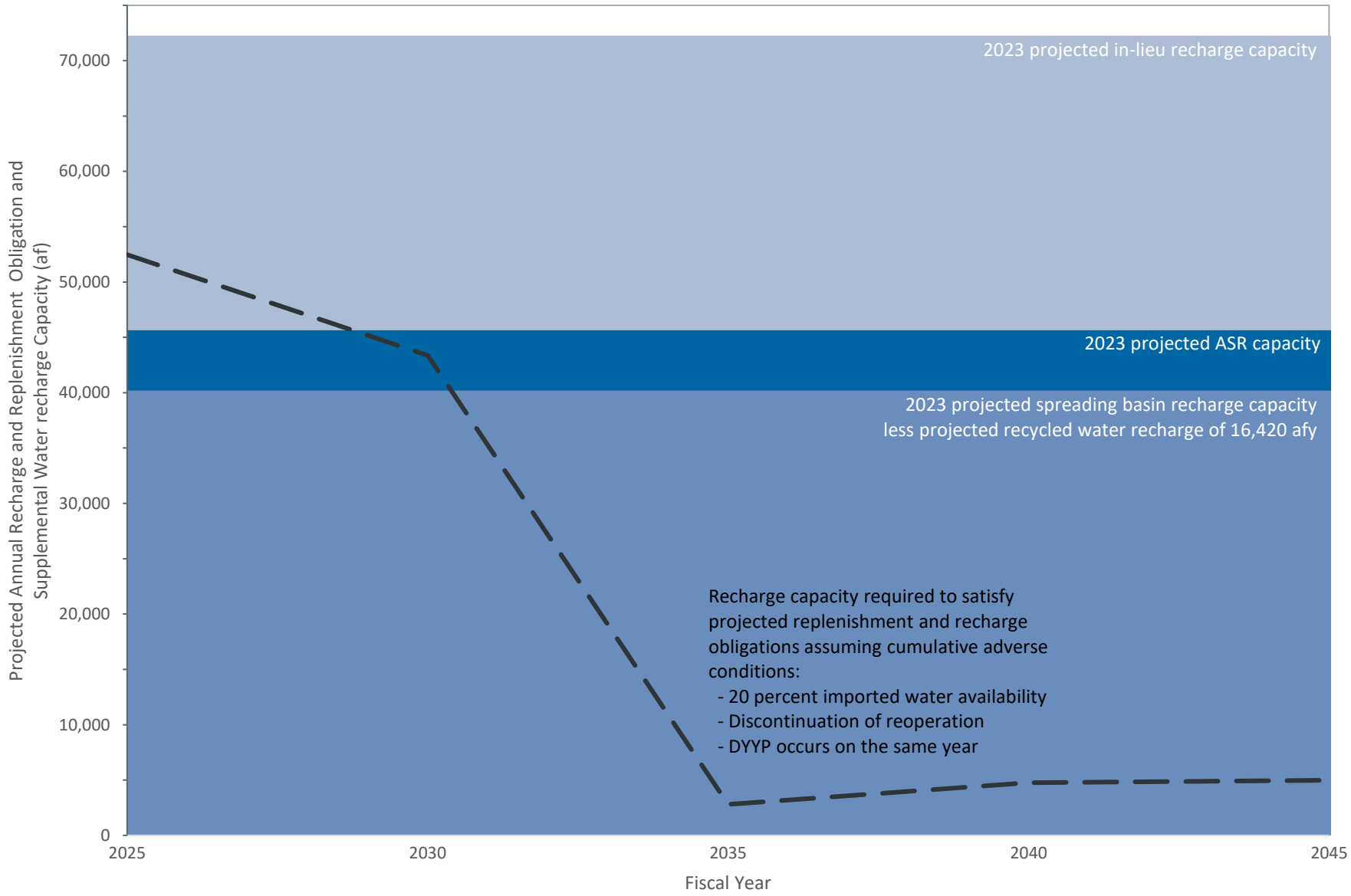
The projected maximum required recharge capacity is shown in Figure 6-1 and Table 6-1 through 2045. Watermaster and IEUA are projected to have enough recharge capacity available to them to meet all their recharge and replenishment obligations through 2045.

6.2 FUTURE RECHARGE CAPACITY REQUIREMENTS TO FACILITATE STORAGE AND RECOVERY PROGRAMS

There are no current Storage and Recovery Programs in the Chino Basin other than the DYYP, the contract for which expires in 2028. Future Storage and Recovery Programs in the Chino Basin are subject to Watermaster's review and approval to ensure that water stored and recovered in the Chino Basin will not cause MPI to a party or the Basin, pursuant to the OBMP and the Peace Agreement.

In FY 2023/24, the Watermaster initiated the development of a Storage and Recovery Master Planning process pursuant to the 2020 OBMP Update. The objective of the Storage and Recovery Master Plan is to facilitate the development, implementation, and optimization of Storage and Recovery Programs to increase water-supply reliability, protect or enhance Safe Yield, and improve water quality. For future Storage and Recovery Programs, recharge magnitudes and capacities are unknown. The availability of existing recharge capacity and the need for new recharge capacity will be determined by the operational plan of the Storage and Recovery Program, the results of Watermaster's evaluation of the Basin response to the Storage and Recovery Program, and any mitigation actions identified by Watermaster. Further detail on the potential need for additional recharge capacity due to the implementation of Storage and Recovery Programs will be included in the Storage and Recovery Master Plan and will be summarized in a future RMPU.

Figure 6-1. Comparison of Projected Annual Recharge and Replenishment Obligation to Supplemental Water Recharge Capacity



6.3 RECHARGE TO MANAGE LAND SUBSIDENCE AND PUMPING SUSTAINABILITY

Projections of new land subsidence and pumping sustainability were evaluated in the 2020 Safe Yield Report for a range of potential groundwater pumping and recharge scenarios (WEI, 2020). Pumping sustainability refers to maintaining groundwater levels high enough to ensure that the planned pumping from wells can be achieved. The 2020 SYR1 model was used to determine the potential for new land subsidence and pumping sustainability challenges under different scenarios. Model results concluded that there are no new projected pumping sustainability challenges which could be practically managed with recharge.

Trends in land subsidence in MZ-1 are being closely monitored. Since 1992, long-term trends of gradual land subsidence have been noted in annual reports produced for the Ground Level Monitoring Committee (GLMC). However, in recent years, observations from InSAR estimates of ground motion have shown that long-term trends of land subsidence have slowed. This is largely due to the decreases in pumping and increases in recharge that have caused heads to stabilize or increase, therefore slowing the drainage and compaction of the aquitards. In 2017, the GLMC modeled the effects of decreased pumping and increased recharge on successfully mitigating subsidence with a one-dimensional aquifer-system compaction model in Northwest MZ-1. Observations over the past few years with decreased pumping and increased recharge have generally confirmed these model results. An update to the Subsidence Management Plan (SMP) is expected in FY 2023/24 and will incorporate the preferred subsidence-management alternative for Northwest MZ-1 into the existing SMP.

6.4 RECHARGE TO ENSURE THE BALANCE OF RECHARGE AND DISCHARGE

For the period of FY 2000/01 through FY 2021/22, the balance of recharge and discharge averaged about 341 afy, -5,800 afy, and -6,200 afy for MZ1, MZ2, and MZ3, respectively. A positive balance means that recharge exceeds discharge. The positive balance in MZ1 is, in part, the result of the 6,500 afy supplemental water recharge provided for in the Peace agreements. The negative balances for MZ2 and MZ3 are the result, in part, of planned and permitted reductions in storage.

The balance of recharge and discharge for FY 2022/23 through FY 2026/27 (2027/28 is the year the next RMPU will be completed) is projected to average -1,760 afy, -100 afy, and 970 afy for MZ1, MZ2, and MZ3, respectively. These balances are based on the 2020 SYR1 model, which does not account for the recharge associated with the DYYP that has occurred since July 2018. The implication of not including the DYYP recharge is that the projected balance estimates are biased low. The changes in balances from the historical period are due to projected pumping by the parties.

West Yost's recommendation to Watermaster regarding the location and magnitude of supplemental water recharge for replenishment has been to maximize recharge to MZ1 up to its spreading capacity, then to maximize recharge in MZ3 up to its recharge capacity, and then to recharge in MZ2. Given that the long-term land subsidence management plan for Northwest MZ1 has not yet been completed and there are no projected recharge-related pumping substantiality challenges which can be practically mitigated through recharge, the existing strategy and the facilities on which it relies are sufficient at least until the next RMPU occurs in 2028. This includes continuing the recharge of at least 6,500 afy of supplemental water in MZ1 until the next RMPU occurs in 2028 or the MZ1 subsidence management plan is completed.

CHAPTER 7
Renewal and Replacement Plan

This chapter presents the renewal and replacement (R&R) planning effort that was completed for Chino Basin recharge system assets. The R&R planning effort included a desktop study to estimate the remaining useful life (RUL) recharge system assets based on asset installation date and an assumed asset useful life. RUL results were used to forecast R&R needs over a 10-year period. Prior to this effort, recharge system assets were not included in any Basin-wide R&R planning, which meant that assets were experiencing failure, with no plan or budget to replace them. The forecast presented in this chapter is intended to be incorporated into future planning and budgeting so recharge system assets can be refurbished, rehabilitated, or replaced proactively, prior to failure.

The methodology employed for the desktop study included four main steps, listed below, and detailed in following Chapters of this chapter:

1. **Asset Inventory** – Development of an asset inventory of Chino Basin recharge system assets and their associated attributes.
2. **Useful Life and Remaining Useful Life Estimates** – Assignment of estimated useful life values for all asset types; calculation of remaining useful life for all assets.
3. **Unit Cost Estimates** – Development of unit costs for all asset types.
4. **Renewal and Replacement Planning** – Development of renewal intervals and associated costs for all asset types; projection of renewal or replacement date based on age/installation date; and development of a 10-year R&R forecast.

7.1 ASSET INVENTORY

To develop an asset inventory, several databases and existing reports were obtained and reviewed. Information from various sources was consolidated to develop a planning level inventory of Chino Basin recharge system assets and their associated attributes (e.g., age, size, owner, etc.). Note that asset owners include IEUA, CBWCD, and SBCFCD. Watermaster has obligations for operation and maintenance of Chino Basin recharge system assets but does not own any of the assets.

IEUA provided two databases with asset data in August 2022, including:

- Operation & Maintenance (O&M) asset list export from SAP, IEAU's enterprise resource planning software. According to IEUA, assets included in the SAP O&M listing are those which can potentially require a work order notification for maintenance. The SAP O&M listing included 600 records.
- Finance asset list export from SAP. According to IEUA, assets included in the SAP Finance listing are those which require capitalization. The SAP Finance listing (Fund 10300) included 222 records.

The SAP O&M listing served as the primary source of data for the asset inventory. The inventory was verified and revised as necessary using existing reports and the SAP Finance listing. Reports included the *IEUA FY 2016/17 Asset Management Plan* (IEUA AMP) and the *Chino Basin Recharge Facilities Operations Procedures* (Groundwater Recharge Coordinating Committee, April 2019).

The consolidated asset inventory consists of 512 entries and associated asset attributes. Assets were categorized based on type into a classification (class), and a subclass if necessary. Due to incomplete data, certain assumptions were made to complete the inventory; those assumptions included:

- Asset owner
  - Asset owner for the Basins was assigned based on asset owners identified in the IEUA AMP Asset Profiles (e.g., IEUA, SBCFCD, etc.).
  - Other assets within/at each Basin were assumed to be the same as the Basin owner, unless otherwise specified. IEUA provided clarification on certain assets such as intermediate wells, power assets, and rubber dams which were in some cases different than the Basin owner.[34]
  - All communication and level sensor assets are owned by IEUA.
- Asset age
  - Age was initially obtained from the basin as-builts and IEUA AMP.
  - Additional age information was obtained from the IEUA AMP Asset Profiles – History of Select Assets table, which lists completed capital improvement activities. The more recent of these two dates was selected for asset age.
  - Level transmitter age was obtained from the level transmitter inventory which is updated annually as part of the Annual Progress Report for Water Rights to the State Board.
- Size/Capacity
  - Asset size (e.g., diameter) or capacity (e.g., acre-feet) were populated based on best available information. Many assets were quantified using aerial imagery such as culverts (length), berm (length and width), and (spillway area).
  - Berms were assumed to be triangular, 5-feet tall by 10-feet wide
  - Box culvert concrete was assumed to be 10-inches thick.

Table 7-1 presents a summary of the assets by unique asset class and subclass. The full asset inventory was provided electronically.

[34] Email correspondence from Andy Campbell, IEUA (October 21, 2022 and December 1, 2022)

Table 7-1. Chino Basin Asset Inventory Summary

Class - Subclass	Asset Type (Description)	Count of Assets
BASIN-FLOW	Basin Type Flow-Through	18
BASIN-OFFCH	Basin Type Off-Channel	26
LAND	Land/Property	31
WELL-MONITOR	Monitoring Well	8
WELL-RECHARGE	Recharge Well	7
COMM-RADIO	Communication Radio Antenna	28
CONTROL-HMI	Human Machine Interface (HMI)	14
CONTROL-RTU	Remote Terminal Unit (RTU)	10
CONTROL-I/O	Input/Output Hub	28
CONTROL-PLC	Programmable Logic Controller (PLC)	26
CONTROL-PANEL	Control Panel	17
INST-LEVEL	Level Transmitter	52
INST-PRESSURE	Pressure Transmitter	11
INST-AIR	Air Pressure Transmitter	4
INST-FLOW	Flow Transmitter	6
INST-FLOWMETER	Flow Meter	12
STRUC-GATEA	Automated Gate Valve	45
STRUC-GATEM	Manual Gate Valve	23
STRUC-VALVE	Miscellaneous Valve	33
STRUC-CLVRT MINOR	Culvert, under 48" diameter	25
STRUC-CLVRT MAJOR BOX	Box Culvert, Multiple Channels	6
STRUC-CLVRT MINOR BOX	Box Culvert, Single Channel	9
STRUC-BERM	Basin Boundary Berm	22
STRUC-SPILL	Concrete Spillway	13
STRUC-ROCKSPILL	Rock Spillway	5
STRUC-BLDG	Concrete/CMU Control Building	6
STRUC-DAM	Rubber Dam	6
STRUC-PIPE	Pipeline	4
HVAC	HVAC Unit	1
PMP	Pump	3
PMP-SUMP	Sump Pump	2
BLOW	Blower	6
ELEC-GEN	Generator	1
ELEC-TRANSFRM	Transformer	4
	Total	**512**

7.2 USEFUL LIFE AND REMAINING USEFUL LIFE ESTIMATES

Asset useful life (UL) is the time that an asset provides valued service, after which it does not meet its intended service level. End of life is not necessarily indicative of catastrophic failure, and in most cases an asset can still hold functionality (but with a reduced level of service) when it has reached the end of its useful life. Asset remaining useful life (RUL) can be estimated by comparing the actual age of assets (determined from installation date) to a standard useful life expectancy. In the absence of condition or performance data, this approach provides an initial determination of assumed condition and can be used to project estimated renewal needs. Municipal utility system assets vary by type, manufacture, design, construction, and quality. They have different characteristics in how they operate and, consequently, will have different profiles of how they perform and ultimately fail. Standard useful life expectancies are documented by the American Water Works Association, Water Environment Research Foundation, in addition to other industry associations. Useful life expectancies were developed for the recharge system assets using these industry standards. Each asset type within the recharge system was assigned an estimated useful life, as presented in Table 7-2.

RUL was calculated for each asset by subtracting the asset age (how long the asset has been installed) from its estimated useful life (UL). For example, an asset with a 50-year useful life that has been in service 35 years would have a RUL of 15 years.

Eqn. 7-1: RUL = UL – age

7.3 UNIT COST ESTIMATES

Unit costs were developed for each asset type to estimate future R&R costs. Appendix D of the 2013 RMPU developed unit costs and assumptions for many recharge system assets. These unit costs were escalated to 2023 costs[35] and used where possible. For assets not included in the 2013 RMPU, unit costs were developed using West Yost cost databases and input from IEAU staff. Some assets such as basins and spillways vary greatly in size and construction and could not be assigned a standard unit cost; these are noted with 'NA' in the unit cost column and were calculated differently for R&R cost projections (discussed in Section 7.4). Unit costs are shown in Table 7-2.

[35] Unit costs were escalated from 2013 to 2023 using the ENR City Cost Index – Los Angeles

Table 7-2. Useful Life and Unit Cost of Recharge System Assets

Asset Type (Description)	Useful Life, years	Units	Unit Cost, dollars
Civil/Site Assets			
Basin Type Flow-Through	120	AF	NA[(a)]
Basin Type Off-Channel	120	AF	NA[(a)]
Land/Property	NA	acres	NA
Monitoring Well	25	EA	20,000
Recharge Well	40	EA	50,000
Culvert, under 48-inch diameter	100	linear feet	520
Box Culvert, Multiple Channels	75	cu.yd.	1,855
Box Culvert, Single Channel	75	cu.yd.	1,600
Basin Boundary Berm	50	cu.yd.	45
Concrete Spillway	100	sq.ft.	NA[(a)]
Rock Spillway	50	sq.ft.	NA[(a)]
Concrete/CMU Control Building	60	sq.ft.	465
Rubber Dam	30	EA	150,000
Pipeline	75	linear feet	415
Electrical, Instrumentation and Controls Assets			
Communication Radio	25	EA	35,000
HMI (Human Machine Interface)	10	EA	10,000
RTU (Remote Terminal Unit)	15	EA	25,000
Input/Output Hub	15	EA	25,000
PLC (Programmable Logic Controller)	15	EA	25,000
Control Panel	20	EA	50,000
Level Transmitter	15	EA	5,000
Pressure Transmitter	15	EA	5,000
Air Pressure Transmitter	15	EA	5,000
Flow Transmitter	15	EA	5,000
Transformer	25	EA	25,000
Flow Meter	20	inch-diameter	1,500
Generator	20	EA	50,000
Mechanical Assets			
Automated Gate Valve	20	inch-diameter	1,380
Manual Gate Valve	30	inch-diameter	920
Miscellaneous Valve	20	inch-diameter	485
HVAC Unit	20	EA	25,000
Pump	20	horsepower	700
Sump Pump	15	EA	5,000
Blower	20	EA	7,500

(a) Asset type varied greatly in size or construction so a standard unit cost could not be estimated. See Chapter 7.4 for details on R&R projection for these asset types.

7.4 RENEWAL AND REPLACEMENT PLANNING

R&R planning is a forecast of planned effort and expenditures for improvement of an asset and ultimately the replacement of the asset. Maintenance activities are not included in R&R forecast. This forecast may be used for planning and budgeting and could be improved based on the findings of condition assessment studies and/or validation with field and maintenance records. The approach to developing the R&R forecast is described below.

7.4.1 Renewal and Replacement Intervals

In order to develop R&R projections, the frequency of required renewal or replacement for each asset type must be established. These renewal and replacement intervals can be applied over the selected study period (10-years in this case) to project associated renewal or replacement costs for each asset.

7.4.1.1 Replacement

As discussed above, each asset class has an estimated useful life. At the end of the UL, the asset is expected to require replacement in full. For example, Table 7-2 shows that the *Pump* asset class has a useful life of 20 years, which means its replacement interval is also 20 years. Replacement needs were forecast based on Eqn. 6-1 for all assets.

7.4.1.2 Renewal

In between replacement intervals, assets require renewal or rehabilitation investments to maximize the life of the asset and ensure continued performance at the required service level. This renewal effort is outside of regular maintenance such as inspection, oil changes, cleaning, etc. Table 7-3 presents the renewal intervals for all asset classes, along with the cost criteria for renewal in terms of percent of total asset replacement cost. Some asset types are grouped if they have the same renewal details (e.g., all valves). Assets that could not be assigned a standard unit cost (see Table 7-2) were assigned a direct renewal cost based on size – see notes a) and b) in Table 7-3.

Table 7-3. Renewal Interval Details

Asset Type (Description)	Renewal Interval, years	Renewal Description	Renewal Cost as Percent of Replacement Cost or Dollars
Civil/Site Assets			
Basin Type Flow-Through	20	Drain, inspect, and address minor issues	$55/AF[(a)]
Basin Type Off-Channel	30	Drain, inspect, and address minor issues	$55/AF[(a)]
Land/Property	NA	Does not require renewal	NA
Monitoring Well, Recharge Well	10	Inspect, repair	2
Culvert, under 48" diameter	25	Inspect and address minor issues	2
Box Culverts (all types)	20	Inspect and address minor issues	2
Basin Boundary Berm	15	Drain, inspect, and address minor issues	2
Concrete Spillway	30	Drain, inspect, and address minor issues	$40/sq.ft.[(b)]
Rock Spillway	20	Drain, inspect, and address minor issues	$10/sq.ft.[(b)]
Concrete/CMU Control Building	15	Drain, inspect, and address minor issues	2
Rubber Dam	15	Drain, inspect, and address minor issues	2
Pipeline	15	Drain, inspect, and address minor issues	2
Electrical, Instrumentation and Controls Assets			
Communication Radio	NA	Asset operational strategy is run-to-failure and/or asset will be obsolete by end of life; no renewal is recommended. Replace at end of useful life.	NA
HMIs, RTUs, I/O Hubs, PLCs, Control Panels, All Transmitters			
Transformer			
Flow Meter	10	Mechanical Rebuild/Overhaul	2
Generator	10	Mechanical Rebuild/Overhaul	2
Mechanical Assets			
Valves (all types)	10	Mechanical Rebuild/Overhaul	2
HVAC Unit	10	Mechanical Rebuild/Overhaul	2
Pump	10	Mechanical Rebuild/Overhaul	2
Sump Pump	NA	Asset operational strategy is run-to-fail; no renewal is recommended. Replace at end of useful life.	NA
Blower	10	Mechanical Rebuild/Overhaul	2

(a) Costs were developing using 2013 RMPU unit costs for Basin operation and maintenance per AF. Renewal is calculated in dollars per AF of Basin storage.

(b) Costs were developed using West Yost cost databases. Renewal is calculated in dollars per square feet of spillway area.

7.4.2 10-Year R&R Forecast

A 10-year forecast of R&R needs was developed based on the renewal and replacement (UL) intervals. Assumptions made in development of the forecast include:

- Replacement occurs at the end of each asset's UL, based on installation date. Once replacement occurs, the replacement and renewal intervals restart.
- Total replacement costs include soft costs, applied as a percentage of the calculated asset replacement cost. Soft costs are shown in Table 7-4 and were developed in the 2013 RMPU.
- Renewal is assumed to have occurred at the specified renewal interval since the installation date (i.e., renewal is not specified based on actual renewal completed by the parties, or lack thereof).
- Costs are escalated at 3 percent per year.

Table 7-4. Replacement Soft Costs (applied to Replacements only)

Soft Cost Category	Project Replacement Cost[(a)]		
	<$1M	$1-2M	>$2M
Mobilization	5	5	5
Contingency	20	15	10
Engineering/Administrative	20	15	10
Construction Management	20	15	10
Total	**65%**	**50%**	**35%**

(a) Shown in percent

Figure 7-1, Figure 7-2, and Table 7-5 present the R&R forecast for a 10-year period. In Figure 7-1, replacement costs are shown as the blue bar and renewal costs are shown as the orange bar. Assets that were already beyond their UL in 2023 are shown in the grey column in the first year (year zero). The five-year rolling average is shown as the gold line. In Figure 7-2, total costs (replacement, renewal, and overdue costs) are grouped and shown by the asset discipline categories in Table 7-3 (civil/site; electrical, instrumentation and controls; and mechanical).

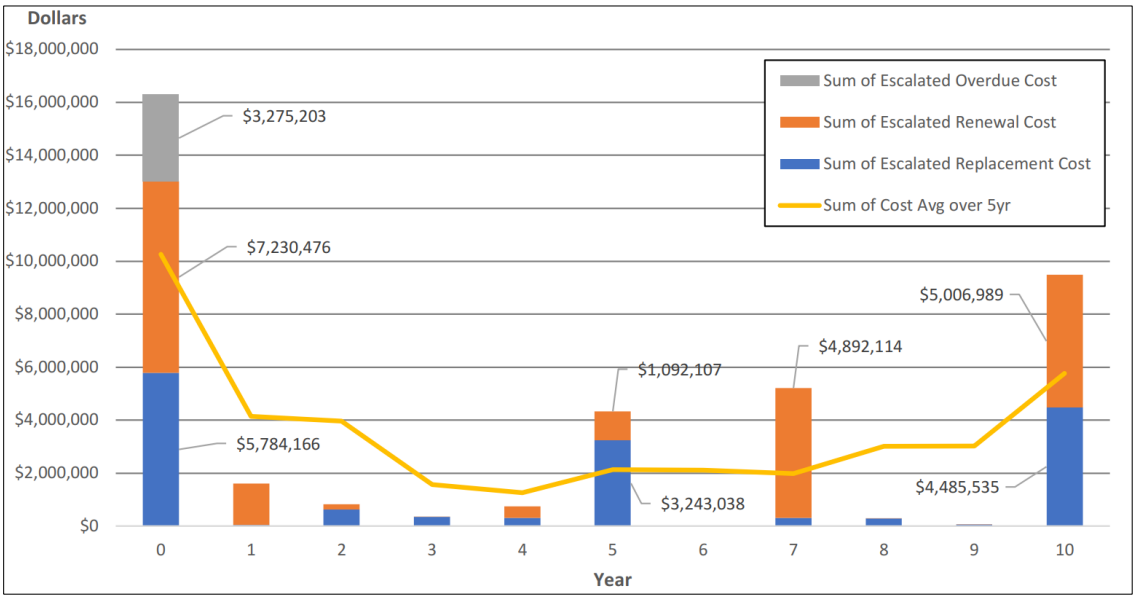


Figure 7-1. Summary of R&R 10-Year Forecast

Excluding the overdue replacements, the average R&R cost over the next 10-years is estimated at $3.3M per year. The total overdue replacements are shown in the first year of projections and total $3.3M. The majority of the overdue replacements include electrical, instrumentation, and controls assets which have a relatively short UL or are already beyond their UL. Appendix B details the renewal and replacement costs by year and asset, for the 10-year period.

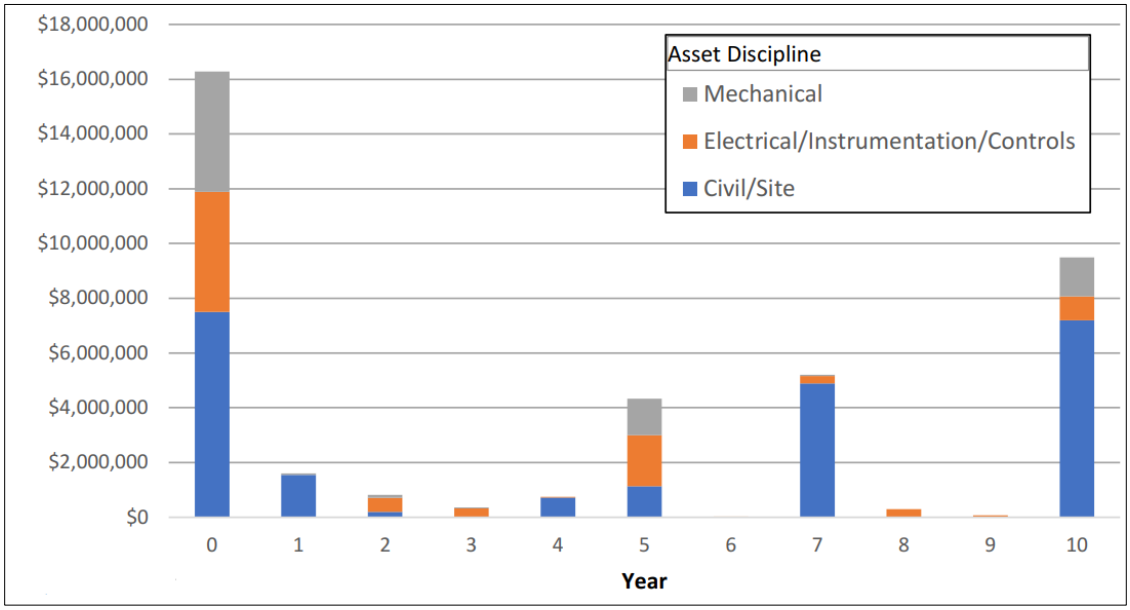


Figure 7-2. Summary of R&R 10-Year Forecast by Asset Discipline

Table 7-5. Summary of R&R 10-Year Forecast			
Year	Renewal Cost, dollars	Replacement Cost, dollars	Total R&R, dollars (Rounded)
0	7,230,476	5,784,166 plus 3,275,203[(a)]	16,290,000
1	1,554,810	50,413	1,610,000
2	193,046	630,937	830,000
3	4,997	352,307	360,000
4	430,369	315,508	750,000
5	1,092,107	3,243,038	4,340,000
6	-	22,315	30,000
7	4,892,114	315,666	5,210,000
8	5,007	284,086	290,000
9	9,657	60,960	80,000
10	5,006,989	4,485,535	9,500,000
Total (Rounded)	**$20,420,000**	**$18,830,000**	**$39,250,000**

(a) Overdue replacements are assets already beyond their UL (grey bar in Figure 7-1)

7.4.3 R&R Implementation Plan

The R&R projections developed in this chapter are intended to provide guidelines for long term budgeting and planning. There are various options to address the overdue replacements and program funding.

After the R&R projections are finalized, the focus should be to develop a comprehensive implementation plan that considers the estimated overdue costs, total renewal and replacement costs, and high peak costs over 10 years. The implementation plan should prioritize the replacements, budget for the costs, secure the necessary funding, execute the program, and monitor the progress to ensure that the assets are renewed to the required standard and at the appropriate time.

Assets or asset groups that meet any of the following criteria can be prioritized for renewal/replacement:

- Have a high risk of failure and would have significant consequences if they fail.
- Are heavily utilized and their failure would have a significant impact on users.
- Have operational or maintenance costs that are higher than expected.
- Have the potential to reduce life cycle costs by being replaced with a modern equivalent asset that can provide the same level of service[36].

A budgeting strategy can consider the estimated total replacement costs and the high peak costs. By developing a budget for each year of the program, Chino Basin Watermaster can ensure that the funding

[36] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97

is available to execute the program according to the plan. The budget should also consider alternative financing options that may be available to supplement the available funding and spread the financial burden over a longer period.

By following these strategies, Chino Basin Watermaster can optimize the useful life of its assets, reduce the risk of failure, and provide the required level of service to its customers. Therefore, a robust implementation plan is critical to the success of the renewal and replacement program and should be developed with great care and attention to detail.

The implementation plan should include the following phases or steps:

1. **Confirm Asset Registry** – The asset registry developed for this RMPU was based on data provided by Watermaster Chino Basin parties and was developed at a high level. An asset registry that includes assets down to the major equipment level or managed asset level will provide greater granularity for evaluating infrastructure needs and forecast investment requirements. A criticality and risk assessment should be performed for assets in the confirmed asset registry. Criticality is a measure of the consequence of assets failure to perform at its prescribed level of service.
2. **Perform Condition Assessment** – Commission an assessment of asset condition based on the confirmed asset registry. The condition assessment should include, at a minimum, a review of maintenance records and other available data related to asset failure and performance, a visual inspection of each asset, in-depth testing where required based on the visual inspection and review of data. The condition assessment will provide a more accurate assessment of RUL and R&R requirements based on actual asset condition. With this, the R&R forecast should be updated.
3. **Investment Strategy** – Based on the condition assessment and an updated R&R forecast an investment strategy should be developed to identify annual funding requirements to meet renewal and replacement needs.

CHAPTER 8
Conclusions and Implementation Plan

This chapter summarizes the conclusions from the 2023 RMPU and includes recommendations for future actions and an implementation plan for the 2023 RMPU.

8.1 CONCLUSIONS

The following are the primary conclusions from the 2023 RMPU:

1. The MS4 information collection program included in Chapter 5 of the 2013 RMPU has been partially implemented. Based on the information collected through June 2022, stormwater recharge in the basin may have increased by about 840 afy.
2. The historical state of the balance of recharge and discharge for MZ1 is consistent with the Peace Agreements.
3. No changes are recommended for the 6,500 afy supplemental water recharge obligation in MZ1[37] (Peace II Agreement).
4. No changes are recommended in the current Watermaster prioritization of supplemental water recharge locations and amounts to meet balance of recharge and discharge requirement (Peace Agreement).
5. Based on the planning data provided by the parties, Metropolitan, and the IEUA, Watermaster has access to enough wet-water recharge capacity to meet its supplemental recharge obligations through 2045.

8.2 LIMITATIONS

The DCE Report noted that the "year-to-year changes in groundwater pumping projections and Parties' uncertainty in the use of Managed Storage and urban outdoor water use indicates that there is uncertainty in future cultural conditions." The uncertainty in future cultural conditions supported the DCE Report's recommendation to "[d]evelop multiple projection scenarios for the 2025 Safe Yield Reevaluation that represent the maximum range in future cultural conditions." The multiple projection scenarios that will be simulated for the 2025 Safe Yield Reevaluation will characterize a variety of cultural conditions, including pumping, recharge, and the use of Managed Storage to meet replenishment obligations. These scenarios will allow for a more comprehensive understanding of the Basin response to various water supply plans and climate scenarios and will improve Watermaster's ability to carry out its obligations regarding recharge in the Basin (see Chapter 1.2). Relevant findings from the 2025 Safe Yield Reevaluation will be summarized in the next RMPU.

8.3 OTHER RECHARGE-RELATED ACTIVITIES

The 2018 Recharge Master Plan Update (RMPU) provided a list of recharge projects that were considered but not recommended for implementation by the Chino Basin Parties (Parties). The recharge projects included: projects considered in the 2013 RMPU that were determined to be technically and institutionally feasible but had stormwater recharge unit costs that exceeded 2013 RMPU's economic feasibility threshold of $612 per acre-foot; and, other projects that the Parties brought to the 2018 RMPU Steering Committee that have not yet been implemented. Additionally, recharge projects were proposed through the 2020 Optimum Basin Management Plan Update (OBMPU) process. The 2018 RMPU projects that were

[37] This value may be updated following further evaluation of the appropriate minimum, which will be part of the ongoing development of a MZ1 subsidence management plan.

considered but not recommended for implementation and the OBMPU recharge projects are referred to herein as Recharge Projects. At its October 27, 2022, meeting, the Watermaster Board discussed recent grant opportunities that are available for planning and construction of recharge and storage projects in the Chino Basin. The Watermaster Board emphasized the importance of having readily available information and documentation that could be used to support grant applications, since grant funding can change the economic feasibility of constructing the Recharge Projects. Based on the Board discussion, Watermaster began developing a Work Plan that will include the following information:

- A description of the information and documentation required for Recharge Projects to be eligible for grant funding opportunities.
- A description of the Recharge Projects in the 2018 RMPU and OBMPU and current level of analysis.
- A current list of Recharge Projects, reflecting the Parties' recommended removals and additions of projects since the 2013 RMPU.

Table 8-1 lists the Recharge Projects from the 2018 RMPU and the 2020 OBMPU Project Description. The locations of these projects are shown in Figure 8-1. Figure 8-1 also shows the location of: areas of pumping sustainability and subsidence concern, recycled and imported water pipelines, and groundwater plumes in relation to the Recharge Projects. The projects listed in Table 8-1 include projects that were considered in the 2013 RMPU and determined to be technically and institutionally feasible but whose unit stormwater recharge costs exceeded the economic feasibility threshold established in the 2013 RMPU of $612 per af. For those projects, where a cost had been developed, the unit stormwater recharge costs were projected to 2023 costs. Additional projects were recommended as part of the 2018 RMPU scoping process and the 2020 OBMPU environmental review process, which is ongoing. These projects are included in Table 8-1, and they should be evaluated more thoroughly in the future when their project descriptions and operating characteristics are more clearly defined.

The unit cost of new stormwater recharge for the projects listed in Table 8-1 ranges from $2,150 to $6,500 per af. In all cases, the projected unit cost of new stormwater recharge projects listed in Table 8-1 exceeds the projected cost of water that could be supplied by Metropolitan in 2023 at about $900 per af (see Table 4-4). However, the cost-benefit of these projects can change when the costs of the WaterFix project are included in the cost of imported water supplied by Metropolitan and/or if grant funding could be obtained that would lower the unit cost of stormwater recharge. Watermaster is continuing to review and analyze these projects.

8.4 IMPLEMENTATION PLAN

The 2023 RMPU implementation plan includes the following:

1. Continue the implementation of the final recommended 2013 RMPU yield enhancement projects.
2. Continue the implementation of the Board-requested recharge project analysis as described in Chapter 8.3.
3. Develop the scope and budget for the 2028 RMPU in FY 2026/27.
4. Complete the 2028 RMPU in FY 2027/28 and file the 2028 RMPU report with the Court in October 2028.

5. Annually review the time and effort involved in the collection of information on MS4 project implementation and reassess the value this effort provides.
6. Develop a plan to collaborate with MS4 permittees to ensure MS4-compliance projects prioritize recharge.
7. Refine and implement the R&R implementation plan defined in Chapter 7.4.2

Table 8-1. Recharge Projects and Status

Project Name	Land Owner	Capital Cost [(a)] ($)	New Stormwater Recharge[(a)] (afy)	Unit Stormwater Recharge Cost[(a)] ($/af)
San Antonio/Chino Creek				
North West Upland Basin	City of Upland	$6,574,000	93	$4,620
Montclair Basins	CBWCD	$5,600,000	68	$5,400
California Institution for Men (CIM) [(b)]	State of California	NE	NE	NE
Cucamonga Creek				
Ely Basin	CBWCD, SBCFCD	$3,017,000	101	$1,990
Lower Cucamonga Ponds[(b)]	SBCFCD	NE	NE	NE
Day Creek				
Riverside Basin[(b)]	RCFC	NE	NE	NE
San Sevaine Creek				
Sultana Avenue	City of Fontana	$601,000	7	$5,620
Jurupa Basin[(b)]	SBCFCD	NE	NE	NE
Agricultural Managed Aquifer Recharge (AgMAR)	n/a	NE	NE	NE
Prado Basin				
Mill Creek Wetlands[(b)]	USACE	NE	NE	NE
Basin-Wide				
ASR Wells	n/a	NE	NE	NE
MS4 Compliance Projects	n/a	NE	NE	NE
Regional Recharge Distribution System	n/a	$184,000,000	5,000	$2,810

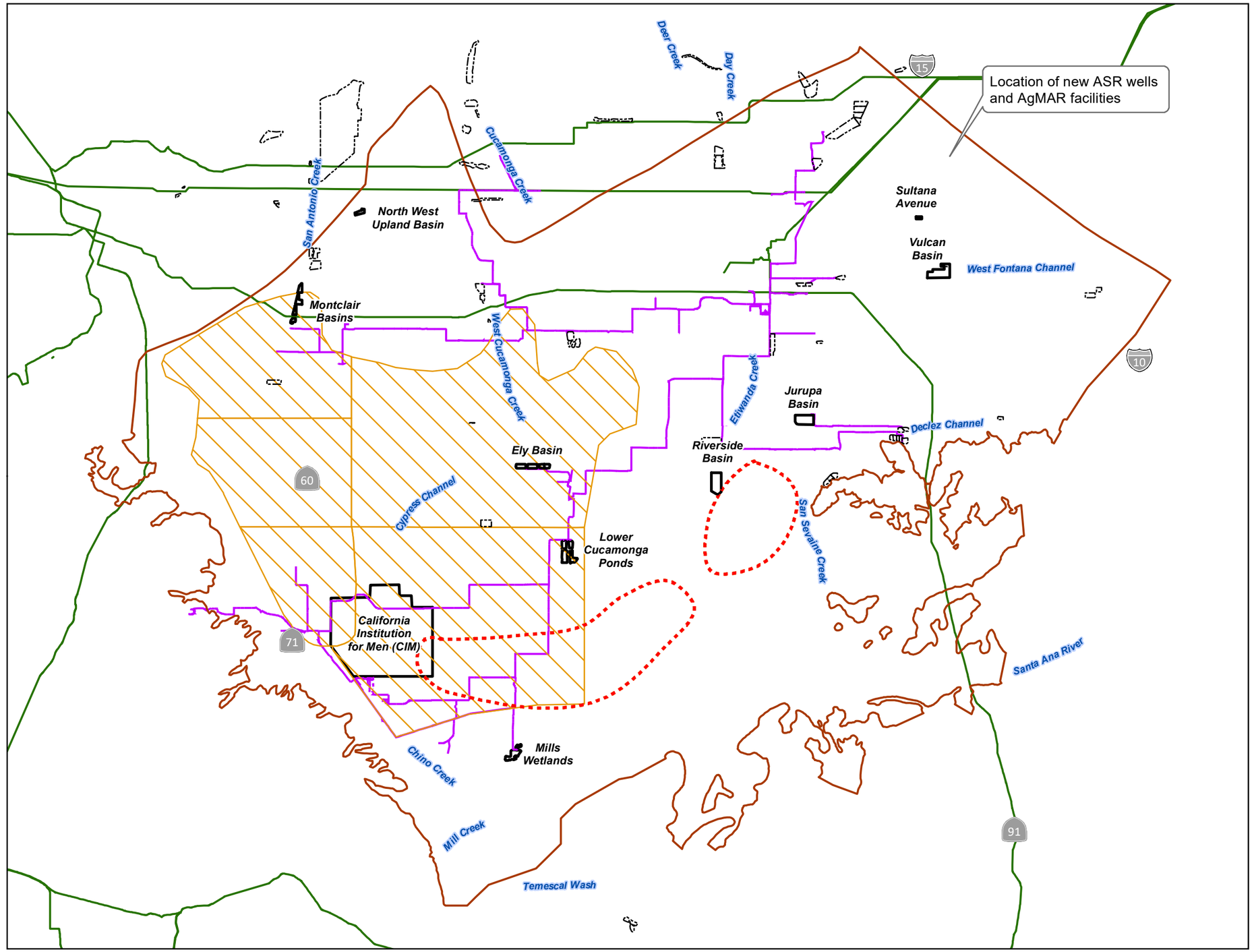
Source: 2018 RMPU; 2020 OBMPU Project Description

(a) Projects considered to have the information and documentation necessary to apply for grant funding were evaluated in 2013. The project costs were re-evaluated in 2018 as part of the 2018 RMPU. However, it should be noted that the project cost and benefit should be re-evaluated based on most current conditions.

(b) These projects are considered elements of the Regional Recharge Distribution System project listed under "Basin-Wide."

(c) The Regional Recharge Distribution system was evaluated at a conceptual level in 2017. However, the evaluation was not documented in any RMPUs and is considered insufficient for grant funding applications.

afy – acre-feet per year; af - acre-feet; NE - Not Estimated; n/a - not applicable; USACE - US Army Corps of Engineers



Recharge Project

Other Existing Recharge Basin

Areas of Pumping Sustainability Concern

Areas of Subsidence Concern

Recycled Water Pipeline

Imported Water Pipeline

Groundwater Plumes

Subwatershed

San Antonio/Chino Creek

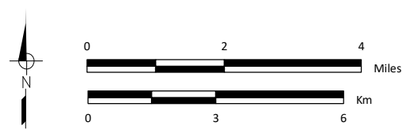
Cucamonga Creek

Day Creek

San Sevaine Creek

Prado Basin

Prepared by:



Prepared for:

Chino Basin Watermaster
2023 Recharge Master Plan Update

Recharge Projects
Location Map

Figure 8-1

CHAPTER 9
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Appendix A

In-Lieu Recharge Calculations for Appropriative Pool Parties

A1: Under Current Conditions

A2: Under Design Conditions

A1. Under Current Conditions

Appendix A1 -- In-Lieu Recharge Calculations for Appropriative Pool Parties Under Current Conditions (afy)

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported Water Supply to Meet Demand					Excess Imported Water Capacity					Projected Pumping from Chino Basin									
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Chino	July	281	334	334	413	413	413	0	0	0	0	0	989	1,136	1,156	1,378	1,378	0	0	0	0	0
	August	281	346	346	428	428	428	0	0	0	0	0	989	1,136	1,156	1,378	1,378	0	0	0	0	0
	September	272	319	319	394	394	394	0	0	0	0	0	989	1,136	1,156	1,378	1,378	0	0	0	0	0
	October	140	247	247	305	305	305	0	0	0	0	0	989	1,136	1,156	1,378	1,378	0	0	0	0	0
	November	136	210	210	260	260	260	0	0	0	0	0	662	780	882	1,060	1,060	0	0	0	0	0
	December	140	151	151	187	187	187	0	0	0	0	0	499	602	691	847	847	0	0	0	0	0
	January	140	152	152	188	188	188	0	0	0	0	0	336	424	500	633	633	0	0	0	0	0
	February	127	137	137	170	170	170	0	0	0	0	0	336	424	500	633	633	0	0	0	0	0
	March	140	151	151	187	187	187	0	0	0	0	0	336	424	500	633	633	0	0	0	0	0
	April	272	179	179	221	221	221	92	92	50	50	50	662	780	882	1,060	1,060	92	92	50	50	50
	May	281	243	243	300	300	300	38	38	0	0	0	826	958	965	1,165	1,165	38	38	0	0	0
	June	272	270	270	334	334	334	1	1	0	0	0	989	1,136	1,156	1,378	1,378	1	1	0	0	0
	Total	*2,481*	*2,742*	*2,742*	*3,387*	*3,387*	*3,387*	*131*	*131*	*50*	*50*	*50*	*8,603*	*10,070*	*10,702*	*12,923*	*12,923*	*131*	*131*	*50*	*50*	*50*
City of Chino Hills	July	747	296	302	311	312	313	450	445	436	435	433	249	253	261	262	263	249	253	261	262	263
	August	747	296	302	311	312	313	451	445	436	435	434	256	261	269	270	271	256	261	269	270	271
	September	723	207	211	217	218	219	516	512	506	505	504	222	226	232	233	234	222	226	232	233	234
	October	373	207	211	217	218	219	166	162	156	155	155	216	220	226	227	228	166	162	156	155	155
	November	361	170	173	178	179	180	191	188	183	182	182	173	177	182	183	183	173	177	182	182	182
	December	373	161	164	169	170	171	212	209	204	204	203	115	117	121	121	122	115	117	121	121	122
	January	373	162	165	170	171	172	211	208	203	202	202	55	56	57	58	58	55	56	57	58	58
	February	337	174	177	182	183	184	164	160	155	154	154	82	83	86	86	87	82	83	86	86	87
	March	373	252	257	264	265	266	121	117	109	108	107	86	88	91	91	91	86	88	91	91	91
	April	723	207	211	218	219	219	515	511	505	504	503	202	206	212	213	213	202	206	212	213	213
	May	747	206	210	216	217	218	541	537	531	530	529	224	228	235	236	237	224	228	235	236	237
	June	723	274	279	288	289	290	449	443	435	434	433	214	218	224	225	226	214	218	224	225	226
	Total	*6,601*	*2,613*	*2,662*	*2,742*	*2,753*	*2,763*	*3,988*	*3,939*	*3,859*	*3,848*	*3,838*	*2,093*	*2,132*	*2,196*	*2,204*	*2,213*	*2,043*	*2,075*	*2,126*	*2,132*	*2,137*
Monte Vista Water District	July	1,142	697	711	732	735	737	444	431	410	407	404	765	799	862	888	916	444	431	410	407	404
	August	1,142	741	755	777	780	783	401	387	364	361	359	641	670	722	745	768	401	387	364	361	359
	September	1,105	649	661	681	683	686	456	444	424	421	419	456	476	513	529	546	456	444	424	421	419
	October	571	566	577	594	596	598	5	0	0	0	0	583	609	657	677	698	5	0	0	0	0
	November	552	421	429	442	444	446	131	123	110	108	107	721	753	812	837	863	131	123	110	108	107
	December	571	313	318	328	329	330	258	252	243	242	240	601	627	677	698	719	258	252	243	242	240
	January	571	314	320	329	331	332	257	251	241	240	239	593	620	668	689	711	257	251	241	240	239
	February	516	318	324	334	335	336	198	192	182	181	179	486	508	548	565	582	198	192	182	181	179
	March	571	404	412	424	426	427	167	159	147	145	144	542	566	611	630	649	167	159	147	145	144
	April	1,105	411	419	432	433	435	694	686	673	672	670	560	585	631	650	670	560	585	631	650	670
	May	1,142	471	480	495	497	498	670	661	647	645	643	791	826	891	919	947	670	661	647	645	643
	June	1,105	611	622	641	643	646	494	483	464	462	459	722	754	813	838	864	494	483	464	462	459
	Total	*10,091*	*5,916*	*6,028*	*6,207*	*6,232*	*6,255*	*4,175*	*4,069*	*3,906*	*3,884*	*3,863*	*7,461*	*7,793*	*8,404*	*8,666*	*8,935*	*4,041*	*3,968*	*3,863*	*3,863*	*3,863*

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported Water Supply to Meet Demand					Excess Imported Water Capacity					Projected Pumping from Chino Basin									
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Ontario	July	1,494	1,076	1,272	1,468	1,663	1,663	417	222	26	0	0	2,285	2,586	2,815	3,552	3,552	417	222	26	0	0
	August	1,494	1,445	1,708	1,971	2,234	2,234	48	0	0	0	0	2,166	2,451	2,668	3,367	3,367	48	0	0	0	0
	September	1,445	1,668	1,971	2,274	2,578	2,578	0	0	0	0	0	1,716	1,942	2,113	2,667	2,667	0	0	0	0	0
	October	747	1,522	1,799	2,076	2,353	2,353	0	0	0	0	0	1,442	1,632	1,777	2,242	2,242	0	0	0	0	0
	November	723	939	1,109	1,280	1,451	1,451	0	0	0	0	0	1,375	1,556	1,693	2,137	2,137	0	0	0	0	0
	December	747	443	523	604	684	684	304	224	143	63	63	1,278	1,447	1,575	1,987	1,987	304	224	143	63	63
	January	747	493	583	672	762	762	254	164	74	0	0	1,163	1,316	1,432	1,808	1,808	254	164	74	0	0
	February	675	489	578	667	756	756	185	96	7	0	0	1,356	1,534	1,670	2,107	2,107	185	96	7	0	0
	March	747	544	643	742	841	841	203	104	5	0	0	1,300	1,471	1,601	2,020	2,020	203	104	5	0	0
	April	1,445	585	691	798	904	904	861	754	648	542	542	1,827	2,068	2,251	2,841	2,841	861	754	648	542	542
	May	1,494	908	1,074	1,239	1,404	1,404	585	420	255	90	90	2,033	2,300	2,504	3,160	3,160	585	420	255	90	90
	June	1,445	887	1,048	1,209	1,370	1,370	559	398	236	75	75	2,309	2,613	2,844	3,589	3,589	559	398	236	75	75
	Total	*13,202*	*11,000*	*13,000*	*15,000*	*17,000*	*17,000*	*3,416*	*2,381*	*1,395*	*769*	*769*	*20,249*	*22,915*	*24,943*	*31,476*	*31,476*	*3,416*	*2,381*	*1,395*	*769*	*769*
City of Upland	July	1,094	452	543	662	719	764	642	551	432	375	331	520	520	520	520	520	520	520	432	375	331
	August	1,094	516	620	756	821	872	578	474	338	273	223	559	559	559	559	559	559	474	338	273	223
	September	1,059	489	587	716	778	826	570	471	343	281	233	480	480	480	480	480	480	471	343	281	233
	October	547	476	573	698	758	805	71	0	0	0	0	444	444	444	444	444	71	0	0	0	0
	November	529	292	351	428	465	494	237	178	101	64	36	285	285	285	285	285	237	178	101	64	36
	December	547	243	292	356	387	411	304	255	191	160	136	460	460	460	460	460	304	255	191	160	136
	January	547	256	308	375	407	433	291	239	172	140	115	488	488	488	488	488	291	239	172	140	115
	February	494	197	237	289	314	334	297	257	205	180	160	385	385	385	385	385	297	257	205	180	160
	March	547	194	233	284	308	327	353	314	263	239	220	422	422	422	422	422	353	314	263	239	220
	April	1,059	201	242	295	320	340	858	817	764	739	719	519	519	519	519	519	519	519	519	519	519
	May	1,094	221	266	324	352	374	873	828	770	742	720	647	647	647	647	647	647	647	647	647	647
	June	1,059	272	327	399	433	460	787	732	660	626	599	535	535	535	535	535	535	535	535	535	535
	Total	*9,670*	*3,808*	*4,579*	*5,581*	*6,063*	*6,437*	*5,862*	*5,117*	*4,240*	*3,818*	*3,491*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*4,813*	*4,409*	*3,746*	*3,412*	*3,153*
Cucamonga Valley Water District	July	5,718	3,352	3,352	3,352	3,352	3,352	2,366	2,366	2,366	2,366	2,366	1,176	1,695	1,874	2,023	2,023	1,176	1,695	1,874	2,023	2,023
	August	5,718	3,358	3,358	3,358	3,358	3,358	2,361	2,361	2,361	2,361	2,361	1,178	1,698	1,877	2,026	2,026	1,178	1,698	1,877	2,026	2,026
	September	5,534	3,028	3,029	3,028	3,029	3,029	2,506	2,505	2,506	2,505	2,505	1,062	1,531	1,693	1,827	1,827	1,062	1,531	1,693	1,827	1,827
	October	5,718	2,682	2,682	2,682	2,682	2,682	3,037	3,037	3,037	3,037	3,037	941	1,356	1,499	1,618	1,618	941	1,356	1,499	1,618	1,618
	November	5,534	2,096	2,096	2,096	2,096	2,096	3,438	3,438	3,438	3,438	3,438	735	1,060	1,172	1,265	1,265	735	1,060	1,172	1,265	1,265
	December	5,718	1,729	1,729	1,729	1,729	1,729	3,989	3,990	3,989	3,990	3,990	607	874	967	1,043	1,043	607	874	967	1,043	1,043
	January	5,718	1,713	1,713	1,714	1,714	1,714	4,005	4,005	4,005	4,005	4,005	601	866	958	1,034	1,034	601	866	958	1,034	1,034
	February	5,165	1,589	1,589	1,589	1,589	1,589	3,576	3,576	3,576	3,576	3,576	557	803	888	959	959	557	803	888	959	959
	March	5,718	1,773	1,773	1,773	1,773	1,773	3,945	3,945	3,946	3,945	3,945	622	896	991	1,070	1,070	622	896	991	1,070	1,070
	April	5,534	2,243	2,243	2,243	2,243	2,243	3,291	3,291	3,291	3,291	3,291	787	1,134	1,254	1,353	1,353	787	1,134	1,254	1,353	1,353
	May	5,718	2,654	2,654	2,654	2,654	2,654	3,064	3,064	3,065	3,065	3,065	931	1,342	1,483	1,601	1,601	931	1,342	1,483	1,601	1,601
	June	5,534	3,001	3,001	3,001	3,001	3,001	2,533	2,533	2,533	2,533	2,533	1,053	1,517	1,677	1,811	1,811	1,053	1,517	1,677	1,811	1,811
	Total	*67,330*	*29,219*	*29,219*	*29,219*	*29,219*	*29,219*	*38,111*	*38,111*	*38,111*	*38,111*	*38,111*	*10,250*	*14,773*	*16,331*	*17,630*	*17,630*	*10,250*	*14,773*	*16,331*	*17,630*	*17,630*

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported Water Supply to Meet Demand					Excess Imported Water Capacity					Projected Pumping from Chino Basin								
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Pomona	July	578	893	893	893	893	893	0	0	0	0	0	953	1,026	1,101	1,174	1,250	0	0	0	0	0
	August	578	946	946	946	946	946	0	0	0	0	0	967	1,041	1,118	1,192	1,269	0	0	0	0	0
	September	559	850	850	850	850	850	0	0	0	0	0	951	1,024	1,099	1,172	1,247	0	0	0	0	0
	October	578	638	638	638	638	638	0	0	0	0	0	952	1,025	1,100	1,173	1,249	0	0	0	0	0
	November	559	393	393	393	393	393	166	166	166	166	166	907	976	1,047	1,117	1,189	166	166	166	166	166
	December	578	203	203	203	203	203	375	375	375	375	375	868	934	1,002	1,069	1,138	375	375	375	375	375
	January	578	172	172	172	172	172	405	405	405	405	405	880	947	1,016	1,084	1,153	405	405	405	405	405
	February	522	136	136	136	136	136	385	385	385	385	385	839	903	970	1,034	1,101	385	385	385	385	385
	March	578	161	161	161	161	161	416	416	416	416	416	867	933	1,001	1,068	1,136	416	416	416	416	416
	April	559	385	385	385	385	385	174	174	174	174	174	865	931	1,000	1,066	1,135	174	174	174	174	174
	May	578	518	518	518	518	518	60	60	60	60	60	919	989	1,061	1,132	1,205	60	60	60	60	60
	June	559	704	704	704	704	704	0	0	0	0	0	889	957	1,027	1,096	1,166	0	0	0	0	0
	Total	*6,800*	*6,000*	*6,000*	*6,000*	*6,000*	*6,000*	*1,982*	*1,982*	*1,982*	*1,982*	*1,982*	*10,858*	*11,685*	*12,543*	*13,376*	*14,238*	*1,982*	*1,982*	*1,982*	*1,982*	*1,982*

A2. Under Design Conditions

Appendix A2 -- In-Lieu Recharge Calculations for Appropriative Pool Parties Under Design Conditions (afy)

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported/Surface Water Supply to Meet Demand					Excess Imported/Surface Water Capacity				Projected Pumping from Chino Basin									
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Chino	July	455	334	334	413	413	413	120	120	42	42	42	989	1,136	1,156	1,378	1,378	120	120	42	42	42
	August	455	346	346	428	428	428	108	108	27	27	27	989	1,136	1,156	1,378	1,378	108	108	27	27	27
	September	440	319	319	394	394	394	121	121	46	46	46	989	1,136	1,156	1,378	1,378	121	121	46	46	46
	October	455	247	247	305	305	305	208	208	150	150	150	989	1,136	1,156	1,378	1,378	208	208	150	150	150
	November	440	210	210	260	260	260	230	230	180	180	180	662	780	882	1,060	1,060	230	230	180	180	180
	December	455	151	151	187	187	187	303	303	268	268	268	499	602	691	847	847	303	303	268	268	268
	January	455	152	152	188	188	188	302	302	266	266	266	336	424	500	633	633	302	302	266	266	266
	February	411	137	137	170	170	170	273	273	241	241	241	336	424	500	633	633	273	273	241	241	241
	March	455	151	151	187	187	187	303	303	268	268	268	336	424	500	633	633	303	303	268	268	268
	April	440	179	179	221	221	221	261	261	219	219	219	662	780	882	1,060	1,060	261	261	219	219	219
	May	455	243	243	300	300	300	212	212	154	154	154	826	958	965	1,165	1,165	212	212	154	154	154
	June	440	270	270	334	334	334	170	170	106	106	106	989	1,136	1,156	1,378	1,378	170	170	106	106	106
	Total	*5,353*	*2,742*	*2,742*	*3,387*	*3,387*	*3,387*	*2,611*	*2,611*	*1,966*	*1,966*	*1,966*	*8,603*	*10,070*	*10,702*	*12,923*	*12,923*	*2,611*	*2,611*	*1,966*	*1,966*	*1,966*
City of Chino Hills	July	1,210	296	302	311	312	313	913	908	899	898	896	249	253	261	262	263	249	253	261	262	263
	August	1,210	296	302	311	312	313	914	908	899	898	897	256	261	269	270	271	256	261	269	270	271
	September	1,171	207	211	217	218	219	964	960	954	953	952	222	226	232	233	234	222	226	232	233	234
	October	1,210	207	211	217	218	219	1,003	999	993	992	991	216	220	226	227	228	216	220	226	227	228
	November	1,171	170	173	178	179	180	1,001	998	993	992	991	173	177	182	183	183	173	177	182	183	183
	December	1,210	161	164	169	170	171	1,049	1,046	1,041	1,040	1,039	115	117	121	121	122	115	117	121	121	122
	January	1,210	162	165	170	171	172	1,047	1,044	1,039	1,039	1,038	55	56	57	58	58	55	56	57	58	58
	February	1,093	174	177	182	183	184	919	916	911	910	909	82	83	86	86	87	82	83	86	86	87
	March	1,210	252	257	264	265	266	958	953	945	944	943	86	88	91	91	91	86	88	91	91	91
	April	1,171	207	211	218	219	219	963	959	953	952	951	202	206	212	213	213	202	206	212	213	213
	May	1,210	206	210	216	217	218	1,004	1,000	994	993	992	224	228	235	236	237	224	228	235	236	237
	June	1,171	274	279	288	289	290	897	892	883	882	881	214	218	224	225	226	214	218	224	225	226
	Total	*14,245*	*2,613*	*2,662*	*2,742*	*2,753*	*2,763*	*11,632*	*11,583*	*11,503*	*11,492*	*11,482*	*2,093*	*2,132*	*2,196*	*2,204*	*2,213*	*2,093*	*2,132*	*2,196*	*2,204*	*2,213*
Monte Vista Water District	July	1,849	697	711	732	735	737	1,152	1,139	1,118	1,115	1,112	765	799	862	888	916	765	799	862	888	916
	August	1,849	741	755	777	780	783	1,109	1,095	1,072	1,069	1,066	641	670	722	745	768	641	670	722	745	768
	September	1,790	649	661	681	683	686	1,141	1,129	1,109	1,106	1,104	456	476	513	529	546	456	476	513	529	546
	October	1,849	566	577	594	596	598	1,284	1,273	1,256	1,253	1,251	583	609	657	677	698	583	609	657	677	698
	November	1,790	421	429	442	444	446	1,368	1,360	1,348	1,346	1,344	721	753	812	837	863	721	753	812	837	863
	December	1,849	313	318	328	329	330	1,537	1,531	1,521	1,520	1,519	601	627	677	698	719	601	627	677	698	719
	January	1,849	314	320	329	331	332	1,535	1,529	1,520	1,519	1,517	593	620	668	689	711	593	620	668	689	711
	February	1,670	318	324	334	335	336	1,352	1,346	1,337	1,335	1,334	486	508	548	565	582	486	508	548	565	582
	March	1,849	404	412	424	426	427	1,446	1,438	1,426	1,424	1,422	542	566	611	630	649	542	566	611	630	649
	April	1,790	411	419	432	433	435	1,378	1,371	1,358	1,356	1,355	560	585	631	650	670	560	585	631	650	670
	May	1,849	471	480	495	497	498	1,378	1,369	1,355	1,353	1,351	791	826	891	919	947	791	826	891	919	947
	June	1,790	611	622	641	643	646	1,179	1,168	1,149	1,147	1,144	722	754	813	838	864	722	754	813	838	864
	Total	*21,776*	*5,916*	*6,028*	*6,207*	*6,232*	*6,255*	*15,860*	*15,748*	*15,568*	*15,544*	*15,521*	*7,461*	*7,793*	*8,404*	*8,666*	*8,935*	*7,461*	*7,793*	*8,404*	*8,666*	*8,935*

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported/Surface Water Supply to Meet Demand					Excess Imported/Surface Water Capacity					Projected Pumping from Chino Basin									
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Ontario	July	2,420	1,076	1,272	1,468	1,663	1,663	1,343	1,148	952	756	756	2,285	2,586	2,815	3,552	3,552	1,343	1,148	952	756	756
	August	2,420	1,445	1,708	1,971	2,234	2,234	974	711	449	186	186	2,166	2,451	2,668	3,367	3,367	974	711	449	186	186
	September	2,342	1,668	1,971	2,274	2,578	2,578	674	371	67	0	0	1,716	1,942	2,113	2,667	2,667	674	371	67	0	0
	October	2,420	1,522	1,799	2,076	2,353	2,353	897	620	344	67	67	1,442	1,632	1,777	2,242	2,242	897	620	344	67	67
	November	2,342	939	1,109	1,280	1,451	1,451	1,403	1,232	1,062	891	891	1,375	1,556	1,693	2,137	2,137	1,375	1,232	1,062	891	891
	December	2,420	443	523	604	684	684	1,977	1,897	1,816	1,736	1,736	1,278	1,447	1,575	1,987	1,987	1,278	1,447	1,575	1,736	1,736
	January	2,420	493	583	672	762	762	1,927	1,837	1,747	1,658	1,658	1,163	1,316	1,432	1,808	1,808	1,163	1,316	1,432	1,658	1,658
	February	2,186	489	578	667	756	756	1,696	1,607	1,518	1,429	1,429	1,356	1,534	1,670	2,107	2,107	1,356	1,534	1,518	1,429	1,429
	March	2,420	544	643	742	841	841	1,875	1,776	1,678	1,579	1,579	1,300	1,471	1,601	2,020	2,020	1,300	1,471	1,601	1,579	1,579
	April	2,342	585	691	798	904	904	1,757	1,650	1,544	1,438	1,438	1,827	2,068	2,251	2,841	2,841	1,757	1,650	1,544	1,438	1,438
	May	2,420	908	1,074	1,239	1,404	1,404	1,511	1,346	1,181	1,016	1,016	2,033	2,300	2,504	3,160	3,160	1,511	1,346	1,181	1,016	1,016
	June	2,342	887	1,048	1,209	1,370	1,370	1,455	1,294	1,133	971	971	2,309	2,613	2,844	3,589	3,589	1,455	1,294	1,133	971	971
	Total	*28,490*	*11,000*	*13,000*	*15,000*	*17,000*	*17,000*	*17,490*	*15,490*	*13,490*	*11,726*	*11,726*	*20,249*	*22,915*	*24,943*	*31,476*	*31,476*	*15,083*	*14,140*	*12,857*	*11,726*	*11,726*
City of Upland	July	1,772	452	543	662	719	764	1,321	1,229	1,110	1,053	1,009	520	520	520	520	520	520	520	520	520	520
	August	1,772	516	620	756	821	872	1,257	1,152	1,017	951	901	559	559	559	559	559	559	559	559	559	559
	September	1,715	489	587	716	778	826	1,227	1,128	999	937	889	480	480	480	480	480	480	480	480	480	480
	October	1,772	476	573	698	758	805	1,296	1,200	1,074	1,014	967	444	444	444	444	444	444	444	444	444	444
	November	1,715	292	351	428	465	494	1,423	1,364	1,287	1,250	1,222	285	285	285	285	285	285	285	285	285	285
	December	1,772	243	292	356	387	411	1,529	1,480	1,416	1,386	1,362	460	460	460	460	460	460	460	460	460	460
	January	1,772	256	308	375	407	433	1,517	1,465	1,397	1,365	1,340	488	488	488	488	488	488	488	488	488	488
	February	1,601	197	237	289	314	334	1,403	1,363	1,311	1,286	1,267	385	385	385	385	385	385	385	385	385	385
	March	1,772	194	233	284	308	327	1,579	1,539	1,488	1,464	1,445	422	422	422	422	422	422	422	422	422	422
	April	1,715	201	242	295	320	340	1,514	1,474	1,421	1,395	1,376	519	519	519	519	519	519	519	519	519	519
	May	1,772	221	266	324	352	374	1,551	1,507	1,448	1,420	1,399	647	647	647	647	647	647	647	647	647	647
	June	1,715	272	327	399	433	460	1,443	1,388	1,317	1,282	1,255	535	535	535	535	535	535	535	535	535	535
	Total	*20,868*	*3,808*	*4,579*	*5,581*	*6,063*	*6,437*	*17,060*	*16,289*	*15,287*	*14,805*	*14,431*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*	*5,743*
Cucamonga Valley Water District	July	5,718	3,352	3,352	3,352	3,352	3,352	2,366	2,366	2,366	2,366	2,366	1,176	1,695	1,874	2,023	2,023	1,176	1,695	1,874	2,023	2,023
	August	5,718	3,358	3,358	3,358	3,358	3,358	2,361	2,361	2,361	2,361	2,361	1,178	1,698	1,877	2,026	2,026	1,178	1,698	1,877	2,026	2,026
	September	5,534	3,028	3,029	3,028	3,029	3,029	2,506	2,505	2,506	2,505	2,505	1,062	1,531	1,693	1,827	1,827	1,062	1,531	1,693	1,827	1,827
	October	5,718	2,682	2,682	2,682	2,682	2,682	3,037	3,037	3,037	3,037	3,037	941	1,356	1,499	1,618	1,618	941	1,356	1,499	1,618	1,618
	November	5,534	2,096	2,096	2,096	2,096	2,096	3,438	3,438	3,438	3,438	3,438	735	1,060	1,172	1,265	1,265	735	1,060	1,172	1,265	1,265
	December	5,718	1,729	1,729	1,729	1,729	1,729	3,989	3,990	3,989	3,990	3,990	607	874	967	1,043	1,043	607	874	967	1,043	1,043
	January	5,718	1,713	1,713	1,714	1,714	1,714	4,005	4,005	4,005	4,005	4,005	601	866	958	1,034	1,034	601	866	958	1,034	1,034
	February	5,165	1,589	1,589	1,589	1,589	1,589	3,576	3,576	3,576	3,576	3,576	557	803	888	959	959	557	803	888	959	959
	March	5,718	1,773	1,773	1,773	1,773	1,773	3,945	3,945	3,946	3,945	3,945	622	896	991	1,070	1,070	622	896	991	1,070	1,070
	April	5,534	2,243	2,243	2,243	2,243	2,243	3,291	3,291	3,291	3,291	3,291	787	1,134	1,254	1,353	1,353	787	1,134	1,254	1,353	1,353
	May	5,718	2,654	2,654	2,654	2,654	2,654	3,064	3,064	3,065	3,065	3,065	931	1,342	1,483	1,601	1,601	931	1,342	1,483	1,601	1,601
	June	5,534	3,001	3,001	3,001	3,001	3,001	2,533	2,533	2,533	2,533	2,533	1,053	1,517	1,677	1,811	1,811	1,053	1,517	1,677	1,811	1,811
	Total	*67,330*	*29,219*	*29,219*	*29,219*	*29,219*	*29,219*	*38,111*	*38,111*	*38,111*	*38,111*	*38,111*	*10,250*	*14,773*	*16,331*	*17,630*	*17,630*	*10,250*	*14,773*	*16,331*	*17,630*	*17,630*

Party	Month	Imported Water and Treatment Constraints										Groundwater Right Constraints					Maximum In-Lieu Capacity Based on Overriding Constraint				
		Facilty Capacity	Imported/Surface Water Supply to Meet Demand					Excess Imported/Surface Water Capacity					Projected Pumping from Chino Basin									
			2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045	2025	2030	2035	2040	2045
City of Pomona	July	578	893	893	893	893	893	0	0	0	0	0	953	1,026	1,101	1,174	1,250	0	0	0	0	0
	August	578	946	946	946	946	946	0	0	0	0	0	967	1,041	1,118	1,192	1,269	0	0	0	0	0
	September	559	850	850	850	850	850	0	0	0	0	0	951	1,024	1,099	1,172	1,247	0	0	0	0	0
	October	578	638	638	638	638	638	0	0	0	0	0	952	1,025	1,100	1,173	1,249	0	0	0	0	0
	November	559	393	393	393	393	393	166	166	166	166	166	907	976	1,047	1,117	1,189	166	166	166	166	166
	December	578	203	203	203	203	203	375	375	375	375	375	868	934	1,002	1,069	1,138	375	375	375	375	375
	January	578	172	172	172	172	172	405	405	405	405	405	880	947	1,016	1,084	1,153	405	405	405	405	405
	February	522	136	136	136	136	136	385	385	385	385	385	839	903	970	1,034	1,101	385	385	385	385	385
	March	578	161	161	161	161	161	416	416	416	416	416	867	933	1,001	1,068	1,136	416	416	416	416	416
	April	559	385	385	385	385	385	174	174	174	174	174	865	931	1,000	1,066	1,135	174	174	174	174	174
	May	578	518	518	518	518	518	60	60	60	60	60	919	989	1,061	1,132	1,205	60	60	60	60	60
	June	559	704	704	704	704	704	0	0	0	0	0	889	957	1,027	1,096	1,166	0	0	0	0	0
	Total	*6,800*	*6,000*	*6,000*	*6,000*	*6,000*	*6,000*	*1,982*	*1,982*	*1,982*	*1,982*	*1,982*	*10,858*	*11,685*	*12,543*	*13,376*	*14,238*	*1,982*	*1,982*	*1,982*	*1,982*	*1,982*

Appendix B

Renewal and Replacement Projection Details (10-year period)

Row Labels	Sum of Escalated Total Cost
2024	**$16,289,845**
Overdue Replacement	**$3,275,203**
IEUA-7AND8-8TH-RW-INST-PRESSURE	$9,344
IEUA-7AND8-E&I-CONTROL-HMI	$18,688
IEUA-7AND8-E&I-CONTROL-I/O	$46,721
IEUA-7AND8-E&I-CONTROL-PLC	$46,721
IEUA-7AND8-E&I-CONTROL-RTU	$46,721
IEUA-BNNA-E&I-CONTROL-HMI	$18,688
IEUA-BNNA-E&I-CONTROL-I/O	$46,721
IEUA-BNNA-E&I-CONTROL-PLC	$46,721
IEUA-BNNA-E&I-CONTROL-RTU	$46,721
IEUA-BRKS-E&I-CONTROL-HMI-1	$18,688
IEUA-BRKS-E&I-CONTROL-HMI-2	$18,688
IEUA-BRKS-E&I-CONTROL-I/O-1	$46,721
IEUA-BRKS-E&I-CONTROL-I/O-2	$46,721
IEUA-BRKS-E&I-CONTROL-PLC-1	$46,721
IEUA-BRKS-E&I-CONTROL-PLC-2	$46,721
IEUA-CLHTS-BASIN-INST-AIR	$9,344
IEUA-CLHTS-E&I-CONTROL-HMI	$18,688
IEUA-CLHTS-E&I-CONTROL-I/O	$93,442
IEUA-CLHTS-E&I-CONTROL-PLC	$46,721
IEUA-DCLZ-E&I-CONTROL-HMI	$18,688
IEUA-DCLZ-E&I-CONTROL-I/O	$46,721
IEUA-DCLZ-E&I-CONTROL-PLC	$46,721
IEUA-ELY-BASIN-1-INST-FLOW	$9,344
IEUA-ELY-BASIN-1-INST-PRESSURE	$9,344
IEUA-ELY-BASIN-2-INST-FLOW	$9,344
IEUA-ELY-BASIN-2-INST-PRESSURE	$9,344
IEUA-ELY-BASIN-3-INST-FLOW	$9,344
IEUA-ELY-BASIN-3-INST-PRESSURE	$9,344
IEUA-ELY-E&I-CONTROL-I/O-1	$46,721
IEUA-ELY-E&I-CONTROL-I/O-2	$46,721
IEUA-ELY-E&I-CONTROL-I/O-3	$46,721
IEUA-ELY-E&I-CONTROL-I/O-4	$46,721
IEUA-ELY-E&I-CONTROL-PLC	$46,721
IEUA-ELY-E&I-CONTROL-RTU	$46,721
IEUA-GROVE-BASIN-STRUC-GATE-1	$108,318
IEUA-GROVE-BASIN-STRUC-GATE-2	$170,213
IEUA-GROVE-E&I-CONTROL-HMI	$18,688
IEUA-GROVE-E&I-CONTROL-I/O	$46,721
IEUA-GROVE-E&I-CONTROL-PLC	$46,721
IEUA-HCKR-BASIN-INST-AIR	$9,344
IEUA-HCKR-BASIN-PMP-SUMP	$9,344
IEUA-HCKR-E&I-CONTROL-PLC	$233,604
IEUA-JRPA-E&I-CONTROL-HMI	$18,688
IEUA-LWRDY-BASIN-INST-AIR	$9,344
IEUA-LWRDY-E&I-CONTROL-HMI	$18,688
IEUA-LWRDY-E&I-CONTROL-I/O	$93,442
IEUA-LWRDY-E&I-CONTROL-PLC	$93,442
IEUA-MCLR-E&I-CONTROL-I/O	$46,721
IEUA-MCLR-E&I-CONTROL-PLC	$46,721
IEUA-RP3-BASIN-INST-AIR	$9,344
IEUA-RP3-BASIN-INST-PRESSURE	$9,344
IEUA-RP3-E&I-CONTROL-HMI	$18,688
IEUA-RP3-E&I-CONTROL-I/O	$46,721
IEUA-RP3-E&I-CONTROL-PLC	$46,721
IEUA-SASEV-E&I-CONTROL-HMI	$18,688
IEUA-TRNR12-E&I-CONTROL-HMI	$18,688
IEUA-TRNR12-E&I-CONTROL-I/O	$140,162
IEUA-TRNR12-E&I-CONTROL-PLC	$46,721
IEUA-TRNR12-E&I-CONTROL-RTU	$46,721
IEUA-UPLND-E&I-CONTROL-HMI	$18,688
IEUA-UPLND-E&I-CONTROL-I/O	$93,442
IEUA-UPLND-E&I-CONTROL-PLC	$46,721

IEUA-VICT-E&I-CONTROL-HMI	$18,688
IEUA-VICT-E&I-CONTROL-I/O	$93,442
IEUA-VICT-E&I-CONTROL-PLC	$46,721
IEUA-VICT-E&I-CONTROL-RTU	$46,721
SBCFCD-GROVE-E&I-ELEC-GEN	$93,442
SBCFCD-SASEV-CELL-1-STRUC-BERM	$117,736
SBCFCD-SASEV-CELL-3-STRUC-BERM	$75,688
SBCFCD-SASEV-CELL-S-STRUC-BERM	$84,097
Renewal	**$7,230,476**
CBWCD-MCLR-BASIN-1-STRUC-CLVRT	$171,128
CBWCD-MCLR-BASIN-1-STRUC-GATE	$455
CBWCD-MCLR-BASIN-2-STRUC-CLVRT	$170,601
CBWCD-MCLR-BASIN-3-STRUC-CLVRT	$661,211
IEUA-7AND8-8TH-N-STRUC-GATE	$1,023
IEUA-ELY-BASIN-1-STRUC-GATE-1	$455
IEUA-ELY-BASIN-1-STRUC-GATE-2	$455
IEUA-ELY-BASIN-1-STRUC-GATE-3	$455
IEUA-ELY-BASIN-1-STRUC-GATE-4	$455
IEUA-ELY-BASIN-2-STRUC-GATE-1	$455
IEUA-ELY-BASIN-2-STRUC-GATE-2	$455
IEUA-ELY-BASIN-3-STRUC-GATE	$1,365
IEUA-HCKR-BASIN-W-STRUC-GATE-W	$1,365
IEUA-LWRDY-BASIN-CELL1-STRUC-GATE	$682
IEUA-LWRDY-BASIN-CELL2-STRUC-GATE	$682
IEUA-RP3-BASIN-2-STRUC-GATE	$455
IEUA-TRNR34-BASIN-4B&C-STRUC-GATE	$2,161
IEUA-VICT-BASIN-CELL1-STRUC-GATE	$682
SBCFCD-7AND8-7TH-BASIN-FLOW	$3,093
SBCFCD-7AND8-8TH-N-BASIN-FLOW	$2,980
SBCFCD-7AND8-8TH-S-BASIN-FLOW	$2,153
SBCFCD-7AND8-8TH-S-STRUC-CLVRT	$488,500
SBCFCD-BNNA-BASIN-BASIN-FLOW	$2,402
SBCFCD-DCLZ-CELL-1-BASIN-FLOW	$2,419
SBCFCD-DCLZ-CELL-2-BASIN-FLOW	$1,649
SBCFCD-DCLZ-CELL-3-BASIN-FLOW	$1,700
SBCFCD-ELY-BASIN-1-BASIN-FLOW	$4,827
SBCFCD-ELY-BASIN-1-STRUC-CLVRT	$1,173,980
SBCFCD-ELY-BASIN-2-BASIN-FLOW	$5,416
SBCFCD-ELY-BASIN-2-STRUC-CLVRT	$1,760,931
SBCFCD-ELY-BASIN-3-BASIN-FLOW	$7,693
SBCFCD-ELY-BASIN-3-STRUC-CLVRT-1	$1,509,414
SBCFCD-ELY-BASIN-3-STRUC-CLVRT-2	$580,570
SBCFCD-HCKR-BASIN-E-BASIN-FLOW-E	$1,020
SBCFCD-HCKR-BASIN-W-BASIN-FLOW-W	$2,453
SBCFCD-JRPA-BASIN-STRUC-BERM	$695
SBCFCD-LWRDY-BASIN-CELL3-STRUC-CLVRT	$664,045
Replacement	**$5,784,166**
CBWCD-MCLR-BASIN-1-STRUC-GATE	$92,844
IEUA-7AND8-7TH-STRUC-GATE	$92,844
IEUA-7AND8-8TH-S-STRUC-GATE	$123,791
IEUA-BNNA-BASIN-STRUC-GATE	$92,844
IEUA-BRKS-BASIN-STRUC-GATE-1	$123,791
IEUA-BRKS-BASIN-STRUC-GATE-2	$108,318
IEUA-BRKS-E&I-CONTROL-PANEL	$93,442
IEUA-CLHTS-BASIN-E-STRUC-GATE	$123,791
IEUA-CLHTS-BASIN-W-STRUC-GATE	$123,791
IEUA-CLHTS-E&I-CONTROL-PANEL	$93,442
IEUA-CLHTS-SAN-DAM-BLOW	$14,016
IEUA-DCLZ-BASIN-STRUC-VALVE	$14,502
IEUA-DCLZ-CELL-1-STRUC-GATE	$92,844
IEUA-DCLZ-CELL-2-STRUC-GATE	$185,687
IEUA-DCLZ-CELL-3-STRUC-GATE	$185,687
IEUA-DCLZ-E&I-CONTROL-PANEL	$93,442
IEUA-ELY-BASIN-3-STRUC-GATE	$61,896
IEUA-ELY-E&I-CONTROL-PANEL-1	$93,442
IEUA-ELY-E&I-CONTROL-PANEL-2	$93,442
IEUA-ELY-E&I-CONTROL-PANEL-3	$93,442

IEUA-ETIW-CB-14-IW-INST-FLOW	$9,344
IEUA-ETIW-CB-14-IW-INST-LEVEL	$9,344
IEUA-ETIW-CB-14-IW-INST-PRESSURE	$9,344
IEUA-ETIW-E&I-CONTROL-PLC	$46,721
IEUA-ETIW-E&I-CONTROL-RTU	$46,721
IEUA-HCKR-BASIN-E-STRUC-GATE-E	$92,844
IEUA-HCKR-BASIN-W-PMP	$13,082
IEUA-HCKR-E&I-CONTROL-PANEL	$93,442
IEUA-HCKR-SAN-CHANNEL-BLOW	$14,016
IEUA-JRPA-BASIN-PMP-SUMP	$9,344
IEUA-JRPA-E&I-CONTROL-I/O	$46,721
IEUA-JRPA-E&I-CONTROL-PLC	$46,721
IEUA-JRPA-PUMP-STA-INST-PRESSURE-1	$9,344
IEUA-JRPA-PUMP-STA-INST-PRESSURE-2	$9,344
IEUA-LWRDY-BASIN-CELL1-STRUC-GATE	$92,844
IEUA-LWRDY-CB-15-IW-INST-FLOWMETER	$56,065
IEUA-LWRDY-CB-15-IW-STRUC-VALVE	$18,128
IEUA-LWRDY-DAYCRK-DAM-BLOW	$14,016
IEUA-LWRDY-E&I-CONTROL-PANEL	$93,442
IEUA-MCLR-E&I-CONTROL-PANEL	$93,442
IEUA-RP3-BASIN-1-STRUC-GATE	$247,583
IEUA-RP3-BASIN-2-STRUC-GATE	$77,370
IEUA-RP3-BASIN-3-STRUC-GATE	$154,739
IEUA-RP3-BASIN-4-STRUC-GATE	$154,739
IEUA-RP3-BASIN-INST-FLOWMETER	$78,491
IEUA-RP3-DECLEZ-DAM-BLOW	$14,016
IEUA-RP3-DECLEZ-DAM-STRUC-GATE	$340,426
IEUA-RP3-E&I-CONTROL-PANEL	$93,442
IEUA-TRNR12-BASIN-1-RW-INST-FLOWMETER	$33,639
IEUA-TRNR12-BASIN-1-RW-STRUC-VALVE	$9,064
IEUA-TRNR12-BASIN-1-STRUC-GATE	$479,692
IEUA-TRNR12-CUCA-CRK-DAM-BLOW	$14,016
IEUA-TRNR12-E&I-CONTROL-PANEL	$93,442
IEUA-TRNR34-BASIN-4-STRUC-GATE	$232,109
IEUA-TRNR34-CB-11-IW-INST-FLOWMETER	$67,278
IEUA-TRNR34-CB-11-IW-STRUC-VALVE	$21,753
IEUA-UPLND-BASIN-STRUC-GATE	$123,791
IEUA-UPLND-E&I-CONTROL-PANEL	$93,442
IEUA-UPLND-SAN-DAM-BLOW	$14,016
IEUA-VICT-BASIN-CELL1-STRUC-GATE	$247,583
IEUA-VICT-BASIN-CELL2-STRUC-GATE	$92,844
IEUA-VICT-E&I-CONTROL-PANEL	$93,442
TBD-LWRDY-BASIN-CELL3-STRUC-GATE	$185,687
2025	**$1,605,223**
Renewal	**$1,554,810**
IEUA-DCLZ-CELL-3-STRUC-CLVRT	$473,518
IEUA-SASEV-CELL-5-STRUC-GATE	$937
SBCFCD-SASEV-CELL-5-BASIN-FLOW	$4,613
SBCFCD-SASEV-CELL-5-STRUC-CLVRT-1	$278,041
SBCFCD-SASEV-CELL-5-STRUC-CLVRT-2	$795,828
SBCFCD-SASEV-CELL-5-STRUC-GATE	$1,874
Replacement	**$50,413**
IEUA-ELY-RW-STRUC-VALVE-1	$9,336
IEUA-ELY-RW-STRUC-VALVE-2	$9,336
IEUA-ELY-RW-STRUC-VALVE-3	$9,336
IEUA-HCKR-CB-18-IW-STRUC-VALVE	$22,406
2026	**$823,983**
Renewal	**$193,046**
SBCFCD-HCKR-BASIN-W-STRUC-CLVRT	$182,148
SBCFCD-HCKR-BASIN-W-STRUC-CLVRT-1	$4,091
SBCFCD-HCKR-BASIN-W-STRUC-CLVRT-2	$239
SBCFCD-HCKR-BASIN-W-STRUC-CLVRT-3	$477
SBCFCD-JRPA-BASIN-STRUC-CLVRT	$6,091
Replacement	**$630,937**
IEUA-BNNA-E&I-CONTROL-PANEL	$99,132
IEUA-BNNA-FMM-RW-INST-FLOWMETER	$35,688
IEUA-BNNA-FMM-RW-STRUC-VALVE	$9,616

IEUA-BNNA-FMM-RW-STRUC-VALVE-1	$21,155
IEUA-BNNA-FMM-RW-STRUC-VALVE-2	$21,155
IEUA-HCKR-FMM-RW-INST-FLOWMETER	$35,688
IEUA-HCKR-FMM-RW-STRUC-VALVE	$42,310
IEUA-HCKR-SAN-RW-STRUC-VALVE	$9,616
IEUA-LWRDY-BASIN-CELL1-INST-LEVEL	$9,913
IEUA-LWRDY-BASIN-CELL3-INST-LEVEL	$9,913
IEUA-SASEV-E&I-CONTROL-I/O	$99,132
IEUA-SASEV-E&I-CONTROL-PLC	$99,132
IEUA-SASEV-E&I-CONTROL-RTU	$99,132
IEUA-SASEV-RW-INST-FLOW	$9,913
IEUA-SASEV-RW-INST-PRESSURE	$9,913
IEUA-TRNR34-DEER-RW-STRUC-VALVE	$9,616
IEUA-VICT-RW-INST-PRESSURE	$9,913
2027	**$357,304**
Renewal	**$4,997**
SBCFCD-ETIW-BASIN-BASIN-FLOW	$4,500
SBCFCD-ETIW-BASIN-STRUC-GATE	$497
Replacement	**$352,307**
IEUA-7AND8-8TH-RW-INST-FLOWMETER	$36,758
IEUA-7AND8-8TH-RW-STRUC-VALVE	$15,847
IEUA-7AND8-E&I-CONTROL-PANEL	$102,106
IEUA-BRKS-ORCHARD-RW-INST-FLOWMETER	$49,011
IEUA-BRKS-ORCHARD-RW-STRUC-VALVE	$15,847
IEUA-GROVE-E&I-COMM-RADIO	$71,474
IEUA-GROVE-E&I-ELEC-TRANSFRM	$51,053
IEUA-RP3-BASIN-4-INST-LEVEL	$10,211
2028	**$745,877**
Renewal	**$430,369**
SBCFCD-GROVE-BASIN-STRUC-SPILL	$430,369
Replacement	**$315,508**
CBWCD-BRKS-BASIN-WELL-MONITOR	$42,068
CBWCD-CLHTS-BASIN-WELL-MONITOR	$42,068
IEUA-7AND8-BASIN-WELL-MONITOR	$42,068
IEUA-ELY-BASIN-WELL-MONITOR	$42,068
IEUA-SASEV-BASIN-WELL-MONITOR	$42,068
IEUA-SASEV-CELL-5-INST-LEVEL	$10,517
IEUA-TRNR34-BASIN-4A-INST-LEVEL	$10,517
IEUA-VICT-BASIN-WELL-MONITOR	$42,068
ONTARIO-TRNR12-BASIN-WELL-MONITOR	$42,068
2029	**$4,335,145**
Renewal	**$1,092,107**
IEUA-DCLZ-CELL-1-STRUC-CLVRT	$224
IEUA-DCLZ-CELL-2-STRUC-CLVRT	$186
IEUA-JRPA-BASIN-STRUC-GATE	$2,373
IEUA-LWRDY-BASIN-CELL1-STRUC-CLVRT	$497
IEUA-LWRDY-BASIN-CELL2-STRUC-CLVRT	$248
IEUA-RP3-BASIN-2-STRUC-CLVRT	$7,016
IEUA-RP3-BASIN-3-STRUC-CLVRT	$1,490
IEUA-RP3-BASIN-4-STRUC-CLVRT	$1,987
IEUA-TRNR12-BASIN-1-STRUC-CLVRT	$4,098
SBCFCD-7AND8-7TH-STRUC-SPILL	$744,707
SBCFCD-7AND8-8TH-S-STRUC-CLVRT	$306,174
SBCFCD-DCLZ-CELL-2-STRUC-CLVRT	$4,098
SBCFCD-SASEV-CELL-1-BASIN-FLOW	$120
SBCFCD-SASEV-CELL-3-BASIN-FLOW	$918
SBCFCD-SASEV-CELL-S-BASIN-FLOW	$1,302
SBCFCD-TRNR34-BASIN-4B&C-STRUC-BERM-4B/4C	$215
SBCFCD-VICT-BASIN-CELL2-STRUC-CLVRT	$16,454
Replacement	**$3,243,038**
CBWCD-UPLND-BASIN-WELL-MONITOR	$43,330
IEUA-BRKS-E&I-COMM-RADIO	$75,827
IEUA-CLHTS-E&I-COMM-RADIO	$75,827
IEUA-DCLZ-CELL-2-INST-LEVEL-2	$10,832
IEUA-DCLZ-E&I-COMM-RADIO	$75,827
IEUA-DCLZ-E&I-ELEC-TRANSFRM	$54,162
IEUA-ELY-E&I-COMM-RADIO-1	$75,827

IEUA-ELY-E&I-COMM-RADIO-2	$75,827
IEUA-ELY-E&I-COMM-RADIO-3	$75,827
IEUA-ELY-E&I-COMM-RADIO-4	$75,827
IEUA-ETIW-CB-14-IW-STRUC-VALVE	$50,436
IEUA-GROVE-BASIN-INST-LEVEL	$10,832
IEUA-HCKR-E&I-ELEC-TRANSFRM	$54,162
IEUA-JRPA-BASIN-HVAC	$54,162
IEUA-JRPA-BASIN-PMP-	$909,925
IEUA-JRPA-BASIN-STRUC-GATE	$143,508
IEUA-JRPA-E&I-CONTROL-PANEL	$108,324
IEUA-JRPA-PUMP-STA-INST-FLOWMETER	$38,997
IEUA-LWRDY-E&I-COMM-RADIO-1	$75,827
IEUA-LWRDY-E&I-COMM-RADIO-2	$75,827
IEUA-MCLR-E&I-COMM-RADIO	$75,827
IEUA-RP3-E&I-COMM-RADIO	$75,827
IEUA-TRNR12-E&I-COMM-RADIO	$75,827
IEUA-TRNR34-BASIN-4B-INST-LEVEL	$10,832
IEUA-TRNR34-BASIN-4C-INST-LEVEL	$10,832
IEUA-TRNR34-DEER-RW-INST-FLOW	$10,832
IEUA-TRNR34-DEER-RW-INST-PRESSURE	$10,832
IEUA-TRNR34-E&I-CONTROL-I/O	$108,324
IEUA-TRNR34-E&I-CONTROL-PLC	$108,324
IEUA-TRNR34-E&I-CONTROL-RTU	$108,324
IEUA-UPLND-E&I-COMM-RADIO	$75,827
IEUA-VICT-E&I-COMM-RADIO-1	$75,827
IEUA-VICT-E&I-COMM-RADIO-2	$75,827
IEUA-VICT-E&I-COMM-RADIO-3	$75,827
MWD/IEUA-7AND8-CB20-MWD-STRUC-VALVE	$25,218
TBD-JRPA-BASIN-STRUC-VALVE	$157,612
2030	**$22,315**
Replacement	**$22,315**
IEUA-7AND8-8TH-N-INST-LEVEL	$11,157
IEUA-TRNR12-BASIN-1-INST-LEVEL	$11,157
2031	**$5,207,780**
Renewal	**$4,892,114**
SBCFCD-HCKR-BASIN-W-STRUC-SPILL	$789,907
SBCFCD-JRPA-BASIN-STRUC-SPILL	$4,102,207
Replacement	**$315,666**
IEUA-BNNA-E&I-COMM-RADIO	$80,445
IEUA-DCLZ-CELL-3-INST-LEVEL-3	$11,492
IEUA-MCLR-BASIN-2-INST-LEVEL	$11,492
IEUA-RP3-BASIN-2-INST-LEVEL	$11,492
IEUA-SASEV-CB-13-IW-INST-FLOWMETER	$82,743
IEUA-SASEV-CB-13-IW-STRUC-VALVE	$26,754
IEUA-SASEV-RW-INST-FLOWMETER	$41,372
IEUA-SASEV-RW-STRUC-VALVE	$13,377
IEUA-VICT-RW-INST-FLOWMETER	$27,581
IEUA-VICT-RW-STRUC-VALVE	$8,918
2032	**$289,093**
Renewal	**$5,007**
SBCFCD-ETIW-BASIN-STRUC-CLVRT	$5,007
Replacement	**$284,086**
IEUA-7AND8-8TH-S-INST-LEVEL	$11,837
IEUA-7AND8-E&I-COMM-RADIO-1	$82,858
IEUA-7AND8-E&I-COMM-RADIO-2	$82,858
IEUA-7AND8-E&I-COMM-RADIO-3	$82,858
IEUA-CLHTS-BASIN-E-INST-LEVEL-1	$11,837
IEUA-VICT-BASIN-CELL1-INST-LEVEL	$11,837
2033	**$70,617**
Renewal	**$9,657**
IEUA-7AND8-BASIN-WELL-RECHARGE	$1,344
IEUA-BNNA-BASIN-WELL-RECHARGE	$1,344
IEUA-ELY-BASIN-WELL-RECHARGE	$1,344
IEUA-HCKR-BASIN-WELL-RECHARGE	$1,344
IEUA-LWRDY-DAYCRK-DAM-STRUC-BLDG	$250
IEUA-SASEV-BASIN-WELL-RECHARGE	$1,344
IEUA-TRNR12-BASIN-WELL-RECHARGE	$1,344

IEUA-VICT-BASIN-WELL-RECHARGE	$1,344
Replacement	**$60,960**
IEUA-7AND8-7TH-INST-LEVEL	$12,192
IEUA-BNNA-BASIN-INST-LEVEL	$12,192
IEUA-MCLR-BASIN-4-INST-LEVEL	$12,192
IEUA-TRNR34-BASIN-3-INST-LEVEL	$12,192
IEUA-VICT-BASIN-CELL2-INST-LEVEL	$12,192
2034	**$9,492,524**
Renewal	**$5,006,989**
CBWCD/SBCFCD-TRNR12-BASIN-1-BASIN-OFFCH	$23,906
CBWCD/SBCFCD-TRNR12-BASIN-2-BASIN-OFFCH	$3,936
CBWCD-BRKS-BASIN-BASIN-OFFCH	$14,618
CBWCD-CLHTS-BASIN-E-BASIN-OFFCH	$7,141
CBWCD-CLHTS-BASIN-W-BASIN-OFFCH	$6,837
CBWCD-MCLR-BASIN-1-BASIN-OFFCH	$11,420
CBWCD-MCLR-BASIN-1-STRUC-GATE	$1,375
CBWCD-MCLR-BASIN-2-BASIN-OFFCH	$22,490
CBWCD-MCLR-BASIN-2-STRUC-SPILL	$513,883
CBWCD-MCLR-BASIN-3-BASIN-OFFCH	$4,857
CBWCD-MCLR-BASIN-4-BASIN-OFFCH	$8,451
CBWCD-MCLR-BASIN-4-STRUC-SPILL	$863,153
IEUA-7AND8-7TH-STRUC-GATE	$1,375
IEUA-7AND8-8TH-S-STRUC-GATE	$1,834
IEUA-BNNA-BASIN-STRUC-GATE	$1,375
IEUA-BRKS-BASIN-STRUC-GATE-1	$1,834
IEUA-BRKS-BASIN-STRUC-GATE-2	$1,605
IEUA-CLHTS-BASIN-E-STRUC-GATE	$1,834
IEUA-CLHTS-BASIN-W-STRUC-GATE	$1,834
IEUA-CLHTS-SAN-DAM-BLOW	$208
IEUA-CLHTS-SAN-DAM-STRUC-BLDG	$6,179
IEUA-DCLZ-BASIN-STRUC-VALVE	$215
IEUA-DCLZ-CELL-1-STRUC-GATE	$1,375
IEUA-DCLZ-CELL-2-STRUC-GATE	$2,751
IEUA-DCLZ-CELL-3-STRUC-GATE	$2,751
IEUA-ELY-BASIN-3-STRUC-GATE	$917
IEUA-GROVE-BASIN-STRUC-GATE-1	$1,605
IEUA-GROVE-BASIN-STRUC-GATE-2	$2,522
IEUA-HCKR-BASIN-E-STRUC-GATE-E	$1,375
IEUA-HCKR-BASIN-W-PMP	$194
IEUA-HCKR-SAN-CHANNEL-BLOW	$208
IEUA-JRPA-BASIN-STRUC-BLDG	$22,528
IEUA-JRPA-BASIN-STRUC-PIPE	$139,019
IEUA-LWRDY-BASIN-CELL1-STRUC-GATE	$1,375
IEUA-LWRDY-CB-15-IW-INST-FLOWMETER	$831
IEUA-LWRDY-CB-15-IW-STRUC-VALVE	$269
IEUA-LWRDY-DAYCRK-DAM-BLOW	$208
IEUA-RP3-BASIN-1-BASIN-OFFCH-1A	$1,435
IEUA-RP3-BASIN-1-BASIN-OFFCH-1B	$1,435
IEUA-RP3-BASIN-1-STRUC-BERM-1	$747
IEUA-RP3-BASIN-1-STRUC-GATE	$3,668
IEUA-RP3-BASIN-1-STRUC-PIPE	$17,234
IEUA-RP3-BASIN-2-BASIN-OFFCH	$3,373
IEUA-RP3-BASIN-2-STRUC-BERM	$623
IEUA-RP3-BASIN-2-STRUC-GATE	$1,146
IEUA-RP3-BASIN-3-BASIN-OFFCH-3A	$2,908
IEUA-RP3-BASIN-3-BASIN-OFFCH-3B	$2,908
IEUA-RP3-BASIN-3-STRUC-BERM	$592
IEUA-RP3-BASIN-3-STRUC-GATE	$2,292
IEUA-RP3-BASIN-4-BASIN-OFFCH-4A	$3,491
IEUA-RP3-BASIN-4-BASIN-OFFCH-4B	$3,491
IEUA-RP3-BASIN-4-STRUC-BERM	$592
IEUA-RP3-BASIN-4-STRUC-GATE	$2,292
IEUA-RP3-BASIN-INST-FLOWMETER	$1,163
IEUA-RP3-DECLEZ-DAM-BLOW	$208
IEUA-RP3-DECLEZ-DAM-STRUC-BLDG	$257
IEUA-RP3-DECLEZ-DAM-STRUC-GATE	$5,043
IEUA-TRNR12-BASIN-1-RW-INST-FLOWMETER	$498

IEUA-TRNR12-BASIN-1-RW-STRUC-VALVE	$134
IEUA-TRNR12-BASIN-1-STRUC-GATE	$7,106
IEUA-TRNR12-CUCA-CRK-DAM-BLOW	$208
IEUA-TRNR12-CUCA-CRK-DAM-STRUC-BLDG	$3,154
IEUA-TRNR34-BASIN-4B&C-STRUC-GATE	$611
IEUA-TRNR34-BASIN-4-STRUC-GATE	$3,438
IEUA-TRNR34-CB-11-IW-INST-FLOWMETER	$997
IEUA-TRNR34-CB-11-IW-STRUC-VALVE	$322
IEUA-UPLND-BASIN-STRUC-GATE	$1,834
IEUA-UPLND-SAN-DAM-BLOW	$208
IEUA-UPLND-SAN-DAM-STRUC-BLDG	$3,347
IEUA-VICT-BASIN-CELL1-STRUC-GATE	$3,668
IEUA-VICT-BASIN-CELL2-STRUC-GATE	$1,375
SBCFCD-7AND8-8TH-STRUC-BERM	$934
SBCFCD-DCLZ-CELL-1-STRUC-BERM	$561
SBCFCD-DCLZ-CELL-2-STRUC-BERM	$448
SBCFCD-ELY-BASIN-1-STRUC-BERM-1	$1,557
SBCFCD-ELY-BASIN-2-STRUC-BERM	$1,620
SBCFCD-ELY-BASIN-3-STRUC-BERM-1	$374
SBCFCD-ELY-BASIN-3-STRUC-BERM-2	$872
SBCFCD-ELY-BASIN-3-STRUC-BERM-3	$311
SBCFCD-GROVE-E&I-ELEC-GEN	$1,384
SBCFCD-HCKR-BASIN-E-STRUC-BERM-E	$623
SBCFCD-LWRDY-BASIN-CELL1-BASIN-OFFCH	$1,995
SBCFCD-LWRDY-BASIN-CELL1-STRUC-PIPE	$6,813
SBCFCD-LWRDY-BASIN-CELL2-BASIN-OFFCH	$2,391
SBCFCD-LWRDY-BASIN-CELL3-BASIN-OFFCH	$4,218
SBCFCD-LWRDY-BASIN-CELL3-STRUC-SPILL	$677,444
SBCFCD-LWRDY-BASIN-STRUC-BERM	$1,308
SBCFCD-TRNR12-BASIN-2-STRUC-SPILL	$1,716,450
SBCFCD-TRNR34-BASIN-3-BASIN-OFFCH	$3,829
SBCFCD-TRNR34-BASIN-4-BASIN-OFFCH	$11,755
SBCFCD-VICT-BASIN-CELL1-BASIN-OFFCH	$2,170
SBCFCD-VICT-BASIN-CELL1-STRUC-BERM	$1,121
SBCFCD-VICT-BASIN-CELL2-BASIN-OFFCH	$3,586
TBD-LWRDY-BASIN-CELL3-STRUC-GATE	$2,751
UPLAND-UPLND-BASIN-BASIN-OFFCH	$52,912
UPLAND-UPLND-BASIN-STRUC-SPILL	$749,480
Replacement	**$4,485,535**
CBWCD-MCLR-BASIN-1-STRUC-GATE	$55,455
IEUA-7AND8-8TH-N-STRUC-GATE	$124,774
IEUA-7AND8-E&I-CONTROL-HMI	$25,116
IEUA-BNNA-E&I-CONTROL-HMI	$25,116
IEUA-BRKS-BASIN-INST-LEVEL-1	$12,558
IEUA-BRKS-BASIN-INST-LEVEL-2	$12,558
IEUA-BRKS-BASIN-INST-LEVEL-3	$12,558
IEUA-BRKS-BASIN-INST-LEVEL-4	$12,558
IEUA-BRKS-E&I-CONTROL-HMI-1	$25,116
IEUA-BRKS-E&I-CONTROL-HMI-2	$25,116
IEUA-CLHTS-E&I-CONTROL-HMI	$25,116
IEUA-CLHTS-SAN-DAM-STRUC-DAM	$376,733
IEUA-DCLZ-E&I-CONTROL-HMI	$25,116
IEUA-ELY-BASIN-1-INST-LEVEL	$12,558
IEUA-ELY-BASIN-1-STRUC-GATE-1	$55,455
IEUA-ELY-BASIN-1-STRUC-GATE-2	$55,455
IEUA-ELY-BASIN-1-STRUC-GATE-3	$55,455
IEUA-ELY-BASIN-1-STRUC-GATE-4	$55,455
IEUA-ELY-BASIN-2-STRUC-GATE-1	$55,455
IEUA-ELY-BASIN-2-STRUC-GATE-2	$55,455
IEUA-ELY-BASIN-3-STRUC-GATE	$166,365
IEUA-ETIW-E&I-COMM-RADIO	$87,904
IEUA-GROVE-E&I-CONTROL-HMI	$25,116
IEUA-HCKR-BASIN-E-INST-LEVEL-E	$12,558
IEUA-HCKR-BASIN-W-INST-LEVEL-2	$12,558
IEUA-HCKR-BASIN-W-STRUC-GATE-W	$166,365
IEUA-HCKR-SAN-CHANNEL-STRUC-DAM	$376,733
IEUA-JRPA-BASIN-INST-LEVEL	$12,558

IEUA-JRPA-E&I-COMM-RADIO	$87,904
IEUA-JRPA-E&I-CONTROL-HMI	$25,116
IEUA-JRPA-E&I-ELEC-TRANSFRM	$62,789
IEUA-LWRDY-BASIN-CELL1-STRUC-GATE	$83,183
IEUA-LWRDY-BASIN-CELL2-INST-LEVEL	$12,558
IEUA-LWRDY-BASIN-CELL2-STRUC-GATE	$83,183
IEUA-LWRDY-DAYCRK-DAM-STRUC-DAM	$376,733
IEUA-LWRDY-E&I-CONTROL-HMI	$25,116
IEUA-RP3-BASIN-1-INST-LEVEL-1	$12,558
IEUA-RP3-BASIN-1-INST-LEVEL-2	$12,558
IEUA-RP3-BASIN-2-STRUC-GATE	$55,455
IEUA-RP3-BASIN-3-INST-LEVEL	$12,558
IEUA-RP3-DECLEZ-DAM-STRUC-DAM	$376,733
IEUA-RP3-E&I-CONTROL-HMI	$25,116
IEUA-SASEV-E&I-CONTROL-HMI	$25,116
IEUA-TRNR12-CUCA-CRK-DAM-STRUC-DAM	$376,733
IEUA-TRNR12-E&I-CONTROL-HMI	$25,116
IEUA-TRNR34-BASIN-4B&C-STRUC-GATE	$207,957
IEUA-TRNR34-E&I-CONTROL-PANEL	$125,578
IEUA-UPLND-E&I-CONTROL-HMI	$25,116
IEUA-UPLND-SAN-DAM-STRUC-DAM	$376,733
IEUA-VICT-BASIN-CELL1-STRUC-GATE	$83,183
IEUA-VICT-E&I-CONTROL-HMI	$25,116
Grand Total	**$39,239,707**

Appendix C

Review Comments and Responses

WATER FACILITIES AUTHORITY (WFA) – VAN JEW

Comment 1 – Chapter 2.3.3 In-Lieu Capacity

Can we add in the word "sustainable" between "current" and "capacity"? Though many moons ago, the WFA has a history of running in the 70-80 MGD range, but just not in a sustainable 365/24/7 manner.

Response:

The text was updated as requested.

Comment 2 – Chapter 2.3.3 In-Lieu Capacity

In the sentence "According to WFA, the sustainable current capacity of the WFA plant is about 40 mgd in the summer months and about 20 mgd in the winter months." Can we change the "40" and the "20" to "50" and "25," respectively? I've spoken to Terry before about the 40/20. Those were conservative numbers. 50/25 are still realistic numbers and are neither conservative or aggressive representations. Example: For the last month or so, we've been flowing at slightly under 40 mgd and we are not stretched at all. We can go to 50 mgd today if the agencies called on us in that manner. This is all to say 40 mgd as a limit is conservative and not necessarily realistic. (BTW of course, changing to 50/25 may affect some of the calcs in the report, which I will leave up to you re-calc as warranted).

Response:

The text was updated as requested. The in-lieu capacity calculations were also updated based on the updated information (see Table 2-4a).

Comment 3 – Chapter 2.3.3 In-Lieu Capacity

If the WFA agencies decided to lease a portable belt press to process sludge (like they did in 2007), WFA staff would estimate that with a reliable and rightly-sized belt press(es) we can treat water at rate of 70 MGD and 40 MGD in the summer and winter, respectively. (Caveat: the portable belt press utilized in the Spring months of 2007 worked wonderfully, but the WFA's experience with portable belt presses beyond this 2007 experience is slightly uncharted territory and the WFA's ability to perform at said higher flows would be very dependent on the portable belt press' reliability).

Response:

Comment noted.

CUCAMONGA VALLEY WATER DISTRICT (CVWD) – JIWON SEUNG

Comment 1 – Chapter 2.1.2 Historical Recharge Activity

Include discussion of Chino Basin Water Conservation District and SB County Flood Control recharge activities.

Response:

Chapter 2.1.2 has been updated to describe the Chino Basin Water Conservation District and San Bernardino County Flood Control recharge activities.

Comment 2 – Chapter 2.3.1 Facilities Used to Effectuate In-Lieu Recharge

Lloyd W. Michael capacity pending discussion. Remove Royer-Nesbit.

Response:

Per a meeting between West Yost and CVWD staff on August 31, 2023, the Lloyd W. Michael capacity was updated and assumed to be zero.

Comment 3 – Table 2-4a

Lloyd W. Michael capacity pending discussion. Remove Royer-Nesbit.

Response:

Per a meeting between West Yost and CVWD staff on August 31, 2023, the Lloyd W. Michael capacity was updated and assumed to be zero.

Comment 4 – Chapter 2.4.2 Deficiencies in MS4 Facilities Documentation and Reporting

Instead of some of these planning studies (future extremes, long-term planning), it would be beneficial to improving the model if a project was implemented to work with land use agencies on coordinating MS4 projects or educating land use agencies on the importance of maintaining MS4 infiltration facilities.

Consider project for visual field inspections of facilities on the list to confirm that they have been constructed per the WQMP.

Response:

Comment noted.

Comment 5 – Chapter 3.3 Hydraulic Control

Figure 3-3 shows through 2018 and narrative states through 2023. Include note regarding model timeline.

Response:

The narrative has been updated to clarify that Figure 3-3 shows data through 2018 and that information regarding hydraulic control from 2018 to 2023 is based on the Chino Basin OBMP Maximum Benefit Annual Reports.

Comment 6 – Figure 4-1

Update legend to show all categories.

Response:

Figure 4-1 was updated.

Comment 7 – Figure 4-3

Change to side-by-side bars and include note that wet water recharge for replenishment could be (not necessarily will be) used towards MZ1 requirement if recharged in MZ1.

Response:

Figure 4-3 was updated to show that replenishment obligation is used to meet the MZ1 recharge requirement.

Comment 8 – Chapter 7.4.3 R&R Implementation Plan

IEUA has robust asset management program and should be able to provide more detailed analysis, not just confirmation of assets and cost estimates.

Response:

As described in Chapter 7, the asset inventory is based on information provided by IEUA, including IEUA's FY2016/17 Asset Management Plan. Any additional steps to implement a Renewal and Replacement Plan as recommended in Chapter 7.4.3 would be conducted in coordination with IEUA to ensure there are no duplicative efforts.

Comment 9 – Chapter 8.1 Conclusions

Improving the MS4 program data set should be a priority.

Response:

Comment noted.

MONTE VISTA WATER DISTRICT (MVWD) – JUSTIN SCOTT-COE

Comment 1 – Page 1-6: "Figure 1-3. Estimated Streambed Infiltration for the Santa Ana River Tributaries in the Chino Basin and New Recharge Resulting from Recharge Master Plan Implementation, 1978-2018"

This figure does not include managed stormwater recharge in years prior to 2005, and appears to suggest that all managed recharge after 2005 was the result of the Chino Basin Facilities Improvement Program (CBFIP) that resulted from the 2001 RMP. The Chino Basin Water Conservation District had been conducting managed stormwater recharge for decades prior to 2005. The historical water budget included in the 2020 Safe Yield Reset Report (attached) shows not insignificant managed stormwater recharge occurring prior to 2004 (all years over 1 TAFY, with some close to 7 TAFY). In order to avoid misunderstanding, we recommend that Figure 1-3 include all historical managed stormwater recharge prior to 2005. And for managed stormwater recharge occurring 2005 and after, Figure 1-3 should distinguish between the amount that would have occurred without CBFIP and the amount that occurred due to CBFIP.

Response:

Figure 1-3 has been updated to show all historical managed stormwater recharge.

Comment 2 – Page 1-8: "When fully implemented, the 2013 RMPU will reduce the demand for SWP water by at least 4,800 afy and possibly by as much as 11,900 afy."

We recommend deleting or rewriting this statement, as increasing managed stormwater recharge does not directly reduce the demand for SWP water.

Response:

The sentence was removed.

Comment 3 – Page 1-11: "This chapter also provides…"

We recommend removing "also" from this sentence.

Response:

The sentence was updated.

Comment 4 – Pages 1-12/13: "The 2023 RMPU was developed through a stakeholder process. Watermaster convened several workshops with the Steering Committee through the Recharge Investigation & Projects Committee (RIPComm) over the course of developing the 2023 RMPU (from October 2022 to August 2023). At these workshops, the important assumptions and interim work products of the RMPU were presented. The presentations developed for these workshops were posted on the Watermaster's website. As part of the stakeholder process, the development of 2023 RMPU was open to comments by all stakeholders, and all comments were responded to and/or addressed. Appendix B contains the comments and responses."

We were unaware that the RIPComm was being used for stakeholder input on RMPU work product. No materials related to 2023 RMPU assumptions or interim RMPU work products appear to have been posted

on Watermaster's website where indicated under footnote 11 (https://protect-us.mimecast.com/s/OTXICXDkYwcLQKrFmlUmR?domain=cbwm.org/), nor do we recall them being circulated. This draft report is the first work product MVWD is aware of that has been distributed to stakeholders for review, with comments requested within 10 days of distribution.

Response:

As described in the FY 2021/22 Engineering Budget, "During FY 2020/21, the stakeholders determined that they do not want to evaluate new recharge projects in the 2023 RMPU. Thus, the 2023 RMPU will have a similar to scope as that of the 2018 RMPU." Due to the scope of the 2023 RMPU and its reliance on existing data and information such as the Data Collection and Evaluation reports, the 2022 State of the Basin, and the 2020 Safe Yield Recalculation, Watermaster focused on presenting new or updated information at RIPComm. This included a discussion on imported water availability and the most up-to-date analysis on MS4 projects. The RIPComm agendas of October 2022, and January and July 2023 included a 2023 RMPU agenda item and were distributed to all Watermaster stakeholders. The presentations with these materials have now been posted on Watermaster's website as documented in the report.

Comment 5 – Page 2-1: "As noted in Chapter 1, prior to 2004 there was no significant recharge of stormwater or dry-weather runoff."

See above comment re Figure 1-3. We recommend this be rewritten to recognize the activities of the Chino Basin Water Conservation District in recharging stormwater and dry-weather runoff prior to 2004 and up to today.

Response:

This sentence has been deleted and additional information has been added to Section 2.1.2 to include this information (see response to comment 6 below).

Comment 6 – Page 2-3: "Prior to 2004, there was no significant recharge of stormwater or dry-weather runoff…"

See above comment re Figure 1-3. We recommend this be rewritten to recognize the activities of the Chino Basin Water Conservation District in recharging stormwater and dry-weather runoff prior to 2004 and up to today.

Response:

Chapter 2.1.2 has been updated to include the Chino Basin Water Conservation District and San Bernardino County Flood Control recharge activities.

Comment 7 – Page 2-3: "Through FY 2021/22, the recharge improvements constructed by Watermaster and the IEUA have enabled them to recharge about 545,400 af of storm and supplemental water into the Chino Basin."

Please clarify how this number was determined separate from the recharge that would have occurred without said recharge improvements constructed by Watermaster and the IEUA.

Response:

The text was updated to read that the recharge improvements constructed by Watermaster and the IEUA have enabled them to recharge about 500,000 af of storm and supplemental water into the Chino Basin. This number now accounts for an average of about 3,000 afy of recharge prior to 2004.

Comment 8 –Page 2-9: "The total in-lieu recharge for the period of FY 1977/78 through FY 2017/18 was about 430,000 af (WEI, 2018). Since FY 2017/18, an additional 78,000 af of in-lieu recharge has occurred, bringing the total in-lieu recharge over the Judgment period to about 508,000 af."

Please explain how these historical in-lieu recharge values were calculated. If the referenced 2018 Storage Framework Investigation report provides this information, please provide a page/table reference.

Response:

The text has been updated to explain how these values were estimated.

Comment 9 – Table 2-4a.

As MVWD is currently conducting in-lieu recharge into the Dry Year Yield Program account under current conditions, please explain the estimate of zero maximum in-lieu recharge capacity for MVWD under current conditions?

Response:

Appendix A now includes the information used to estimate in-lieu recharge calculations. Please note that Table 2-4a has been updated based on comment provided by WFA and it now shows that MVWD has an in-lieu recharge capacity of about 4,000 af.

Comment 10 – Figure 3-2c.

For the "Contour" legend entries, we believe "Spring 2000" should be changed to "Spring 2018".

Response:

The legend was updated to say "Spring 2018".

Comment 11 – Figure 4-1.

The legend appears incomplete (does not include labels for the last two dark green and grey colored bars).

Response:

Figure 4-1 was updated.

Comment 12 – Page 4-5: "For the foreseeable future, the IEUA projects that it will recharge at least 3,490 afy of recycled water in MZ1, yielding a residual MZ1 recharge obligation of 3,010 afy of imported water recharge through 2030."

Under Section 8.4(e) of the Peace II Agreement, Watermaster was obligated by 2012 to evaluate the minimum recharge quantity needed for MZ1. Watermaster has not yet conducted this evaluation; therefore, Watermaster's residual MZ1 recharge obligation through 2030 is unknown at this time. Please revise this section of the report consistent with the Peace II Agreement.

Response:

The text was updated and now reads "For the foreseeable future, the IEUA projects that it will recharge at least 3,490 afy of recycled water in MZ1. Using an obligation of 6,500 afy, this yields a residual MZ1 recharge obligation of 3,010 afy of imported water recharge through 2030." The estimated residual is based on the obligation as it exists at this time. This value may be updated following further evaluation of the appropriate minimum, which will be part of the ongoing development of a MZ1 subsidence management plan.

Comment 13 – Page 4-5: "Figure 4-3 also shows the 6,500 afy supplemental water recharge obligation for MZ1 through 2030.".

Section 8.4(e) of the Peace II Agreement states: "In no circumstance will the commitment to recharge 6,500 acre-feet be reduced for the duration of the Peace Agreement." The Peace Agreement includes provisions for its potential extension for an additional 30 years. If the Peace Agreement is extended, the commitment to recharge 6,500 AFY will also be extended for the full duration (not only the initial term through 2030) of the Peace Agreement. Please revise this section of the report consistent with the Peace II Agreement.

Response:

The Peace II Agreement's requirements will expire when the Peace II Agreement terminates in 2030.

Comment 14 – Page 6-1: "…Watermaster is obligated to recharge at least 6,500 afy of supplemental water in MZ1 through 2030 per the Peace II Agreement. … the additional supplemental water that must be recharged in MZ1 (through 2030) …"

See above comments re Page 4-5. Please add the phrase "at least" before "2030."

Response:

See response to MVWD Comment 13.

Comment 15 – Page 6-5: "… continuing the recharge of 6,500 afy of supplemental water in MZ1 …"

See above comments re Page 4-5. Please add the phrase "at least" before "6,500 afy."

Response:

The text has been adjusted as follows (additions marked in red): "This includes continuing the recharge of at least 6,500 afy of supplemental water in MZ1 until the next RMPU occurs in 2028 or the MZ1 subsidence management plan is completed."

Comment 16 – Page 8-1: "No changes are recommended for the 6,500 afy supplemental water recharge obligation in MZ1 (Peace II Agreement)."

See above comments re Page 4-5. Please revise language contingent on the results of an evaluation of the minimum recharge quantity for MZ1, as required by the Peace II Agreement.

Response:

The text has been updated to include a footnote which reads "This value may be updated following further evaluation of the appropriate minimum, which will be part of the ongoing development of a MZ1 subsidence management plan."

SCOTT S. SLATER (State Bar No. 117317)
BRADLEY J. HERREMA (State Bar No. 228976)
LAURA K. YRACEBURU (State Bar No. 333085)
BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102
Telephone: 805.963.7000
Facsimile: 805.965.4333
Attorneys for
CHINO BASIN WATERMASTER

JEAN CIHIGOYENETCHE (State Bar No. 105227)
JC LAW FIRM
5871 Pine Avenue, Suite 200
Chino Hills, CA 91709
Telephone: 909.214.6012
Attorney for
INLAND EMPIRE UTILITIES AGENCY

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,

Plaintiff,

v.

CITY OF CHINO, et al.,

Defendant.

Case No. RCV RS51010

[Assigned for All Purposes to the Honorable Gilbert G. Ochoa]

NOTICE OF MOTION AND MOTION FOR COURT APPROVAL OF 2023 RECHARGE MASTER PLAN UPDATE

Date: _____, 2023
Time: ____ __.m.
Dept.: S24

[*Filed concurrently herewith: Declaration of Bradley J. Herrema; Declaration of Jean Cihigoyenetche; Declaration of Edgar Tellez Foster; [Proposed] Order*]

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

PLEASE TAKE NOTICE that on _____, 2023, at_____ __.m., or as soon thereafter as the matter may be heard, in Department S24 of the above entitled Court located at 247 West Third Street, San Bernardino, California 92415, the Chino Basin Watermaster ("Watermaster") and the Inland Empire Utilities Agency ("IEUA") will and hereby do move the Court for an order approving the 2023 Recharge Master Plan Update ("2023 RMPU"). Approval of the 2023 RMPU is warranted as it conforms to and satisfies the requirements of the Peace Agreements, prior orders of this Court, and the Judgment.

This Motion is based on the Memorandum of Points and Authorities attached hereto, the Declarations of Bradley J. Herrema, Jean Cihigoyenetche and Edgar Tellez Foster and the exhibits attached thereto filed concurrently herewith, the pleadings and papers on file in this case, and any oral argument the Court entertains on this matter.

Dated: ____, 2023

BROWNSTEIN HYATT FARBER SCHRECK, LLP

By:_____
SCOTT S. SLATER
BRADLEY J. HERREMA
LAURA K. YRACEBURU
Attorneys for CHINO BASIN WATERMASTER

Dated: ____, 2023

JC LAW FIRM

By:_____
JEAN CIHIGOYENETCHE
Attorney for INLAND EMPIRE UTILITIES AGENCY

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

The Chino Basin Watermaster ("Watermaster") and the Inland Empire Utilities Agency ("IEUA") hereby jointly request the Court's approval of the 2023 Recharge Master Plan Update ("2023 RMPU").[1] The 2023 RMPU complies with and satisfies the requirements of the Peace Agreements, prior orders of this Court, and the Restated Judgment, and, on this basis, the Court should approve the 2023 RMPU.

II. BACKGROUND

A. The Recharge Master Plan

In its December 21, 2007 Order approving the Peace II Agreement, the Court required Watermaster to satisfy a number of conditions subsequent. Condition subsequent number eight required Watermaster to update its Recharge Master Plan. The Judgment operates on the fundamental premise that, through the Physical Solution, overproduction can be replenished with the recharge of supplemental water. Consequently, under the Judgment, no party is limited in the amount of groundwater that it may pump from the Basin, provided that sufficient funds are provided by the parties to purchase available replenishment water to offset any pumping above the Safe Yield of the Basin. (*See* Plaintiff's Post Trial Memorandum, July 12, 1978, 5:5-12.)

In broad terms, the purpose of the Recharge Master Plan is to articulate the manner in which Watermaster will fulfill its responsibilities under the Judgment to ensure that groundwater production from the Chino Basin in excess of the Safe Yield is off-set, bucket for bucket, by replenishment in accordance with the Physical Solution. Success is dependent upon making projections in the Recharge Master Plan concerning anticipated production of groundwater from the Basin, the availability of imported water supplies, and the facilities necessary to make use of those imported supplies. (*See* Peace II Agreement, Article VIII.)

[1] A copy of the 2023 RMPU is attached to Exhibit C to the Declaration of Bradley J. Herrema, filed concurrently with this Motion ("Herrema Decl."), as Exhibit C to Watermaster's Resolution No. 2023-06, Resolution of the Chino Basin Watermaster Regarding the Adoption of the 2023 Recharge Master Plan Update.

In addition, Watermaster's discretion with regard to the manner in which recharge activities are conducted is constrained by commitments made in the Peace and Peace II Agreements. Implementation of the Recharge Master Plan recommendations must satisfy these commitments. (*See, e.g.,* Peace II Agreement, ¶ 8.4.) Fundamentally, the purpose of the Recharge Master Plan Update is to ensure that: (i) if at any time during the period when the 400,000 acre-feet of Basin Re-Operation water is being produced that water were to become unavailable; and, (ii) when the 400,000 acre-feet has been exhausted under the Court authorized schedule, then, Watermaster and the parties will have the ability to offset all overproduction.

B. Update Requirements for Recharge Master Plan

Section 8.1 of the Peace II Agreement requires that Watermaster and IEUA update the Recharge Master Plan "to address how the Basin will be contemporaneously managed to secure and maintain Hydraulic Control and subsequently operated at a new equilibrium at the conclusion of the period of Re-Operation." (Peace II Agreement, § 8.1.)[2] The Recharge Master Plan must contain recharge estimations and summaries of the projected water supply availability, as well as the physical means to accomplish the projected recharge quantities. (*Id.*) Specifically, the Peace II Agreement envisions that updates to the Recharge Master Plan will:

> . . . reflect an appropriate schedule for planning, design, and physical improvements as may be required to provide reasonable assurance that following the full beneficial use of the groundwater withdrawn in accordance with the Basin Re-Operation and authorized controlled overdraft, that sufficient Replenishment capability exists to meet the reasonable projections of Desalter Replenishment obligations.

(*Id.*) The Peace II Agreement requires that Watermaster and IEUA update and amend the Recharge Master Plan as frequently as necessary, and not less frequently than every five years. (*Id.*)

C. Past Recharge Master Plan Updates

In the Court's December 21, 2007 order approving the Peace II Agreement, the Court

[2] A copy of Article VIII of the Peace II Agreement is attached to Exhibit C of the Declaration of Bradley J. Herrema filed concurrently with this Motion, as Exhibit A to Watermaster's Resolution No. 2023-06, Resolution of the Chino Basin Watermaster Regarding the Adoption of the 2023 Recharge Master Plan Update.

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1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

directed Watermaster to prepare and submit the first update to the Recharge Master Plan by July 1, 2010. Accordingly, on June 30, 2010, Watermaster submitted its 2010 Recharge Master Plan Update ("2010 RMPU"). And, on October 8, 2010, the Court issued an order finding that the 2010 RMPU was responsive to the Court's order approving the Peace II Agreement. (October 8, 2010 Order Approving Watermaster Compliance with Condition Subsequent Number Eight and Approving Procedures to be Used to Allocate Surplus Agricultural Pool Water in the Event of a Decline in Safe Yield ("October 8, 2010 Order"), 4:3-4.)

To address certain state legislation and in response to the recommendations in the 2010 RMPU and the October 8, 2010 Order, Watermaster submitted the 2013 Amendment to the 2010 Recharge Master Plan Update ("2013 RMPU") to the Court on November 4, 2013.[3] On December 13, 2013, the Court issued an order approving the 2013 RMPU, except section 5 thereof, which was approved by the Court on April 25, 2014. (December 13, 2013 Order Approving Watermaster's 2013 Amendment to 2010 Update to Recharge Master Plan and Intervention of TAMCO – Amended; April 25, 2014 Ruling and Order.)

On October 9, 2018, Watermaster and IEUA submitted the 2018 RMPU, which did not recommend construction of any new recharge facilities. (Watermaster and IEUA's October 9, 2018 Motion for Court Approval of 2018 Recharge Master Plan Update.) On December 28, 2018, the Court issued an order approving the 2018 RMPU. (December 28, 2018 Order Approving Watermaster's 2018 Recharge Master Plan Update.)

Since the Court's approval of the 2018 RMPU, the Watermaster and IEUA have planned, designed, or constructed the five feasible recharge projects identified in the 2013 RMPU. (2023 RMPU, § 1.1.3, Table 1-1.) These projects, once completed, will provide a projected increase in stormwater recharge of 4,800 acre-feet per year ("AFY") and recycled water recharge capacity of 7,100 AFY. (*Id.*) Three of the five projects have been completed. (*Id.*) The Wineville/Jurupa/RP3 project is underway with completion estimated by the end of 2023. (*Id.*)

[3] See the October 8, 2010 Order; Watermaster and IEUA's November 4, 2013 Motion for Court Approval of 2013 Amendment to 2010 Recharge Master Plan Update; Request for Intervention by TAMCO ("November 4, 2013 Motion") and the 2013 RMPU for further detail as to the need for and development of the 2013 RMPU.

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Santa Barbara, CA 93101-2102

The Montclair Basin project is expected to begin construction in 2024 and be completed in 2024. (*Id.*)

D. Development of the 2023 RMPU

In compliance with the Peace II Agreement and the Court's orders, Watermaster, with the assistance of its consultant, West Yost Associates ("West Yost"), began the process of updating the Recharge Master Plan by defining the scope of the 2023 RMPU at the February 11, 2021 and April 8, 2021 Pool Committee meetings and the April 15, 2021 RIPComm meeting. (Declaration of Edgar Tellez Foster ["Tellez Foster Decl."] at ¶ __.) Specifically, Watermaster convened the Recharge Master Plan Update Steering Committee through the Recharge Investigation and Projects Committee ("RIPComm")[4] in October 2022 and held three meetings on October 10, 2022, January 19, 2023, and July 20, 2023 RIPComm meetings to develop the 2023 RMPU. (*Id*. at ¶ __.) Watermaster also held a stakeholder workshop on August 22, 2023. (*Id*. at ¶ __.) Stakeholders, including IEUA, participated in this process. (*Id*. at ¶ __.) These meetings included discussions of: (1) changed conditions in the Basin since the 2018 RMPU, (2) replenishment needs and capacity in the Basin, (3) groundwater response to projected pumping, recharge and replenishment, (4) existing and planned recharge facilities, (5) future recharge requirements, (6) renewal and replacement needs of recharge assets, and (7) conclusions and recommendations arising from the 2023 RMPU process. (*Id*. at ¶ __.) RIPComm discussions largely focused on the impact of availability of imported water and MS4 projects. (*Id*. at ¶ __.) Pursuant to scoping discussions in early 2021 and subsequent budget approval by the Watermaster Board on May 27, 2021, Watermaster additionally leveraged and incorporated existing data and analysis from the Safe Yield Annual Data Collection and Evaluation reports and the 2020 Safe Yield Recalculation effort into the 2023 RMPU.[5] (*Id*. at ¶ __.) An administrative

[4] The IEUA/Watermaster Joint Projects Committee and RMPU Steering Committee were combined into the RIPComm. (Tellez Foster Decl. at ¶ __.)

[5] While separate from the 2023 RMPU development process, the 2020 Safe Yield Recalculation involved significant stakeholder participation on issues relevant to the 2023 RMPU. (See Watermaster Motion Regarding 2020 Safe Yield Reset, Amendment of Restated Judgment, Paragraph 6, dated May 27, 2020, pp. 13-16 [describing stakeholder review and engagement opportunities]; Orders re Chino Basin Watermaster Motion Regarding 2020 Safe Yield Reset, Amendment of Restated Judgment, Paragraph 6, dated July 31, 2020, pp. 3, 7 [finding stakeholder engagement adequate] and p. 4 [ordering that Watermaster has satisfied the

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1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

draft was released to IEUA for review on July 17, 2023. (Herrema Decl. at ¶ __.) The 2023 RMPU was widely released on August 14, 2023 for additional comment through September 5, 2023. (*Id*. at ¶ __.) Watermaster received comments from the Water Facilities Authority, Cucamonga Valley Water District ("CVWD") and Monte Vista Water District. (*Id*. at ¶ __.) Watermaster addressed these comments,[6] and in the case of CVWD, met with staff to provide additional information, and released a final draft 2023 RMPU to all stakeholders on September 8, 2023. (*Id*. at ¶ __.)

No new recharge projects were considered during the development of the 2023 RMPU.[7] (2023 RMPU, § 1.1.3, Table 1-1.) Rather, the 2023 RMPU concludes that the existing and planned recharge facilities, as identified in the 2018 RMPU, 2013 RMPU and elsewhere, are sufficient to satisfy Watermaster's obligations until the next Recharge Master Plan Update in 2028. (*Id.* at §§ 1.1.3, 6, 8.3, 8.4.) As such, the 2023 RMPU's implementation plan includes a recommendation that in Watermaster "continue the implementation of the final recommended 2013 RMPU yield enhancement projects." (*Id.* at § 8.4.)

E. Watermaster and IEUA Approval of the 2023 RMPU

The 2023 RMPU has been [unanimously] approved by both the Watermaster and IEUA Boards. On September 14, 2023, the Watermaster Pool Committees reviewed the 2023 RMPU and the Appropriative Pool and the Overlying (Agricultural) Pool unanimously recommended that the Advisory Committee recommend the Watermaster Board approve the 2023 RMPU and adopt Resolution 2023–06. (Herrema Decl. at ¶ __.) The Overlying (Non-Agricultural) Pool unanimously recommended its representatives support approval and adoption at the Advisory Committee and Watermaster Board subject to changes they deem appropriate. (*Id.* at ¶ ___.) On September 21, 2023, the Watermaster Advisory Committee reviewed the 2023 RMPU and

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requirements for resetting of the Safe Yield] .)

[6] Comments and written responses are included as Appendix C of the 2023 RMPU.

[7] Although no new recharge projects were considered, a renewal and replacement ("R&R") plan was added to the 2023 RMPU given the aging recharge system assets and absence of basin-wide assessment of recharge systems. (2023 RMPU, § 7.) The R&R plan (1) inventories recharge assets; (2) estimates useful life and remaining useful life; (3) estimates unit costs; and (4) develops renewal intervals and costs, projects renewal or replacement dates and costs, and develops a 10-year forecast. (*Id.*)

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Santa Barbara, CA 93101-2102

unanimously recommended that the Watermaster Board adopt the 2023 RMPU. (*Id.* at ¶ ___.) And, at its regular meeting on September 28, 2023, the Watermaster Board received a presentation on the 2023 RMPU, reviewed the Staff Report regarding the 2023 RMPU, and [unanimously/vote] adopted Resolution 2023-06, Resolution of the Chino Basin Watermaster Regarding the Adoption of the 2023 Recharge Master Plan Update. (*Id.* at ¶¶ ____, Exs. ____.) Watermaster further directed Watermaster legal counsel to move this Court for approval of the 2023 RMPU. (*Id.* at ¶ ___.)

Watermaster's Resolution 2023-06 includes findings that:

- There exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.
- Watermaster and interested parties thoroughly evaluated changed circumstances since the time of the 2018 RMPU and how these changes affect the Recharge Master Plan, and this evaluation is included in Sections 3, 4, and 5 of the 2023 RMPU.
- Watermaster and interested parties thoroughly evaluated the existing and planned recharge facilities in the Basin as compared to the Basin's recharge needs, and this evaluation is included in Sections 2 and 7 of the 2023 RMPU. Section 7's renewal and replacement plan is a new component of the Recharge Master Plan to address aging recharge assets in the absence of basin-wide renewal and replacement planning.
- Watermaster and interested parties considered the need for future recharge capacity by comparing the projected future recharge requirements of the Basin and physical capacity to achieve that requirement and concluded that the existing recharge capacity and facilities on which it relies are sufficient until the next Recharge Master Plan update in 2028. This evaluation is included in Section 6 of

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Santa Barbara, CA 93101-2102

the RMPU.

- Using the information and analysis contained in Sections 1 through 7 of the 2023 RMPU, Watermaster and interested parties developed recommendations and an implementation plan for the 2023 RMPU, which are included in Section 8 of the 2023 RMPU.
- The development of the 2023 RMPU complies with the requirements for an update to the Recharge Master Plan.

(Herrema Decl. at ¶ ____, Ex. _____.)

On the basis of these findings, the Board resolved that:

- The 2023 RMPU is based on sound technical analysis and adequately updates the 2018 RMPU in light of changed economic, legislative, and hydrologic conditions within the State of California and in satisfaction of the Peace II Agreement and the Court's Orders.
- Based upon the 2023 RMPU, there exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU through 2045. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.
- Watermaster adopts the 2023 RMPU as the guidance document for the further development of the recharge facilities within the Basin.
- Pursuant to the Peace II Agreement Section 8.1, Watermaster and IEUA will update the Recharge Master Plan not less frequently than once every five years. The Plan will next be updated no later than 2028.

(Herrema Decl. at ¶ ____, Ex. _____.)

At its September 20, 2023 regular Board meeting, the IEUA Board of Directors adopted Resolution 2023-06, Resolution of the Board of Directors of the Inland Empire Utilities Agency, San Bernardino County, California, Adopting the 2023 Update to the Recharge Master Plan, approving the 2023 RMPU. (Declaration of Jean Cihigoyenetche at ¶ ____, Ex. ____.)

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

III. THE COURT SHOULD APPROVE THE 2023 RMPU

As described above, the 2023 RMPU satisfies the requirements of the Peace Agreements, the prior orders of this Court, and the Judgment. The 2023 RMPU evaluates: (1) changed circumstances in the Basin since the 2018 RMPU (2023 RMPU, §§ 3–5), (2) existing and planned recharge facilities in the Basin as compared to recharge requirements (*Id.* at §§ 2, 7), (3) the need for future recharge capacity (*Id.* at § 6), and (4) recommendations and an implementation plan for the 2028 RMPU (*Id.* at § 8). Based on the 2023 RMPU, Watermaster found that there exists sufficient recharge capacity to meet future replenishment obligations. In other words, as required by the Peace II Agreement, the 2023 RMPU addresses "how the Basin will be contemporaneously managed to secure and maintain Hydraulic Control and subsequently operated at a new equilibrium at the conclusion of the period of Re-Operation." (Peace II Agreement, § 8.1.)

Furthermore, on the basis of the evidence before them – and which is before the Court through this Motion – both the Watermaster and IEUA Boards made the specific findings set forth in Resolutions 2023-06 and 2023-9-5 and reasonably concluded that the 2023 RMPU satisfies the requirements of an amendment to the Recharge Master Plan. No party has objected to and Watermaster is unaware of any party that opposes the Court's approval of the 2023 RMPU. (Herrema Decl., ¶ ___.)

IV. CONCLUSION

For the reasons stated above, Watermaster requests that the Court approve the 2023 RMPU and Watermaster's use of the 2023 RMPU as its Recharge Master Plan.

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

Dated: _____, 2023

BROWNSTEIN HYATT FARBER SCHRECK, LLP

By: _____
SCOTT S. SLATER
BRADLEY J. HERREMA
LAURA K. YRACEBURU
Attorneys for CHINO BASIN WATERMASTER

Dated: _____, 2023

JC LAW FIRM

By: _____
JEAN CIHIGOYENETCHE
Attorneys for INLAND EMPIRE UTILITIES AGENCY

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BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

SCOTT S. SLATER (State Bar No. 117317)
BRADLEY J. HERREMA (State Bar No. 228976)
LAURA K. YRACEBURU (State Bar No. 333085)
BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102
Telephone: 805.963.7000
Facsimile: 805.965.4333

Attorneys for
CHINO BASIN WATERMASTER

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,

Plaintiff,

v.

CITY OF CHINO, et al.,

Defendant.

Case No. RCV 51010

[Assigned for All Purposes to the Honorable Gilbert G. Ochoa]

DECLARATION OF EDGAR TELLEZ FOSTER IN SUPPORT OF MOTION FOR COURT APPROVAL OF 2023 RECHARGE MASTER PLAN UPDATE

Date: _____2023
Time: _:_0 __.m.
Dept.: S24

[*Filed concurrently herewith: Notice of Motion and Motion; Declaration of Jean Cihigoyenetche; Declaration of Bradley J. Herrema; [Proposed] Order*]

I, Edgar Tellez Foster, declare as follows:

1. I am the Water Resources Management and Planning Director for Chino Basin Watermaster ("Watermaster"). I have served as the Water Resources Management and Planning Director for Watermaster since 2016. I have personal knowledge of the facts stated in this declaration, except where stated on information and belief, and, if called as a witness, I could and would competently testify to them under oath. I make this declaration in support of the above-referenced motion.

2. As Water Resources Management and Planning Director for Watermaster, I am

familiar with Watermaster's practices and procedures, including discussions by special committees such as the Recharge Investigations and Projects Committee ("RIPComm"), as well as actions taken by the Pool Committees, Advisory Committee, and Watermaster Board.

3. Watermaster's engineer West Yost Associates ("WY") gave a report on the scope of work for the 2023 Recharge Master Plan Update ("2023 RMPU") to each of the Appropriative Pool and the Overlying (Non-Agricultural) Pool Committees at their respective February 11, 2021 meetings. The Appropriative Pool Committee engaged in discussion following the report.

4. At the Appropriative Pool Committee's April 8, 2021 meeting, WY gave a presentation on the scope of the 2023 RMPU. A discussion followed the presentation.

5. At their respective April 8, 2021 meetings, the Overlying (Non-Agricultural) Pool and Overlying (Agricultural) Pool Committees received an update by Watermaster General Manager, Peter Kavounas, regarding the 2023 RMPU.

6. The RIPComm discussed scoping of the 2023 RMPU at its April 15, 2021 meeting.

7. During the 2023 RMPU scoping presentations and discussions conducted in early 2021, parties generally recommended leveraging analysis conducting in conjunction with the 2020 Safe Yield Recalculation and Annual Data Collection and Evaluation reports to avoid duplicative efforts in development of the 2023 RMPU. Ultimately, the budget approved by the Advisory Committee on May 20, 2021 and the Watermaster Board on May 27, 2021 reflected a narrowed scope of work for the 2023 RMPU.

8. In 2022, the Inland Empire Utilities Agency ("IEUA")/Watermaster Joint Projects Committee and the Recharge Master Plan Update Steering Committee ("Steering Committee") were combined into the RIPComm.

9. Watermaster convened the Steering Committee through RIPComm, holding meetings on October 10, 2022, January 19, 2023, and July 20, 2023. Additionally, Watermaster held a stakeholder workshop on August 22, 2023. Stakeholders discussed: (1) changed conditions in the Basin since the 2018 RMPU, (2) replenishment needs and capacity in the Basin, (3) groundwater response to projected pumping, recharge and replenishment, (4) existing and

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

planned recharge facilities, (5) future recharge requirements, (6) renewal and replacement needs of recharge assets, and (7) conclusions and recommendations arising from the 2023 RMPU process. Two themes emerged in discussion of these seven topics: availability of imported water and MS4 projects.

10. A representative of IEUA participated in the development and review of the 2023 RMPU, including the October 2022, January 2023, July 2023, and August 2023 discussions.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this _____ day of October, 2023, at _____, California.

_____
Edgar Tellez-Foster

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BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

SCOTT S. SLATER (State Bar No. 117317)
BRADLEY J. HERREMA (State Bar No. 228976)
LAURA K. YRACEBURU (State Bar No. 333085)
BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102
Telephone: 805.963.7000
Facsimile: 805.965.4333

Attorneys for
CHINO BASIN WATERMASTER

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,

Plaintiff,

v.

CITY OF CHINO, et al.,

Defendant.

Case No. RCV 51010

[Assigned for All Purposes to the Honorable Gilbert G. Ochoa]

DECLARATION OF BRADLEY J. HERREMA IN SUPPORT OF MOTION FOR COURT APPROVAL OF 2023 RECHARGE MASTER PLAN UPDATE

Date: _____2023
Time: _:_0 _.m.
Dept.: S24

[*Filed concurrently herewith: Notice of Motion and Motion; Declaration of Jean Cihigoyenetche; Declaration of Edgar Tellez Foster; [Proposed] Order*]

I, Bradley J. Herrema, declare as follows:

1. I am an attorney duly admitted to practice before all of the courts of this State, and am a shareholder in the law firm of Brownstein Hyatt Farber Schreck, LLP, counsel of record for Chino Basin Watermaster ("Watermaster"). I have personal knowledge of the facts stated in this declaration, except where stated on information and belief, and if called as a witness, I could and would competently testify to them under oath. I make this declaration in support of the above-referenced motion.

2. As legal counsel for Watermaster, I am familiar with Watermaster's practices and procedures, as well as actions taken by the Pool Committees, Advisory Committee and the Watermaster Board of Directors ("Board").

3. Watermaster sought the Inland Empire Utilities Agency's ("IEUA") input on an administrative draft of the 2023 RMPU on July 17, 2023. The Draft 2023 RMPU was released to all stakeholders for review on August 14, 2023.

4. The Water Facilities Authority, Cucamonga Valley Water District ("CVWD") and Monte Vista Water District each provided written comments following the release of the draft 2023 RMPU through September 5, 2023. Watermaster incorporated or responded to each comment and met with CVWD staff to provide additional explanation.

5. At their respective September 14, 2023 regular meetings, the Watermaster Overlying (Agricultural) Pool Committee and the Appropriative Pool Committee reviewed the 2023 RMPU and the members of each Committee unanimously recommended that the Advisory Committee recommend that the Watermaster Board adopt the 2023 RMPU and Resolution No. 2023-06. At its September 14, 2023 meeting, the Overlying (Non-Agricultural) Pool Committee reviewed the 2023 RMPU and its members unanimously recommended that its representatives support approval of the 2023 RMPU and adoption of Resolution 2023-06 at the Advisory Committee and Board meetings subject to changes they deem appropriate.

6. At its September 21, 2023 regular meeting, the Watermaster Advisory Committee reviewed the 2023 RMPU and unanimously recommended that the Watermaster Board adopt the 2023 RMPU and Resolution No. 2023-06.

7. At its September 28, 2023 regular meeting, the Watermaster Board considered approval and adoption of the 2023 RMPU pursuant to Resolution 2018-04, Resolution of the Chino Basin Watermaster Regarding the Adoption of the 2023 Recharge Master Plan Update.

8. As part of its consideration of the adoption of Resolution 2023-06, the Watermaster Board reviewed a Staff Report, prepared by Watermaster staff and consultants, included in the agenda packet for the meeting. The Watermaster Board was also presented a PowerPoint presentation by Watermaster staff and Watermaster's hydrologic consultant from

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

WY. Attached hereto as **Exhibit A** is a true and correct copy of the Staff Report, excluding attachments, which was included in the September 28, 2023 Watermaster Board meeting agenda package. Attached hereto as **Exhibit B** is a true and correct copy of the PowerPoint presentation presented to the Watermaster Board at its September 28, 2023 meeting.

9. After receiving the presentation, reviewing the pertinent documents and hearing any other comments, the Watermaster Board approved and adopted Resolution 2023-06, Resolution of the Chino Basin Watermaster Regarding the Adoption of the 2023 Recharge Master Plan Update. The Watermaster Board also directed Watermaster legal counsel to move this Court for approval of the 2023 RMPU. Attached hereto as **Exhibit C** is a true and correct copy of Watermaster Resolution 2023-06.

10. Watermaster Resolution 2023-06 includes a series of Exhibits thereto. Exhibit A to Watermaster Resolution 2023-06 includes excerpts of Article VIII of the Peace II Agreement. Exhibit B to Watermaster Resolution 2023-06 is a copy of the WY opinion regarding adequacy of replenishment capacity in the Basin, which the Watermaster Board adopted on November 17, 2022. Exhibit C to Watermaster Resolution 2023-06 is a copy of the 2023 RMPU.

11. I am unaware that any party has any objection to the Court's approval of the 2023 RMPU.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this _____ day of October, 2023, at Los Angeles, California.

_____
Bradley J. Herrema

BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

SCOTT S. SLATER (State Bar No. 117317)
BRADLEY J. HERREMA (State Bar No. 228976)
LAURA K. YRACEBURU (State Bar No. 333085)
BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102
Telephone: 805.963.7000
Facsimile: 805.965.4333

Attorneys for
CHINO BASIN WATERMASTER

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,

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CITY OF CHINO, et al.,

Defendant.

Case No. RCV 51010

[Assigned for All Purposes to the Honorable Gilbert G. Ochoa]

DECLARATION OF JEAN CIHIGOYENETCHE IN SUPPORT OF MOTION FOR COURT APPROVAL OF 2023 RECHARGE MASTER PLAN UPDATE

Date: _____2023
Time: _:_0 __.m.
Dept.: S24

[*Filed concurrently herewith: Notice of Motion and Motion; Declaration of Bradley J. Herrema; Declaration of Edgar Tellez Foster; [Proposed] Order*]

I, Jean Cihigoyenetche, declare as follows:

1. I am an attorney duly admitted to practice before all of the courts of this State, and am a partner in the law firm of JC Law Firm, counsel of record for the Inland Empire Utilities Agency ("IEUA"). I have personal knowledge of the facts stated in this declaration, except where stated on information and belief, and if called as a witness, I could and would competently testify to them under oath. I make this declaration in support of the above-referenced motion.

2. As legal counsel for IEUA, I am familiar with IEUA's practices and procedures, as

well as actions taken by the IEUA Board of Directors ("Board").

3. On September 20, 2023, during its regularly scheduled meeting, the IEUA Board considered approval and adoption of the 2023 Recharge Master Plan Update.

4. At its September 20, 2023 meeting, the IEUA Board adopted Resolution No. 2023-9-5, Resolution of the Board of Directors of the Inland Empire Utilities Agency, San Bernardino County, California, Adopting the 2023 Update to the Recharge Master Plan, approving the 2023 Recharge Master Plan Update. Attached hereto as **Exhibit A** is a true and correct copy of IEUA Resolution No. 2023-9-5.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this _____ day of October, 2023, at Chino Hills, California.

_____
Jean Cihigoyenetche

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BROWNSTEIN HYATT FARBER SCHRECK, LLP
1021 Anacapa Street, 2nd Floor
Santa Barbara, CA 93101-2102

EXHIBIT A

RESOLUTION NO. 2023-9-5

RESOLUTION OF THE BOARD OF DIRECTORS OF THE INLAND EMPIRE UTILITIES AGENCY* (IEUA), SAN BERNARDINO COUNTY, CALIFORNIA, ADOPTING THE 2023 UPDATE TO THE RECHARGE MASTER PLAN

WHEREAS, in 2000, the Chino Basin Watermaster adopted a Recharge Master Plan which established the technical foundation for the development of the recharge facilities and practices in the Chino Basin; and

WHEREAS, in 2001, Watermaster, in cooperation with the Inland Empire Utilities Agency ("IEUA"), initiated the Chino Basin Facilities Improvement Project ("CBFIP") which implemented facilities recommendations in the Recharge Master Plan; and

WHEREAS, in 2006, Watermaster, in cooperation with IEUA, initiated Phase II of the CBFIP in order to implement additional facilities recommendations in the Recharge Master Plan; and

WHEREAS, on December 21, 2007, the Court approved the Peace II Measures which set forth a modified approach to management of the Chino Basin known as Basin Re-Operation, the ultimate goal of which is the achievement of Hydraulic Control; and

WHEREAS, Section 8.1 of the Peace II Agreement, included the requirement that the Recharge Master Plan be updated and that each of Watermaster and IEUA approve the updates to the Recharge Master Plan; and

WHEREAS, pursuant to Section 8.3 of the Peace II Agreement, Watermaster is obligated to make an annual finding that it is in substantial compliance with the Recharge Master Plan, as revised. This requirement exists to ameliorate any long-term risk attributable to reliance upon un-replenished groundwater production by the Desalters, and is a condition on the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft; and

WHEREAS, pursuant to Section 8.1 of the Peace II Agreement, updates to the Recharge Master Plan must occur as frequently as necessary, but not less frequently than every five years, and must be approved by the Court; and

WHEREAS, updates to the Recharge Master Plan must account for the new Basin management regime and other changes that occurred since the creation or last update of the Recharge Master Plan; and

WHEREAS, on June 30, 2010, Watermaster submitted its updated Recharge Master Plan ("2010 RMPU") to the Court; and

WHEREAS, Watermaster submitted its 2013 Amendment to the 2010 Recharge Master Plan Update ("2013 RMPU") to the Court on November 4, 2013; and

WHEREAS, on December 13, 2013, the Court issued an order approving the 2013 RMPU, except Section 5 thereof, and on April 25, 2013, the Court issued an Order approving Section 5 of the 2013 RMPU; and

WHEREAS, Watermaster submitted its 2018 Recharge Master Plan Update ("2018 RMPU") to the Court on October 9, 2018; and

WHEREAS, on December 28, 2018, the Court issued an order approving the 2018 RMPU; and

WHEREAS, at its November 17, 2022 regular meeting, the Board reviewed an opinion from West Yost Associates ("West Yost") regarding the adequacy of replenishment capacity. The Board adopted the findings in the West Yost report, a copy of which is attached hereto as Exhibit B, which found that, as there is sufficient recharge capacity to meet future replenishment obligations identified in the 2013 RMPU and 2018 RMPU and that if Basin Re-Operation were terminated prior to 2030, that Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, and, accordingly, Watermaster was in substantial compliance with the Recharge Master Plan, as required; and

WHEREAS, in October 2022, a Recharge Master Plan Update Steering Committee ("Steering Committee"), composed of stakeholders in the Basin, including IEUA, was convened through the Recharge Investigations and Projects Committee ("RIPComm") in order to develop the 2023 Recharge Master Plan Update ("2023 RMPU"), attached hereto as Exhibit C, through a collaborative process. The Steering Committee convened at three RIPComm meetings in October 2022, January 2023, and July 2023 in addition to an independent stakeholder workshop in August 2023 in order for stakeholders to participate in the development of the 2023 RMPU; and

WHEREAS, the 2023 RMPU addresses the elements required by the Court's December 21, 2007 Order Concerning Motion for Approval of Peace II Documents and the Peace II Agreement; and

WHEREAS, the 2023 RMPU includes: (1) a description of changed conditions in the Basin from those detailed in the 2018 RMPU and planning assumptions for the 2023 RMPU; (2) a description of the Basin's response to the updated conditions in the Basin; (3) an inventory of existing and planned recharge facilities in the Basin that can be compared to the Basin's recharge needs; (4) identification of future needs for recharge capacity in the Basin and a comparison with available recharge capacity; and, (5) recommendations for future activities and an implementation plan for the 2023 RMPU; and

WHEREAS, the 2023 RMPU also includes a renewal and replacement plan to predict, plan, and fund renewal or replacement of aging recharge assets in response to aging recharge assets and the absence of basin-wide renewal and replacement planning; and

WHEREAS, the Watermaster Board has received periodic updates as to the progress made by the Steering Committee in the development of the 2023 RMPU.

NOW, THEREFORE, on the basis of the staff reports, expert opinions and substantial evidence presented, the Board of Directors of the Inland Empire Utilities Agency* finds that:

1. There exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.

2. Watermaster and interested parties, through the Steering Committee, thoroughly evaluated changed circumstances since the time of the 2018 RMPU and how these changes affect the Recharge Master Plan, and this evaluation is included in Sections 3, 4 and 5 of the 2023 RMPU.

3. Watermaster and interested parties, through the Steering Committee, thoroughly evaluated the existing and planned recharge facilities in the Basin as compared to the Basin's recharge needs, and this evaluation is included in Sections 2 and 7 of the 2023 RMPU. Section 7's renewal and replacement plan is a new component of the Recharge Master Plan to address aging recharge assets and the absence of basin-wide renewal and replacement planning.

4. Watermaster and interested parties, through the Steering Committee, considered the need for future recharge capacity by comparing the projected future recharge requirements of the Basin and physical capacity to achieve that requirement and concluded that the existing recharge capacity and facilities on which it relies are sufficient until the next Recharge Master Plan update in 2028. This evaluation is included in Section 6 of the 2023 RMPU.

5. Using the information and analysis contained in Sections 1 through 7 of the 2023 RMPU, Watermaster and interested parties, through the Steering Committee, developed recommendations and an implementation plan for the 2023 RMPU, which are included in Section 8 of the 2023 RMPU.

6. The development of the 2023 RMPU complies with the requirements for an update to the Recharge Master Plan.

NOW, THEREFORE, the Board of Directors of the Inland Empire Utilities Agency* does hereby RESOLVE, DETERMINE AND ORDER as follows:

1. The 2023 RMPU is based on sound technical analysis and adequately updates the 2018 RMPU in light of changed economic, legislative, and hydrologic conditions within the State of California and in satisfaction of the Peace II Agreement and the Court's Orders.

2. Based upon the 2023 RMPU, there exists sufficient recharge capacity to meet future replenishment obligations identified in the 2023 RMPU through 2050. If Basin Re-Operation were terminated prior to 2030, Watermaster would be able to increase its replenishment activity in order to maintain hydrologic balance within the Basin, in compliance with the Recharge Master Plan.

3. Watermaster adopts the 2023 RMPU as the guidance document for the further development of the recharge facilities within the Basin.

4. Pursuant to the Peace II Agreement Section 8.1, Watermaster and IEUA will update the Recharge Master Plan not less frequently than once every five years. The Plan will next be updated no later than 2028

ADOPTED this 20th day of September 2023.

_____
Marco Tule
President of the Inland Empire
Utilities Agency* and of the
Board of Directors thereof

ATTEST:

_____
Jasmin A. Hall
Secretary/Treasurer of the Inland Empire
Utilities Agency* and of the
Board of Directors thereof
*A Municipal Water District

(SEAL

*A Municipal Water District

STATE OF CALIFORNIA)

) SS
COUNTY OF SAN BERNARDINO)

I, Jasmin A. Hall, Secretary/Treasurer of the Inland Empire Utilities Agency*, DO HEREBY CERTIFY that the foregoing Resolution being No. 2023-9-52, was adopted at a regular Board Meeting on September 20, 2023, of said Agency by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

_____
Jasmin A Hall
Secretary/Treasurer of the Inland Empire
Utilities Agency* and of the
Board of Directors thereof
*A Municipal Water District

(SEAL)

*A Municipal Water District

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,

Plaintiff,

v.

CITY OF CHINO, et al.,

Defendant.

Case No. RCV 51010

[Assigned for All Purposes to the Honorable Gilbert G. Ochoa]

[PROPOSED] ORDER APPROVING WATERMASTER'S 2023 RECHARGE MASTER PLAN UPDATE

On _____, 2023, in Department S24 of the above-entitled Court, Chino Basin Watermaster ("Watermaster") and Inland Empire Utilities Agency's ("IEUA") Motion for Court Approval of the 2023 Recharge Master Plan Update came on regularly for hearing in the above-captioned matter. Having read, reviewed, and considered all pleadings filed in support and in response, if any, including the testimony presented at the _____, 2023 hearing, and good cause appearing therefore, the Motion is **GRANTED** and the Court Orders as follows:

(1) The Court finds that the 2023 Recharge Master Plan Update ("2023 RMPU") satisfies the requirements of the Peace II Agreement, prior orders of this Court, and the Restated Judgment; and,

(2) The Court approves Watermaster proceeding with the 2023 RMPU as the effective Recharge Master Plan, as updated.

Dated: _____ _____

The Hon. Gilbert G. Ochoa

26036167

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

STAFF REPORT

DATE: September 28, 2023

TO: Board Members

SUBJECT: Board-Requested Recharge Project Analysis (Business Item II.B.)

SUMMARY:

Issue: Following Board direction a Work Plan needs to be prepared to ensure that potential Recharge Projects are eligible for Grant funding. [Discretionary Function]

Recommendation: Approve staff moving forward with gathering necessary information and documentation for each project to be considered grant-ready and prepare the Work Plan.

Financial Impact: None. This work item has been included in the FY 2023/24 budget.

Future Consideration
Watermaster Board – September 28, 2023: Approval

ACTIONS:
Appropriative Pool – September 14, 2023: Unanimously recommended Advisory Committee to recommend Watermaster Board approval.
Non-Agricultural Pool – September 14, 2023: Unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to changed they deem appropriate.
Agricultural Pool – September 14, 2023: Unanimously recommended Advisory Committee to recommend Watermaster Board approval.
Advisory Committee – September 21, 2023: Unanimously recommended Board approval
Watermaster Board – September 28, 2023:

BACKGROUND

The Chino Basin Watermaster maintains a summary of grant and low interest loan opportunities to support projects in the Chino Basin. At the October 27, 2022 Board Meeting, the Watermaster Board directed staff to revisit whether projects that were deferred from the 2013 Recharge Master Plan Update (2013 RMPU) contain potential projects that could be candidates for existing or future grants and loans. The goal expressed by the Board was to revisit and refine the list of projects, then to have West Yost analyze the planning and construction costs, or "soft costs", to get the selected projects eligible to apply for future Grant funding.

In November 2022, A budget amendment of $60,000 was approved by the Advisory Committee and Watermaster Board to develop a Work Plan for this effort. The Work Plan would describe: The Projects, the next planning and/or construction tasks to implement the Project, and provide costs estimates to perform the next planning or construction tasks.

DISCUSSION

Watermaster staff and West Yost have compiled a list of potential projects that were deferred from the 2013 RMPU which includes feedback from the stakeholders (Attachment 1). Based on the updated list, staff is seeking guidance on moving forward with an in-depth analysis of all the projects, or a partial list thereof and incorporating them in the Work Plan, positioning them for potential grant funding application should an opportunity arise.

At the Pool Committee meetings held on September 14, 2023, the Appropriative and Overlying (Agricultural) Pool Unanimously recommended Advisory Committee to recommend to the Watermaster Board to approve the list of projects for further analysis. The Overlying (Non-Agricultural) Pool unanimously recommended its representatives to support at Advisory Committee and Watermaster Board subject to changed they deem appropriate. At that meeting, Vice-Chair Bob Bowcock asked for the MS4 project to be considered with its effect on potential impacts to policy as part of the Work Plan.

At the September 21, 2023 Advisory Committee Meeting, the Committee unanimously approved to move forward with gathering necessary information and documentation for each project to be considered grant-ready and prepare the Work Plan.

ATTACHMENTS

1. Table of Projects to Analyze

Draft Table of Projects to Analyze

Project Name	Land Owner	Has the information and documentation necessary to apply for planning grant (year of most recent evaluation)	Capital Cost[a] ($)	New Stormwater Recharge[a] (afy)	Unit Stormwater Recharge Cost[a] ($/af)
North West Upland Basin	City of Upland	Yes (2013) [a]	$6,574,000	93	$4,620
Montclair Basins	CBWCD	Yes (2022)	$5,600,000	68	$5,400
California Institution for Men (CIM) [b]	State of California	No	NE	NE	NE
Ely Basin	CBWCD, SBCFCD	Yes (2013) [a]	$3,017,000	101	$1,990
Lower Cucamonga Ponds[b]	SBCFCD	No	NE	NE	NE
Riverside Basin[b]	RCFCD	No	NE	NE	NE
~~Sultana Avenue~~	~~City of Fontana~~	~~Yes (2013) (a)~~	~~$601,000~~	~~7~~	~~$5,620~~
~~Vulcan Basin~~	~~CalMat Co.~~	~~Yes (2013) [a]~~	~~$33,168,000~~	~~857~~	~~$2,560~~
Jurupa Basin[b]	SBCFCD	No	NE	NE	NE
AgMAR	n/a	No	NE	NE	NE
Mills Wetlands[b]	USACE	No	NE	NE	NE
ASR Wells	n/a	No	NE	NE	NE
MS4 Compliance Projects	n/a	No	NE	NE	NE
Regional Recharge Distribution System	n/a	No [c]	$184,000,000	5,000	$2,810

(a) Projects considered to have the information and documentation necessary to apply for grant funding were evaluated in 2013. The project costs were re-evaluated in 2018 as part of the 2018 RMPU. However, it should be noted that the project cost and benefit should be re-evaluated based on most current conditions.

(b) These projects are considered elements of the Regional Recharge Distribution System project listed under "Basin-Wide."

(c) The Regional Recharge Distribution system was evaluated at a conceptual level in 2017. The evaluation is considered insufficient for grant funding applications.

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

STAFF REPORT

DATE: September 28, 2023

TO: Board Members

SUBJECT: Increase of FY 2023/24 Dry Year Yield Program Delivery (Business Item II.C.)

SUMMARY:

Issue: Metropolitan Water District (MWD) has requested to increase the amount of water it can put in Chino Basin in Fiscal Year 2023/24 pursuant to the Dry Year Yield (DYY) agreement, which permits an annual recharge of up to 25,000 acre-feet. [Advisory Committee Approval Required]

Recommendation: Approve an increase of the annual delivery limit from 25,000 acre-feet to 50,000 acre-feet for Fiscal Year 2023/24.

Financial Impact: There is no financial impact associated with this recommendation.

Future Consideration
Watermaster Board – September 28, 2023: Approval

ACTIONS:
Advisory Committee – September 21, 2023: Unanimously approved to increase the annual delivery limit from 25,000 acre-feet to 50,000 for fiscal year 2023/24
Watermaster Board – September 28, 2023:

BACKGROUND

The Dry Year Yield Agreement provides for MWD delivery of up to 25,000 acre-feet during a fiscal year, for a program maximum of 100,000 acre-feet subject to higher amounts if approved in advance by Chino Basin Watermaster. MWD can call for this water in future years, at the maximum rate of 33% of the volume In the MWD account during a fiscal year.

This is the second occasion MWD has made this request. The last request was approved in November 2017.

DISCUSSION

In 2022, the Dry Year Yield Operating Committee approved an Operating Plan that showed the potential to deliver 42,579 acre-feet, contingent upon Watermaster Board approval of additional recharge beyond the 25,000 acre-feet per Fiscal Year. At the current pace, MWD will be at or near the 25,0000 acre-feet cap by the end of October. As a proactive measure, on September 18, 2023, MWD submitted a request to exceed this limit.

Watermaster's Engineer is of the opinion that there is no Material Physical Injury (MPI) associated with the proposed increased deliveries during the current fiscal year (Attachment 1).

With the absence of MPI, and potential benefits to water levels and water quality, Watermaster recommends approval of the increase to increase the delivery limit for MWD from 25,000 acre-feet to 50,000 acre-feet in Fiscal Year 2023/24. The projected balance of the DYY account would be 58,000 ac-ft.

At the September 21, 2023 Advisory Committee meeting, the Committee unanimously approved the increase of the delivery limit.

ATTACHMENTS

1. September 19, 2023, Letter from West Yost to Watermaster: *Opinion of Consistency of The Proposed Increase In Recharge For The Dry-Year Yield Program In Fiscal Year 2023/24 With Past Material Physical Injury Analyses*

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WEST YOST
Water. Engineered.

23692 Birtcher Drive
Lake Forest CA 92630

949.420.3030 phone
530.756.5991 fax
westyost.com

September 20, 2023

Project No.: 941-80-23-03
SENT VIA: EMAIL

Peter Kavounas, PE
General Manager
Chino Basin Watermaster
Rancho Cucamonga, CA 91730

SUBJECT: Opinion of consistency of the proposed increase in recharge for the Dry-Year Yield Program in Fiscal Year 2023/24 with past Material Physical Injury analyses

Dear Mr. Kavounas:

The Dry-Year Yield Program (DYYP) is a groundwater Storage and Recovery Program in the Chino Basin where imported State Water Project water is recharged during surplus years and extracted during years when the availability of imported water is limited. The DYYP was developed by the Chino Basin Watermaster (Watermaster), the Inland Empire Utilities Agency (IEUA), and the Metropolitan Water District of Southern California (MWD). The DYYP has a maximum storage capacity of 100,000 af with maximum puts of 25,000 acre-feet per year (afy) and maximum takes of 33,000 afy. On behalf of Watermaster, Wildermuth Environmental, Inc. (WEI) completed a Material Physical Injury (MPI) analysis for the DYYP in 2003 and IEUA completed documentation for the DYYP in 2004 pursuant to the California Environmental Quality Act (CEQA). The DYYP was subsequently implemented. In 2008, WEI completed an MPI analysis for a proposed expansion of the DYYP that would increase the maximum storage to 150,000 af and increase the put and take capacities to 50,000 afy. IEUA subsequently completed CEQA documentation for the DYYP expansion, but the DYYP expansion was not implemented. For both the existing and proposed expanded DYYP, potential MPI and related mitigation measures were identified and included in the associated CEQA documentation.

MWD recently completed a cycle of DYYP puts and takes in the Chino Basin spanning the period of Fiscal Year (FY) 2016/17 through FY 2020/21. In FY 2017/18, MWD requested to recharge more than the 25,000 afy limit. The parties and the DYYP Operating Committee supported this increase, and Watermaster's Engineer (WEI) determined that there would be no MPI associated with this temporary increase. The Advisory Committee approved a temporary exceedance of the 25,000 afy limit for puts in November 2017.[1] MWD proceeded to recharge over 35,000 af in FY 2017/18, and no known MPI has occurred to date.

[1] See page 73 of 20171116 Advisory Committee and Watermaster Board Meeting Package.pdf (cbwm.org)

In 2021, Watermaster completed the *Evaluation of the Local Storage Limitation Solution*,[2] which evaluated the parties' and MWD's collective use of storage space up to 700,000 af, including assumed DYYP operations, using Watermaster's groundwater-flow model. The simulated activities included storage of up to 100,000 af in the DYYP. This evaluation did not find any adverse impacts or MPI associated with the assumed activities of the DYYP. If MWD recharges 50,000 af in FY 2023/24 and no takes occur, the balance in the DYYP will be approximately 58,000 af, which is less than the maximum DYYP storage assumed in the *Evaluation of the Local Storage Limitation Solution*.

Based on our knowledge and professional experience in the evaluation of the original and proposed expansion of the DYYP, the FY 2017/18 temporary exceedance of the 25,000 afy limit, and prior groundwater-model evaluations of the potential MPI of Storage and Recovery Programs,[3] it is our professional opinion that increasing the puts from 25,000 afy to 50,000 afy for FY 2023/24 will not result in MPI.

Please contact me with any questions or concerns on this opinion.

Sincerely,
WEST YOST

Garrett Rapp, PE
Senior Engineer
RCE #86007

[2] *Evaluation of the Local Storage Limitation Solution*

[3] E.g., the *Evaluation of the Local Storage Limitation Solution*, the *2018 Storage Framework Investigation*, and the *2023 Storage Framework Investigation*