

AGENDA

IRVINE RANCH WATER DISTRICT SUPPLY RELIABILITY PROGRAMS COMMITTEE

THURSDAY, MARCH 16, 2017

CALL TO ORDER 1:30 p.m., Committee Room, Second Floor, District Office
15600 Sand Canyon Avenue, Irvine, California

ATTENDANCE Committee Chair: Peer Swan _____
Member: Douglas Reinhart _____

<u>ALSO PRESENT</u>	Paul Cook	_____	Kellie Welch	_____
	Rob Jacobson	_____	Patrick Sheilds	_____
	Ray Bennett	_____	Paul Weghorst	_____
	Jo Ann Corey	_____	Dane Johnson	_____
	Fiona Sanchez	_____	Christine Compton	_____
	_____	_____	_____	_____

COMMUNICATIONS

1. Notes: Weghorst
 2. Public Comments
 3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted.
 4. Determine which items may be approved without discussion.
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INFORMATION

5. WATER BANKING PROJECT FACILITIES, CAPACITIES AND PROGRAMS OVERVIEW – JOHNSON/WELCH/SANCHEZ/WEGHORST

Recommendation: Receive and file.

6. UPDATE ON RECHARGE OPERATIONS – WELCH/SANCHEZ/WEGHORST

Recommendation: Receive and file.

OTHER BUSINESS

7. A. CLOSED SESSION:
Conference with Real Property Negotiator (Government Code Section 54956.8).
Property: Parcel Nos. 160-010-39,40
Negotiating Parties: Rosedale-Rio Bravo Water Storage District
Agency Negotiator: Paul Cook, General Manager
Purpose of Negotiations: Price and Terms of Payment

OTHER BUSINESS (Continued)

- 7. B. Director Comments
- C. Adjourn

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available at the entrance of the meeting room at the District Office. The Irvine Ranch Water District Committee Room is wheelchair accessible. If you require any special disability-related accommodations (e.g., access to an amplified sound system, etc.), please contact the District Secretary at (949) 453-5300 during business hours at least seventy-two (72) hours prior to the scheduled meeting. This agenda can be obtained in an alternative format upon written request to the District Secretary at least seventy-two (72) hours prior to the scheduled meeting.

March 16, 2017

Prepared by: D. Johnson/K. Welch

Submitted by: F. Sanchez/P. Weghorst *PMW*

Approved by: Paul Cook *Paul Cook*

SUPPLY RELIABILITY PROGRAMS COMMITTEE

WATER BANKING PROJECT FACILITIES, CAPACITIES AND PROGRAMS OVERVIEW

SUMMARY:

Staff has prepared information related to IRWD's water banking facilities, capacities, exchange programs and operations that can be used for reference purposes during Committee meetings. The information is provided in tabular, map and schematic formats that can be updated as necessary to reflect changes in IRWD's projects, programs and operations. At the Committee meeting, staff will provide an overview of the information. Staff will also provide an update on other information of interest to the Committee.

BACKGROUND:

To assist in the facilitation of Committee meeting discussions, staff has prepared reference materials in tabular, map and schematic formats that describe IRWD's water banking facilities, capacities, exchange programs and operations. The reference materials will be updated as needed to reflect changes to the projects, programs and operations. Following is an overview of the reference materials provided.

Capacity and Operations Tables:

A table has been prepared that presents storage, recharge and recovery capacities of existing and planned IRWD water banking projects including capacities available to IRWD in the Kern Water Bank. Another table has been prepared that provides an update on Strand Ranch recovery and recharge operations and the balance of the stored water in the Kern Water Bank. These tables are provided as Exhibits "A" and "B", respectively.

The recharge of State Water Project Article 21 water on behalf of IRWD is ongoing at the Strand and Stockdale Integrated Banking Projects as well as at the Kern Water Bank. Accordingly, the estimates shown in Exhibit "B" are preliminary and subject to change.

Project Maps:

To support the tables provided as Exhibits "A" and "B", staff has prepared maps that depict project wells, pipelines and Cross Valley Canal turn-out locations, and recharge basin locations. These maps are provided as Exhibits "C", "D", and "E", respectively. The facilities shown on these maps are associated with the Strand Ranch, Stockdale West, Stockdale East and Rosedale Drought Relief Projects.

Program Agreement Diagrams:

Schematic diagrams have been prepared that depict IRWD's water banking and exchange programs with Rosedale-Rio Bravo Storage District, Buena Vista Water Storage District, Dudley Ridge Water District and Metropolitan Water District of Southern California. These diagrams are provided as Exhibits "F", "G", "H", "I" and "J" as described in the List of Exhibits below.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

- Exhibit "A" – Recharge, Storage and Recovery Capacities of Current and Anticipated Water Banking Projects
- Exhibit "B" – Strand Ranch Storage, Recharge and Recovery Operations
- Exhibit "C" – Map of Water Banking Project Wells and Pipelines
- Exhibit "D" – Map of Cross Valley Canal Turnout Facilities
- Exhibit "E" – Map of Water Banking Recharge Basins
- Exhibit "F" – Diagram of IRWD-Rosedale Water Banking and Exchange Program Agreements
- Exhibit "G" – Diagram of Long-Term Water Exchange Program with Buena Vista Water Storage District
- Exhibit "H" – Diagram of Unbalanced Exchange Program Diagram with Dudley Ridge Water District
- Exhibit "I" – Diagram of Coordinated Operating, Water Storage, Exchange and Delivery Agreement with Metropolitan Water District of Southern California
- Exhibit "J" – Diagram of Template Wheeling Agreement with Metropolitan Water District of Southern California

Exhibit "A"

TABLE 1
Current and Anticipated Water Banking Projects
Recharge, Storage and Recovery Capacities
March 16, 2017

WATER BANKING PROJECT	OWNERSHIP AND WELL INFO			ALLOCATED CAPACITY (AF)					1 st PRIORITY RECOVERY CONDITIONS (CFS)		2 nd PRIORITY RECOVERY CONDITIONS (CFS)	
	IRWD OWNED	WELLS EXISTING	WELLS PROPOSED	TOTAL STORAGE CAPACITY	ANNUAL RECHARGE 1 ST PRIORITY	ANNUAL RECHARGE 2 ND PRIORITY	ANNUAL RECOVERY 1 ST PRIORITY	ANNUAL RECOVERY 2 ND PRIORITY	RECOVERY CAPACITY AS PLANNED ¹	RECOVERY CAPACITY (DEC. 2016 CONDITIONS) ²	RECOVERY CAPACITY AS PLANNED	RECOVERY CAPACITY CURRENT CONDITIONS
Strand Ranch	Yes	7	-	50,000	17,500	-	17,500	-	40.0	27.0	-	-
Stockdale West	Yes	-	3	26,000	27,100	-	11,250	-	15.0	-	-	-
Stockdale East	No	-	2	-	-	19,000	-	7,500	-	-	10.0	-
IRWD Acquired Storage Account ³	No	-	-	50,000	-	-	-	-	-	-	-	-
Drought Relief Project Wells	No	-	3	-	-	-	-	-	15.0	-	-	-
Kern Water Bank Storage Account ⁵	No	-	-	9,495	3,200	-	6,330	-	-	-	-	-
TOTALS		7	8	126,000	44,600	19,000	28,750	7,500	70.0	27.0	10.0	0.0
Partner Capacities ⁴				36,000	22,300	9,500	12,000	0	35.5	27.0	-	-
IRWD Capacities				90,000	22,300	9,500	16,750	7,500	34.5	0.0	-	-
IRWD's recovery <i>during</i> 6 month partner recovery period (AF)									12,420	0.0	-	-
IRWD's recovery <i>after</i> 6 month partner recovery period (AF)									4,330	6,733	-	-
TOTALS (AF)									16,750	6,733	-	-
Number of months needed to recover IRWD's total AF after partners' recovery (Assumes IRWD has use of total recovery capacity after partners' recovery)									8.1	14.0	-	-

¹ Based on designed Strand recovery capacity assuming 370' bgs. Assumes 5 cfs for each of the Stockdale West and Drought Relief wells in order to meet IRWD's Water Banking, Transfers, and Wheeling policy position. Assumes partners' water is recovered over 6 months.

² Strand Ranch wells currently idle.

³ IRWD has use of Acquired Storage and Drought Relief Project wells until January 12, 2039, unless the term of the agreement is extended.

⁴ One half of storage capacity at Stockdale West and Strand Ranch will be allocated for partners.

⁵ Kern Water Bank capacities based on 6.58% of Dudley Ridge Water District's 9.62% share of the Kern Water Bank. Annual recharge amount is based on an average of recharge rates for high and low groundwater level conditions. Not included in storage capacity, recharge, and recovery totals to match IRWD's Water Banking Policy Position Paper (10/26/2015).

EXHIBIT "B"

TABLE 2
Strand Ranch Storage, Recharge and Recovery Operations
 March 16, 2017

TRANSACTIONS	WATER BANKING ENTITY				
	IRWD		BUENA VISTA (BVWSD)	CENTRAL COAST (CCWA)	DUDLEY RIDGE WATER DISTRICT (DRWD) ³
	SWP ¹	NON-SWP ²	NON-SWP	SWP	SWP
BEGINNING WATER IN STORAGE 2016 (AF)					
Total Kern Water Bank	-	4,267	-	-	-
Total MWD System ⁴	7,502	-	-	-	649
Total Strand Ranch	389	9,675	-	-	-
TOTAL STORED WATER (1/1/2016)	7,891	13,942	-	-	649
(RECOVERY) AND RECHARGE IN 2016 (AF)					
CVWD	-	-	-	-	-
BVWSD	-	-	-	-	-
Kern Water Bank	-	22	-	-	-
2016 SWP Allocation ³	524	-	-	-	525
TOTAL 2016 TRANSACTIONS	524	22	-	-	525
Total Kern Water Bank	-	4,289	-	-	-
Total MWD System	8,026	-	-	-	1,174
Total Kern County	389	9,675	-	-	-
TOTAL STORED WATER (1/1/2017)	8,415	13,964	-	-	1,174
(RECOVERY) AND RECHARGE IN 2017 (AF)					
Kern Water Bank ⁵	210	23	-	-	-
2017 SWP Allocation (60%) ³	446	-	-	-	472
2017 SWP Article 21 ⁶	884	-	-	-	936
TOTAL ESTIMATED 2017 TRANSACTIONS	1,540	23	-	-	1,408
ESTIMATED WATER IN STORAGE 2017 (AF)					
Total Kern Water Bank	210	4,312	-	-	-
Total MWD System	8,026	-	-	-	1,174
Total Kern County	1,719	9,675	-	-	1,408
TOTAL ESTIMATED STORED WATER (1/1/2018)	9,955	13,987	-	-	2,582

NOTES:

-Water in storage has been adjusted to account for losses. IRWD's water stored in Kern County is adjusted 15% for losses; Water stored for DRWD in Kern County is adjusted 10%.

-MWD = Metropolitan Water District of Southern California.

¹ IRWD's SWP includes 389 AF from CVWD that stays in Kern County.

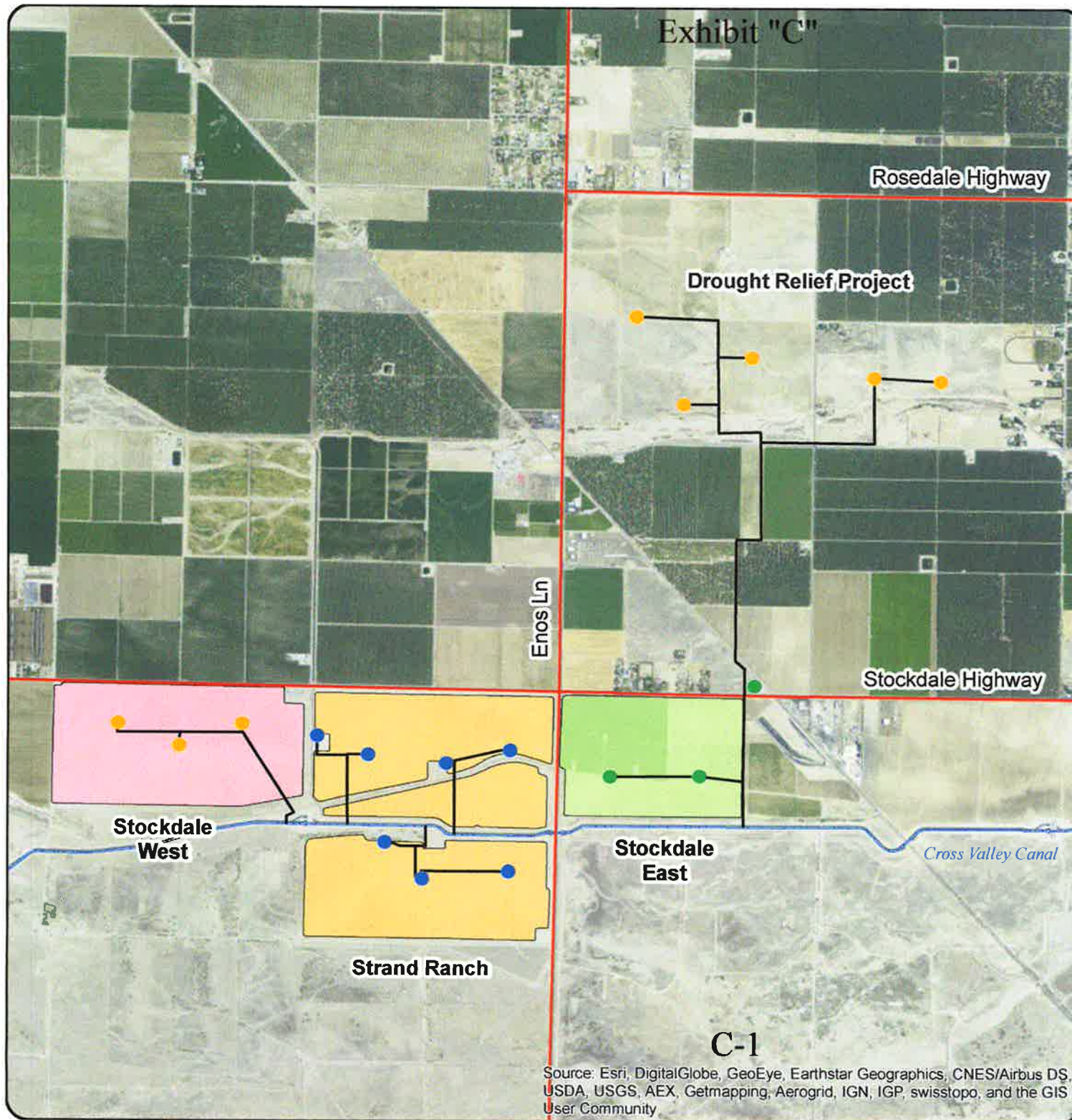
² IRWD's Non-SWP total includes 2,842 AF of Kern County Water Agency Article 21 Water.

³ DRWD water supply will be returned by MWD or IRWD's Strand Ranch to IRWD's Jackson Ranch. IRWD's 2013-2016 SWP allocation amounts are stored in the MWD system. IRWD's 2017 SWP allocation water will be stored at Strand Ranch.

⁴ Beginning balance of water stored in MWD system includes 4,000 AF 2014 Exchange, 2,853 AF 2014 borrowed SWP, 649 AF IRWD's 2013-2015 SWP allocations through DRWD.

⁵ Article 21 deliveries to Kern Water Bank commenced on 2/15/17. DRWD's capacity was 72 cfs through 2/24/17, then dropped to a capacity of 63 cfs. IRWD's 6.58% yielded 9 AF/day from 2/15-2/24 and yields 8 AF/day from 2/25/17 to current.

⁶ Article 21 deliveries to Strand Ranch/Stockdale West began 3/8/17. Deliveries made pursuant to the DRWD/MWD Unbalanced Exchange Program at current rate of 130 cfs.



Location Map: IRWD Water Banking Projects Wells and Turnin Pipelines

MAP FEATURES

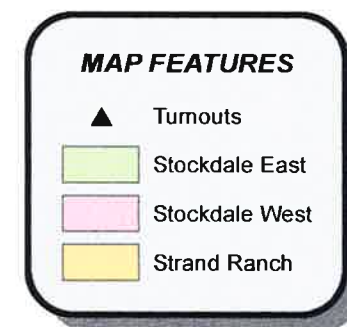
- Existing Extraction Well
- Planned Extraction Well
- Well Under Construction
- Well Discharge Pipelines
- Stockdale East
- Stockdale West
- Strand Ranch

This figure shows the location of IRWD's water banking project sites as well as existing and proposed extraction wells.





**Location Map:
IRWD Water Banking Projects
Turnout Facilities**



**Existing Siphon
50 CFS Capacity
From Strand**

**Under Construction
Stockdale West
Turnout Facility
100 CFS Capacity**

**Existing North & South
Strand Ranch
Turnout Facilities
100 CFS Capacity Each**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

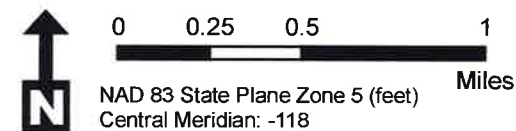


Exhibit "E"

Rosedale Highway



Location Map: IRWD Water Banking Projects Recharge Basins & Turnout Facilities

MAP FEATURES

- ▲ Turnouts
- Stockdale West
- Strand Ranch

This figure shows the location of recharge basins as well as existing and anticipated pipelines and turnout facilities.

Existing Siphon
50 CFS Capacity
From Strand

Construction Complete
(Not Yet Operational)
Stockdale West Turnout
100 CFS Capacity

Existing North & South
Strand Ranch
Turnout Facilities
100 CFS Capacity Each

Cross Valley Canal

Enos Ln

Stockdale Highway

5

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



0 0.25 0.5 1
Miles
NAD 83 State Plane Zone 5 (feet)
Central Meridian: -118

EXHIBIT "F"

IRWD-Rosedale Water Banking and Exchange Program Agreements

Effective 1/12/2009 through 1/12/2039 (Strand Ranch)
2/4/2016 through 1/12/2039 (Stockdale West)

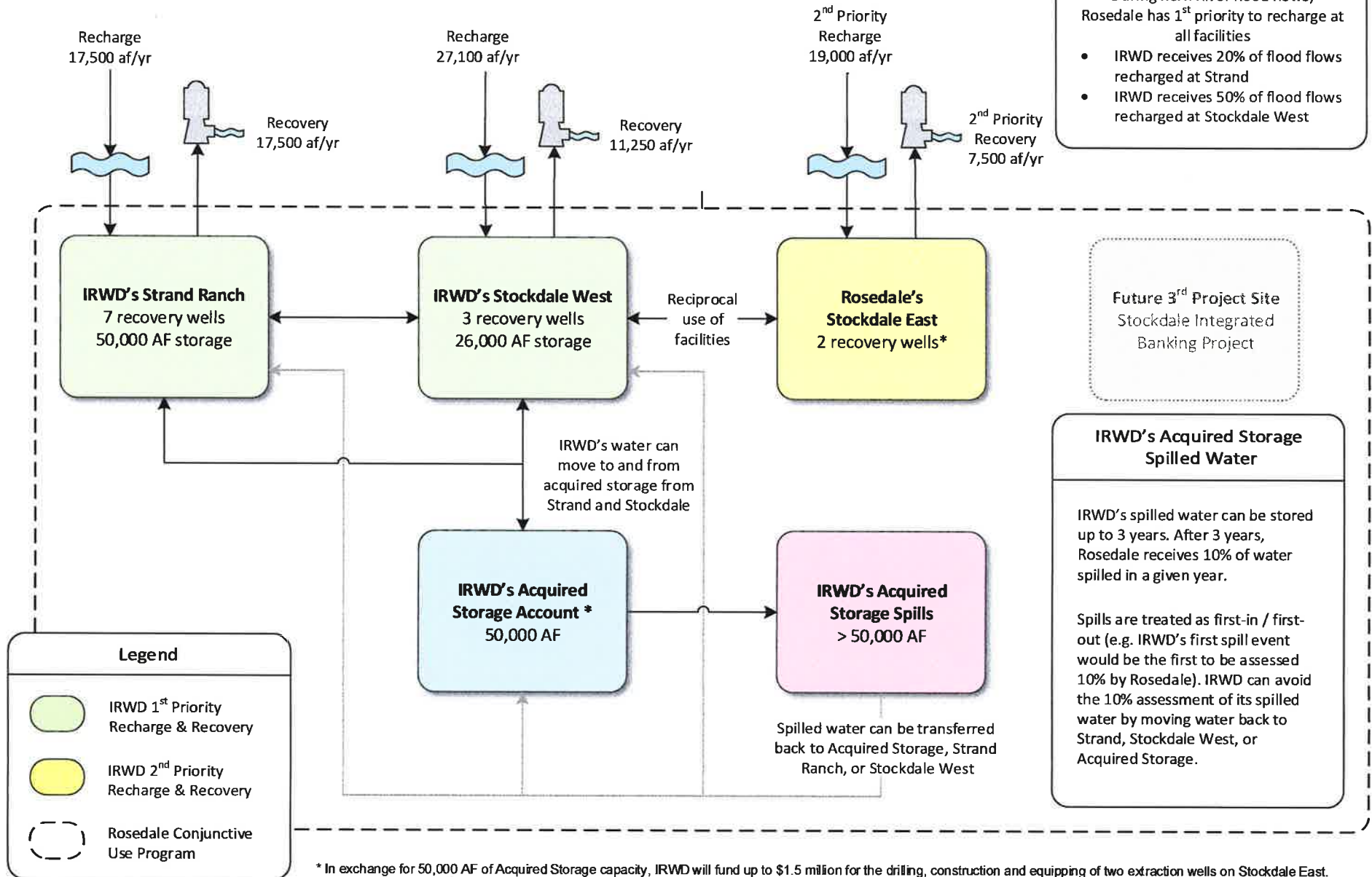
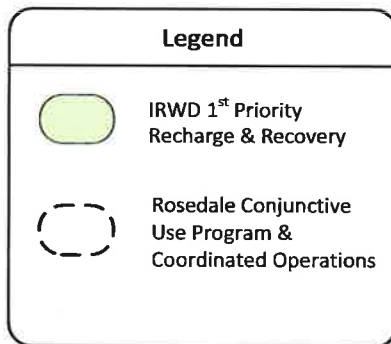
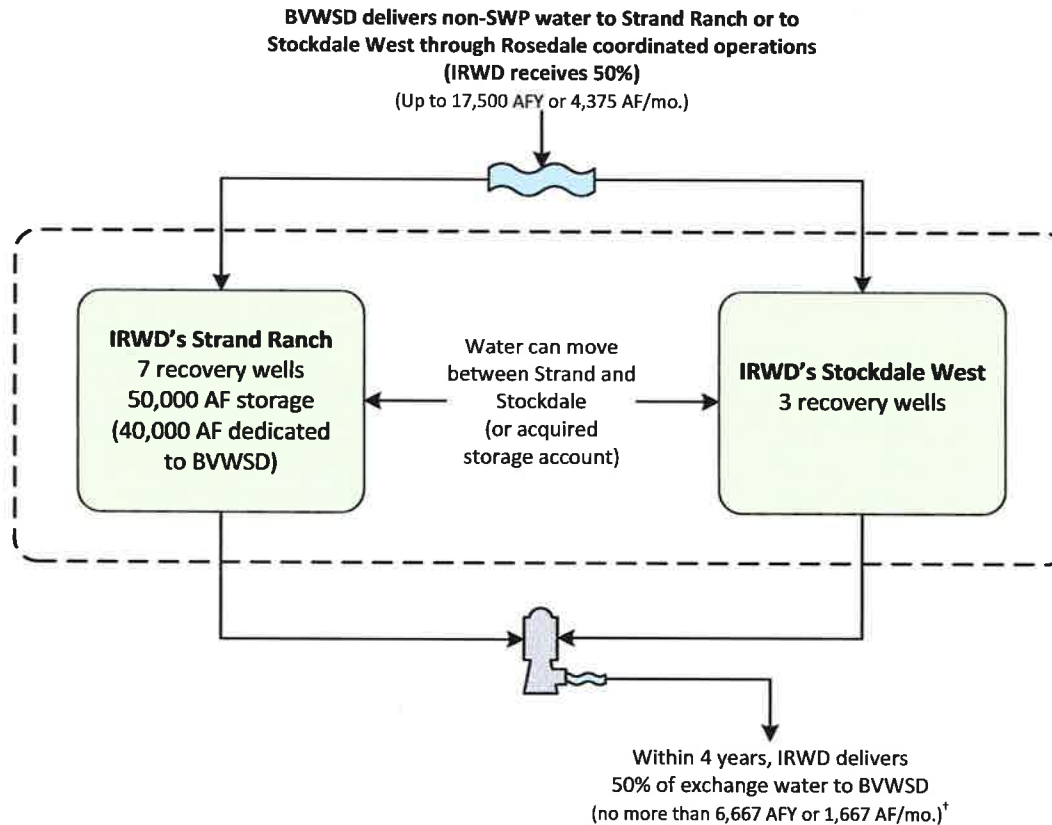


Exhibit "G"

Buena Vista Water Storage District Long Term Water Exchange Program

Effective 1/1/2011 through 1/12/2039



[†]IRWD shall remit one-half of the exchanged supply less one-half of reasonable losses back to BV no later than December 31st of the 4th year following the associated recharge event. IRWD pays for recovery of water returned to BV. Water to be remitted back to BV may remain in storage at Strand Ranch beyond the 4th year, in exchange for a greater percent being transferred to IRWD as compensation per the table shown to the right:

Year Following Recharge Event	Percent Transferred to IRWD	Percent Returned to BV During or Before Indicated Year
1	50%	50%
2	50%	50%
3	50%	50%
4	50%	50%
5	60%	40%
6	70%	30%
7	80%	20%
8	90%	10%
9	100%	0%

Exhibit "H"

Dudley Ridge Water District (DRWD) Unbalanced Exchange Program

Up to 8,700 AF delivered from 12/16/2013 through 12/31/2017

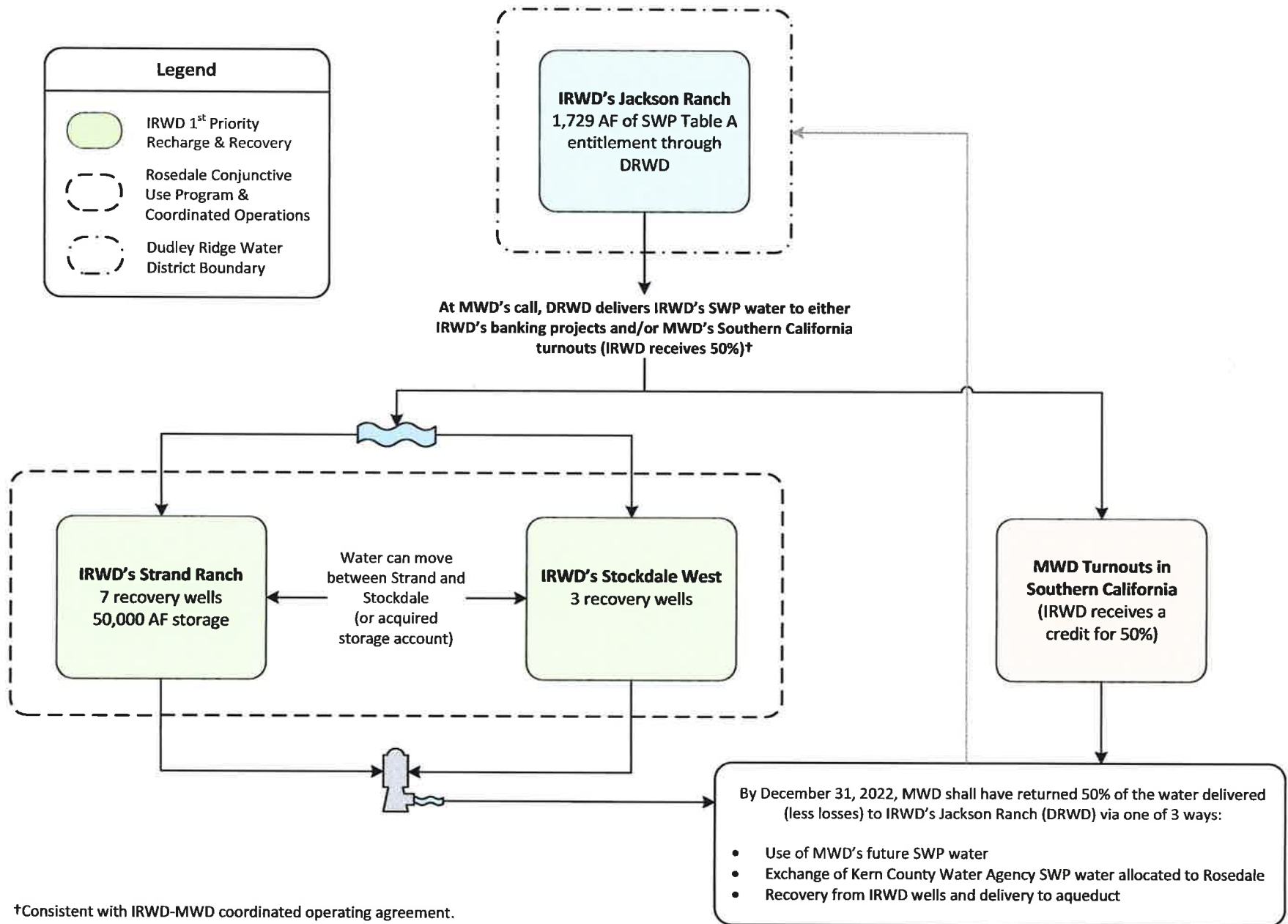


Exhibit "I"

Coordinated Operating, Water Storage, Exchange and Delivery Agreement Between MWD, MWDOC and IRWD Effective 5/1/2011 through 11/4/2035

With MWD's consent, IRWD secures SWP water (Program Water) through exchanges with IRWD Banking Partners for use as extraordinary supply under MWD Water Supply Allocation Plan

MWD has three options for the use and storage of Program Water:

- Storage of water in IRWD's Integrated Banking Project
- Delivery to Southern California for immediate use and/or storage in MWD system
- Borrow a portion of Program water, with accrual in MWD Delivery Account

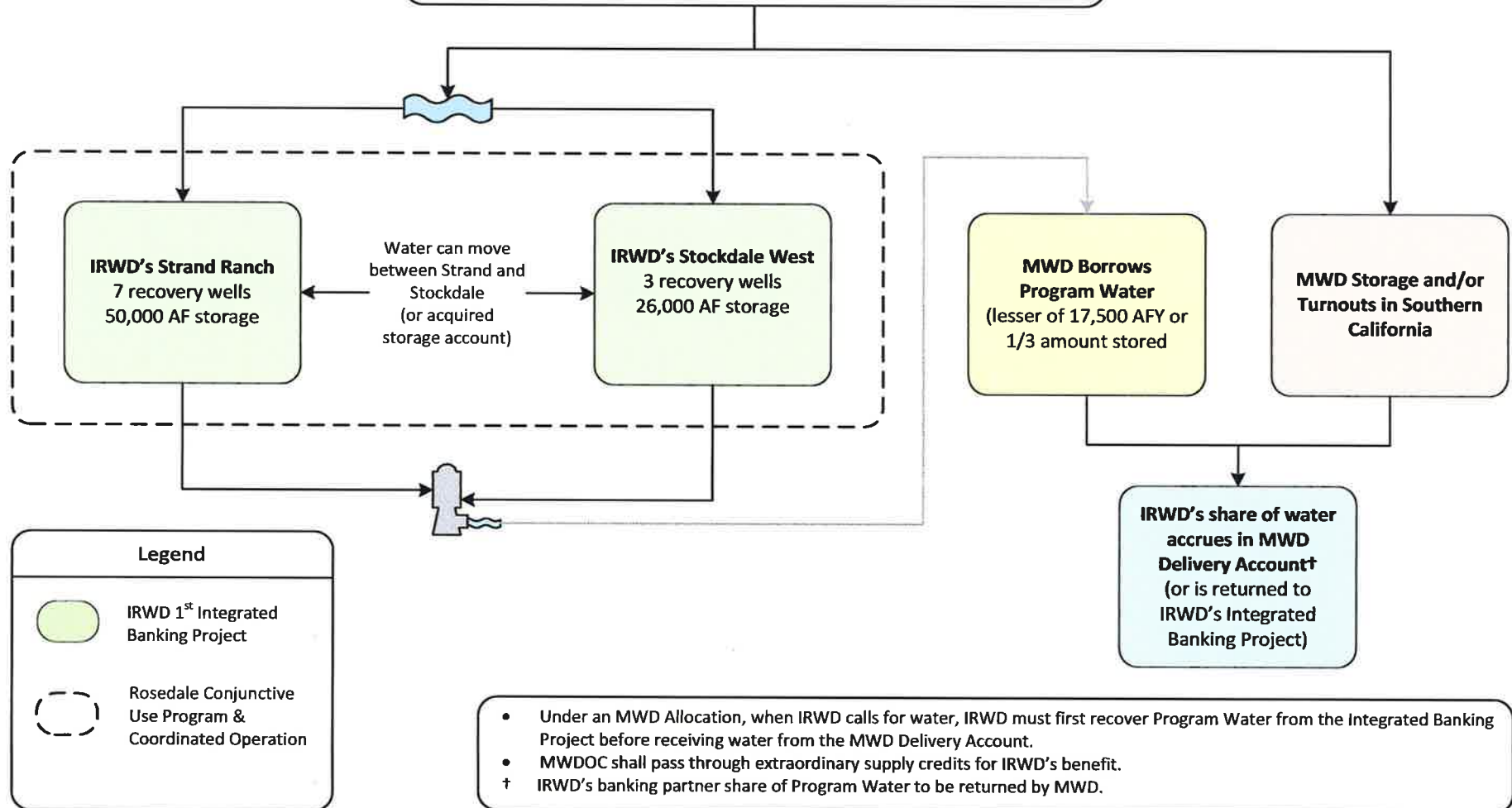
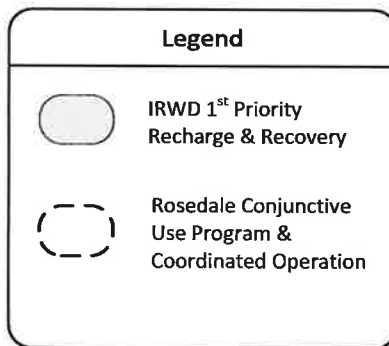
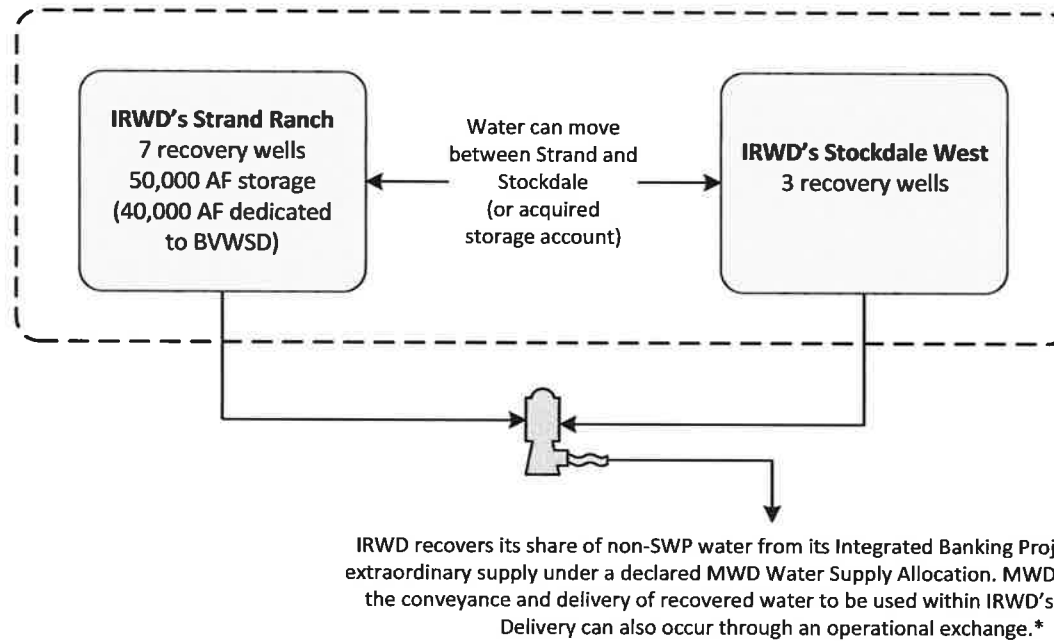


Exhibit "J"
Agreement for Conveyance of Water Between MWD, MWDOC, and IRWD (Wheeling Agreement)
Template for future agreements



*The recovered water must be used within IRWD's service area. IRWD to pay MWD wheeling charges, including system access rate, water stewardship rate, and treatment surcharge (if applicable), for each acre foot of recovered water wheeled by MWD. IRWD will pay the actual costs of power incurred by MWD to convey recovered water in the California Aqueduct to IRWD delivery points.

March 16, 2017

Prepared by: K. Welch

Submitted by: F. Sanchez/P. Weghorst *FW*

Approved by: Paul Cook *PC*

SUPPLY RELIABILITY PROGRAMS COMMITTEE

UPDATE ON RECHARGE OPERATIONS

SUMMARY:

Wet year conditions are resulting in water supplies being available for IRWD to recharge at the Strand and Stockdale Integrated Banking Projects (Integrated Water Bank). This report provides an update on the ongoing recharge of State Water Project (SWP) Article 21 water that is available to IRWD through the existing unbalanced exchange program with Dudley Ridge Water District (DRWD) and the planned delivery of Kern River water supplies to the Strand Ranch through IRWD's long-term unbalanced exchange program with Buena Vista Water Storage District (BVWSD). At the Committee meeting, staff will also provide updates on progress being made in developing other exchange programs.

BACKGROUND:

As a result of favorable wet-year water supply conditions, agencies within the Kern Fan area, including IRWD, are maximizing recharge operations. Staff has coordinated with DRWD, Rosedale-Rio Bravo Water Storage District (Rosedale) and the Kern County Water Agency (KCWA), which collectively began the delivery of Article 21 water to the Integrated Water Bank through the existing unbalanced exchange program that IRWD has with DRWD that makes use of water supplies available to IRWD's Jackson Ranch. Staff has also been coordinating with BVWSD to facilitate the delivery of high-flow Kern River water to IRWD's Strand Ranch consistent with IRWD's long-term unbalanced exchange program with BVWSD. Following is an overview of Rosedale's use of the Integrated Water Bank, the ongoing recharge of IRWD's Article 21 water and upcoming expected deliveries of high-flow Kern River water from BVWSD to the Strand Ranch.

Rosedale Recharge Operations:

From the beginning of January until March 7, 2017, Rosedale recharged water at the Integrated Water Bank on a second priority basis to fulfill its own programs. The average delivery rate to the Strand Ranch turnouts had been about 150 cfs with 100 cfs through the north turnout and up to 50 cfs through the south turnout, which yielded approximately 300 AF of recharge per day. Rosedale has seen a drop in infiltration rates on the south basins on the Strand Ranch likely due to the influence of significant recharge activities by the Kern Water Bank. Rosedale recently reduced total deliveries to the Strand Ranch turnouts to 130 cfs in order to balance observed recharge rates. Rosedale estimates that it has recharged over 9,000 AF on the Strand Ranch over the January to February period. Rosedale terminated deliveries to the Integrated Water Bank on March 8 when IRWD initiated first priority deliveries of Article 21 water.

IRWD Article 21 Water Deliveries:

In February 2017, the California Department of Water Resources (DWR) announced to the SWP contractors the availability of Article 21 water that began on February 15. Currently, DWR

forecasts that Article 21 water will continue to be available through the end of March. Upon receiving notification through DRWD of the availability of Article 21 water, staff began coordinating with DRWD, Metropolitan Water District of Southern California (Metropolitan), Rosedale and KCWA for the delivery of Article 21 water to the Integrated Water Bank. These deliveries would be made consistent with the unbalanced exchange program between IRWD and DRWD that is facilitated through an Exchange and Point of Delivery Agreement between DRWD, Metropolitan and KCWA.

Available of Program Capacity:

The Exchange and Point of Delivery Agreement allows for up to 8,700 AF of SWP supplies, that are available to IRWD as a landowner in DRWD, to be delivered as directed by Metropolitan through the end of 2017 to either the Integrated Water Bank or to Metropolitan's reservoirs in southern California. These deliveries are made consistent with the Coordinated Operating and Exchange Agreement between IRWD, Metropolitan and Municipal Water District of Orange County. To date, 2,347 AF of SWP Table A has been delivered to Metropolitan's southern California reservoirs and potentially an additional 1,350 AF will be delivered, by the end of the year, to the Integrated Water Bank from IRWD's 2017 SWP Table A allocation. This leaves up to 5,000 AF of the 8,700 AF program capacity available for Article 21 water deliveries to the Integrated Water Bank.

Ongoing First Priority Deliveries:

As a result of staff's coordination efforts, DRWD ordered Article 21 water for delivery to the Integrated Water Bank and KCWA approved a transaction request to deliver the water through the Cross Valley Canal (CVC). On March 8, Rosedale began diverting up to 5,000 AF of Article 21 water to the Integrated Water Bank using IRWD's first priority recharge capacity. These deliveries will continue through March 31, 2017, subject to availability of Article 21 water and capacity in the CVC. Pursuant to the Exchange and Point of Delivery Agreement between DRWD, KCWA and Metropolitan for this program, these deliveries cannot affect KCWA's water management activities. At the Committee meeting, staff will provide an update on the ongoing deliveries of Article 21 supplies to the Integrated Water Bank.

BVWSD Kern River Deliveries:

Staff has been coordinating with BVWSD on initiating deliveries of high-flow Kern River water to the Strand Ranch on a first priority basis. These deliveries would be made consistent with the long-term unbalanced exchange agreement between IRWD and BVWSD whereby 50% of the water recharged is transferred to IRWD. In January 2017, staff submitted a Transaction Request Form through Rosedale to the KCWA to schedule delivery of up to 17,500 AF of BVWSD's high-flow Kern River water to the Strand Ranch turnouts when capacity becomes available.

Method of Deliveries:

There are two methods that can be used to make high-flow Kern River water available for delivery to the Strand Ranch. These methods involve performing an operational exchange or diverting Kern River water directly into the CVC. Since January, BVWSD and Rosedale have made use of all

available operational exchange capacity to deliver Kern River water to fulfill other existing programs. To increase the amount of Kern River water that can be diverted into the CVC, BVWSD and KCWA have been working on a physical modification to a CVC pump station which will allow up to 200 cfs of Kern River water to be available for delivery to the Strand Ranch. BVWSD and KCWA expect that the modification work will be completed by March 30 and that deliveries to the Strand Ranch could begin on April 1. At the Committee meeting, staff will provide an update on the status of the modification work and the expected date for receiving BVWSD's high-flow Kern River water at the Strand Ranch.

Availability of High-Flow Kern River Water:

Currently, the Army Corps of Engineers is making releases of Kern River water from Lake Isabella to make room for large amounts of expected runoff in the spring. The expected runoff is likely to result in BVWSD having access to high-flow Kern River water through the summer.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Both the Strand Ranch and Stockdale Integrated Banking Projects are subject to the California Environmental Quality Act (CEQA). In compliance with CEQA, the California Public Resources Code Section 21000 et. seq., and per the California CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3, Rosedale as a lead agency, filed Notices of Determinations with the County of Kern and with the California State Clearinghouse for the Strand Ranch Integrated Banking Project Final Environmental Impact Report (EIR) and the Stockdale Integrated Banking Project Final EIR. IRWD, as a Responsible Agency, filed Notices of Determinations with the Counties of Orange and Kern and with the California State Clearinghouse for both the Strand Ranch and Stockdale Integrated Banking Projects Final EIRs.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

None.