
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.

INFORMATION

5. WATER BANKING PROJECT FACILITIES, CAPACITIES, OPERATIONS AND PROGRAMS – LINDSAY / WELCH / SANCHEZ / WEGHORST

Recommendation: Receive and file.

6. DISCUSSION OF ENVIRONMENTALLY FRIENDLY DELTA DIVERSION PROJECT – LINDSAY / SANCHEZ / WELCH / WEGHORST

OTHER BUSINESS


7. Directors' Comments
8. 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 electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

July 20, 2023

Prepared by: M. Lindsay / K. Welch

Submitted by: F. Sanchez / P. Weghorst

Approved by: Paul A. Cook 

SUPPLY RELIABILITY PROGRAMS COMMITTEE

WATER BANKING PROJECT FACILITIES, CAPACITIES, OPERATIONS, AND PROGRAMS

SUMMARY:

Staff has prepared information related to IRWD's water banking facilities, capacities, operations, and exchange programs. The information is regularly updated to reflect changes in the status of IRWD's projects, programs, and operations. At the Committee meeting, staff will review this information and provide an update on IRWD's actual and forecasted monthly recharge operations for 2023.

BACKGROUND:

Staff has prepared reference materials in tabular, map, and schematic formats to describe IRWD's water banking facilities, capacities, operations, storage, and exchange programs. The reference materials are updated regularly to reflect changes in the status of the projects, programs, and operations. The following is an overview of the reference materials as well as monthly recharge operations for calendar year 2023 at the IRWD Water Bank.

Capacity and Operations Tables:

A table presenting storage, recharge, and recovery capacities of existing and planned IRWD water banking projects, including capacities available to IRWD in the Kern Water Bank, is provided as Exhibit "A". Exhibits "B" and "C" provide an update on water banking recovery and recharge operations, as well as the balance of the water stored in the Kern Water Bank. Exhibit "B" provides before-loss estimates of water recharged and in storage at the water banking projects, and Exhibit "C" provides after-loss estimates of water recharged and in storage at the projects. Changes shown in red on Exhibits "B" and "C" depict the projected delivery of 8,337 AF of Dudley Ridge Water District return water and 17,500 AF of Kern River water deliveries from Buena Vista Water Storage District. In addition, the values reported in Exhibits "B" and "C" include delivery of water to the West Enos Interim Recharge Facilities under the Kern Fan Groundwater Storage Project which started June 7. Values associated with recharge at the Kern Water Bank have yet to be reported and are expected to be available in early 2024.

Summary of Programs:

A table summarizing IRWD's water purchase and exchange programs is presented as Exhibit "D." This table lists each purchase and exchange program IRWD has entered into and presents information related to the type of exchange, year executed, agreement type, and water type. IRWD and partner shares are listed and show the total amount of water included in each program. The balances listed for IRWD and its partners show the amount of water remaining in storage, with IRWD's balances specifying whether the water is stored in Metropolitan's system,

Kern County or owed to IRWD by Dudley Ridge. The table also provides details related to the exportability of IRWD's supplies. Changes shown in red on Exhibit "D" correspond with the changes made to Exhibits "B" and "C." A new column has been added to Exhibit "D" to reflect the delivery of water to the West Enos Interim Recharge Facilities.

Exhibit "E" graphically depicts how storage of State Water Project (SWP) and non-SWP water has changed annually in the Strand and Stockdale Integrated Banking Projects. Exhibit "E" has been revised to depict the balance of water owed to IRWD by Dudley Ridge. The table provided as Exhibit "F" shows how capacities in the water banking projects have been dedicated to IRWD's existing and proposed exchange programs.

Project Maps:

To support the tables and figures provided as Exhibits "A", "B", "C", "D", "E", and "F", staff has prepared maps depicting project wells, pipelines, recharge basins, and Cross Valley Canal turnout locations, along with the most current recharge rates. These maps are provided as Exhibits "G", "H" and "I", respectively. Exhibit "I" has been updated with current recharge rates for IRWD's Water Bank. The facilities shown on the maps are associated with the Strand Ranch, Stockdale West, Stockdale East, and Drought Relief Projects.

Program Agreement Diagrams:

Schematic diagrams have been prepared that depict IRWD water banking and exchange programs with Rosedale-Rio Bravo Water Storage District, Buena Vista, Dudley Ridge and Metropolitan. These diagrams are provided as Exhibits "J", "K", "L", "M", "N", and "O", as described in the List of Exhibits.

Cost of Water Table:

A table presenting a summary of the costs of water from each of IRWD's unbalanced exchange partnerships is provided as Exhibit "P". The table lists each of IRWD's unbalanced exchange partnerships and presents information related to the period over which water was acquired, water type, IRWD's share of water, and various cost components as well as the total cost of water delivered to IRWD's service area. Cost components include fixed and variable operating costs, estimated future IRWD recovery costs, the 2023 Metropolitan Full Service Untreated Tier-1 Rate, and a capital cost of water. The variable costs include an administrative fee issued by the Kern County Water Agency for staff time related to processing Transaction Request Forms. The costs of water are presented on a dollar per acre-foot basis.

IRWD's Coordinated Agreement with Metropolitan:

An overview of IRWD's Coordinated Operating, Water Storage, Exchange, and Delivery Agreement with Metropolitan and Municipal Water District of Orange County (Coordinated Agreement) is provided as Exhibit "Q". The benefits to IRWD are foundational to the success of IRWD's water banking project and programs.

2023 Actual and Forecasted Water Recharge Activities:

Exhibit "R" has been added to depict actual and forecasted recharge operations for 2023. IRWD's annual contractual recharge limit of 17,500 AF on the Strand Ranch was reached in June. IRWD deliveries continue to the Stockdale West at a rate of 25 to 30 cfs, or approximately 50 to 60 AF per day. Water deliveries to West Enos are currently estimated at a rate of 28 cfs for most of July, or approximately 56 AF per day, for Rosedale and IRWD. Half of this capacity is available for the benefit of IRWD with approximately 28 AF per day being recharged to West Enos.

Water deliveries to IRWD from Dudley Ridge satisfy return obligations associated with Dudley Ridge's prior use of non-SWP water from IRWD's Water Bank consistent with the 1-for-1 long term exchange program that is depicted in Exhibit "O." IRWD Water Bank deliveries from Buena Vista consist of Kern River water that was stored by exchange in the SWP. These deliveries are made pursuant to the long-term 2-for-1 exchange program between IRWD and Buena Vista depicted in Exhibit "K" as well as the recently executed 2023 Supplemental Recharge Program.

Starting in mid-July, Cross Valley Capacity (CVC) constraints may impact IRWD's ability to accept deliveries to both the Stockdale West and West Enos facilities. Both Buena Vista and Dudley Ridge are working to secure CVC capacity to continue deliveries of their respective supplies. Deliveries for Antelope Valley-East Kern Water Agency and Central Coast Water Authority are shown in Exhibit "R" to begin in August and will be subject to the availability of CVC Capacity. Should CVC capacity not be available, deliveries of water from both Buena Vista and Dudley Ridge water are likely to continue. Through the end of July, staff estimates that 29,251 AF will have been delivered for recharge with 19,625 AF dedicated to IRWD.

Water Supply Conditions:

Deliveries to IRWD's Water Bank in 2023 reflect the wet-year conditions in the State of California. At the Committee meeting staff will present an update on water supply conditions including the Colorado River, SWP, Central Valley Project, and Kern River systems.

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” – Water Banking Storage, Recharge, and Recovery Operations before Losses
- Exhibit “C” – Water Banking Storage, Recharge, and Recovery Operations after Losses
- Exhibit “D” – Status of IRWD Purchase and Exchange Programs
- Exhibit “E” – Historic Water Storage in Strand and Stockdale Projects
- Exhibit “F” – Dedicated Capacities of Current Water Banking Projects
- Exhibit “G” – Map of Water Banking Project Wells and Pipelines
- Exhibit “H” – Map of Water Banking Recharge Basins and Turnout Facilities
- Exhibit “I” – Map of Water Banking Recharge Rates
- Exhibit “J” – Diagram of IRWD-Rosedale Water Banking and Exchange Program Agreements
- Exhibit “K” – Diagram of Long-term Water Exchange Program with Buena Vista Water Storage District and Diagram of One-year Program to Augment Recharge Using Stockdale West Recharge Facilities with Buena Vista Water Storage District
- Exhibit “L” – Diagram of Unbalanced Exchange Program Diagram with Dudley Ridge
- Exhibit “M” – Diagram of Coordinated Operating, Water Storage, Exchange, and Delivery Agreement with Metropolitan
- Exhibit “N” – Diagram of Template Wheeling Agreement with Metropolitan
- Exhibit “O” – Diagram of Dudley Ridge One-for-One Exchange
- Exhibit “P” – Cost of Water Tables
- Exhibit “Q” – Summary of IRWD’s Coordinated Operating, Water Storage, Exchange and Delivery Agreement with Metropolitan and MWDOC
- Exhibit “R” – Actual and Forecasted 2023 Recharge Operations

Exhibit "A"

TABLE 1
Current and Anticipated Water Banking Projects
Recharge, Storage and Recovery Capacities
 July 20, 2023

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	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 (Average Daily Production 1/1/2021 - 7/31/2022)	RECOVERY CAPACITY AS PLANNED	RECOVERY CAPACITY CURRENT CONDITIONS
Strand Ranch	Yes	7	50,000	17,500	-	17,500	-	40.0	20.5	-	-
Stockdale West	Yes	3	26,000	27,100	-	11,250	-	15.0	11.6	-	-
Stockdale East	No	2	-	-	19,000	-	7,500	-	-	10.0	9.0
IRWD Acquired Storage Account ²	No	-	50,000	-	-	-	-	-	-	-	-
Drought Relief Project Wells ²	No	3	-	-	-	-	-	15.0	16.5	-	-
Kern Water Bank Storage Account ⁴	No	-	9,495	3,200	-	1,520	<5,000	-	-	-	-
TOTALS		15	135,495	47,800	19,000	30,270	12,500	70.0	48.6	10.0	9.0
Partner Capacities ³			38,000	22,300	9,500	10,850	0	35.5	25.0	-	-
IRWD Capacities (does not include Kern Water Bank capacities)			88,000	22,300	9,500	17,900	7,500	34.5	25.0	-	-
IRWD's recovery <i>during</i> 6 month partner recovery period (AF)								12,420	9,000	-	-
IRWD's recovery <i>after</i> 6 month partner recovery period (AF)								5,480	6,733	-	-
TOTALS (AF)								17,900	15,733	-	-
Number of months needed to recover IRWD's total AF after partners' recovery (Assumes IRWD has use of total recovery capacity after partners' recovery)								8.6	10.2	-	-
Strand Ranch monthly recharge amount assuming 0.3 ft/day average recharge rate (AF)										4,518	
Stockdale West monthly recharge amount assuming 0.3 ft/day average recharge rate (AF)										2,331	

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

³ One half of storage capacity at Stockdale West and Strand Ranch will be allocated for partners.

⁴ 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. 5,000 AF of recovery capacity may be available for second priority use.

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Exhibit "B"

TABLE 2
IRWD's Water Banking Storage, Recharge and Recovery Operations - BEFORE LOSSES
 July 20, 2023

TRANSACTIONS	WATER BANKING ENTITY						TOTAL BY WATER TYPE AND STORAGE LOCATION
	IRWD		BUENA VISTA (BVWSD)	CENTRAL COAST (CCWA)	ANTELOPE VALLEY-EAST KERN (AVEK)	DUDLEY RIDGE WATER DISTRICT (DRWD) ³	
	SWP ¹	NON-SWP ²	NON-SWP	SWP	SWP	SWP	
BEGINNING WATER IN STORAGE 2022 (AF)							
Total Kern Water Bank ⁴	-	3,848	-	-	-	-	3,848
Total MWD System	8,062	-	-	-	-	-	8,062
Total Kern County	5,234	14,416	-	-	-	-	19,650
Total DRWD 1-for-1 Long Term Exchange Credit ⁵	11,000	-	-	-	-	-	11,000
TOTAL STORED WATER (1/1/2022)	24,296	18,264	-	-	-	-	42,560
(RECOVERY) AND RECHARGE IN 2022 (AF)							
KWB Recovery for use on Jackson Ranch ⁶	-	(84)	-	-	-	-	(84)
2022 SWP Allocation (5%)	44	-	-	-	-	43	87
2019 Reserve Water	76	225	225	-	-	-	526
Kern River Water	-	(5,000)	-	-	-	-	(5,000)
DRWD 1-for-1 Long Term Exchange Credit	5,500	-	-	-	-	-	5,500
Recovery of Banked SWP Water for MWD	(3,927)	-	-	-	-	-	(3,927)
MWD Credit for SWP Water	3,927	-	-	-	-	-	3,927
TOTAL 2022 TRANSACTIONS	5,620	(4,859)	225	-	-	43	1,029
Total Kern Water Bank ⁹	-	3,764	-	-	-	-	3,764
Total MWD System	12,033	-	-	-	-	43	12,076
Total Kern County	1,383	9,641	225	-	-	-	11,249
Total DRWD 1-for-1 Long Term Exchange Credit	16,500	-	-	-	-	-	16,500
TOTAL STORED WATER (1/1/2023)	29,916	13,405	225	-	-	43	43,589
(RECOVERY) AND RECHARGE IN 2023 (AF)							
KWB Recovery for use on Jackson Ranch ⁶ Est.	-	(235)	-	-	-	-	(235)
2023 SWP Allocation (100%) ³	875	-	-	-	-	874	1,749
BV Long Term Program Kern River Water Est.	-	8,750	8,750	-	-	-	17,500
BV 2023 Recharge Kern River Water Est.	-	368	367	-	-	-	735
DRWD 1-for-1 Long Term Exchange (Recharge) Est.	8,337	-	-	-	-	-	8,337
TOTAL ESTIMATED 2023 TRANSACTIONS	9,212	8,883	9,117	-	-	874	28,086
ESTIMATED WATER IN STORAGE 2023 (AF)							
Total Kern Water Bank	-	3,529	-	-	-	-	3,529
Total MWD System	12,033	-	-	-	-	43	12,076
Total Kern County	10,595	18,759	8,975	-	-	874	39,203
Total DRWD 1-for-1 Long Term Exchange Credit	8,163	-	-	-	-	-	8,163
TOTAL ESTIMATED STORED WATER TO DATE	30,791	22,288	8,975	-	-	917	62,971

NOTES: MWD = Metropolitan Water District of Southern California.

¹ IRWD's SWP includes 295 AF from CVWD that stays in Kern County.

² IRWD's Non-SWP total includes 2,403 AF, net of losses, 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. MWD took delivery of IRWD's 2022 SWP allocation in June 2022. MWD will not take delivery of IRWD's 2023 SWP Allocation.

⁴ IRWD's KWB Account balance includes SWP, Friant and Kern River water. The KWB account balance is included in the Non-SWP column because it is not exportable to IRWD's service area. The 2022 beginning KWB balance was revised by DRWD based on KCWA 2021 end of year balances.

⁵ Per the DRWD Long-Term 1-for-1 Exchange Program, Non-SWP water delivered to DRWD landowners will be returned to IRWD as SWP water at a later date. To account for the SWP water that will be returned at a later date, the amount of water owed will be shown as a credit. Total assumes all water is returned to IRWD Water Bank which adds in a 10% loss factor.

⁶ Water recovered from IRWD's Kern Water Bank account for use on Jackson Ranch.

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Exhibit "C"

TABLE 3
IRWD's Water Banking Storage, Recharge and Recovery Operations - AFTER LOSSES
 July 20, 2023

TRANSACTIONS	WATER BANKING ENTITY						TOTAL BY WATER TYPE AND STORAGE LOCATION
	IRWD		BUENA VISTA (BVWSD)	CENTRAL COAST (CCWA)	ANTELOPE VALLEY-EAST KERN (AVEK)	DUDLEY RIDGE WATER DISTRICT (DRWD) ³	
	SWP ¹	NON-SWP ²	NON-SWP	SWP	SWP	SWP	
BEGINNING WATER IN STORAGE 2022 (AF)							
Total Kern Water Bank ⁴	-	3,848	-	-	-	-	3,848
Total MWD System	8,062	-	-	-	-	-	8,062
Total Kern County	4,199	10,492	-	-	-	-	14,691
Total DRWD 1-for-1 Long Term Exchange Credit ⁵	10,000	-	-	-	-	-	10,000
TOTAL STORED WATER (1/1/2022)	22,261	14,340	-	-	-	-	36,601
(RECOVERY) AND RECHARGE IN 2022 (AF)							
KWB Recovery for use on Jackson Ranch ⁶	-	(84)	-	-	-	-	(84)
2022 SWP Allocation (5%)	44	-	-	-	-	43	87
2019 Reserve Water	72	213	225	-	-	-	510
Kern River Water	-	(5,000)	-	-	-	-	(5,000)
DRWD 1-for-1 Long Term Exchange Credit	5,000	-	-	-	-	-	5,000
Recovery of Banked SWP Water for MWD	(3,927)	-	-	-	-	-	(3,927)
MWD Credit for SWP Water	3,927	-	-	-	-	-	3,927
TOTAL 2022 TRANSACTIONS	5,116	(4,871)	225	-	-	43	513
Total Kern Water Bank	-	3,764	-	-	-	-	3,764
Total MWD System	12,033	-	-	-	-	43	12,076
Total Kern County	344	5,705	225	-	-	-	6,274
Total DRWD 1-for-1 Long Term Exchange Credit	15,000	-	-	-	-	-	15,000
TOTAL STORED WATER (1/1/2023)	27,377	9,469	225	-	-	43	37,114
(RECOVERY) AND RECHARGE IN 2023 (AF)							
KWB Recovery for use on Jackson Ranch ⁶ Est.	-	(235)	-	-	-	-	(235)
2023 SWP Allocation (100%) ³	747	-	-	-	-	747	1,494
BV Long Term Program Kern River Water Est.	-	7,475	7,896	-	-	-	15,371
BV 2023 Recharge Kern River Water Est.	-	315	331	-	-	-	646
DRWD 1-for-1 Long Term Exchange (Recharge) Est.	7,123	-	-	-	-	-	7,123
TOTAL ESTIMATED 2023 TRANSACTIONS	7,870	7,555	8,227	-	-	747	24,399
ESTIMATED WATER IN STORAGE 2023 (AF)							
Total Kern Water Bank	-	3,529	-	-	-	-	3,529
Total MWD System	12,033	-	-	-	-	43	12,076
Total Kern County	8,214	13,495	8,452	-	-	747	30,908
Total DRWD 1-for-1 Long Term Exchange Credit	7,877	-	-	-	-	-	7,877
TOTAL ESTIMATED STORED WATER TO DATE	28,124	17,024	8,452	-	-	790	54,390

NOTES: Water in storage has been adjusted to account for losses. IRWD's water stored in Kern County is adjusted 15% for losses (5% for out of county loss, 6% surface loss, and 4% reserve loss); Water stored for-BVWSD in Kern County is adjusted 10% (6% for surface loss and 4% for reserve loss); no losses for water directly delivered to MWD system.

MWD = Metropolitan Water District of Southern California.

¹ IRWD's SWP includes 251 AF from CVWD that stays in Kern County.

² IRWD's Non-SWP total includes 2,403 AF of Kern County Water Agency Article 21 Water.

³ DRWD water will be returned by MWD or IRWD's Strand Ranch to IRWD's Jackson Ranch. MWD took delivery of IRWD's 2022 SWP allocation in June 2022. MWD will not take delivery of IRWD's 2023 SWP Allocation.

⁴ IRWD's KWB Account balance includes SWP, Friant and Kern River water. The KWB account balance is included in the Non-SWP column because it is not exportable to IRWD's service area. The 2022 beginning KWB balance was revised by DRWD based on KCWA 2021 end of year balances.

⁵ Per the DRWD Long-Term 1-for-1 Exchange Program, Non-SWP water delivered to DRWD landowners will be returned to IRWD as SWP water at a later date. To account for the SWP water that will be returned at a later date, the amount of water owed will be shown as a credit. Total assumes all water is returned to IRWD Water Bank which adds in a 10% loss factor. Final amounts may be subject to additional CVC losses.

⁶ Water recovered from IRWD's Kern Water Bank account for use on Jackson Ranch.

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Exhibit "D"

TABLE 4
Status of IRWD Purchase and Exchange Programs (AFTER LOSSES)
 July 20, 2023

PARTNER	EXCHANGE RATIO	YEAR EXECUTED	AGREEMENT TYPE	WATER TYPE	PARTNER WATER		IRWD WATER								SELLABLE (Y/N)	
					PARTNER SHARE (AF)	PARTNER BALANCE (AF)	IRWD SHARE (AF)	IRWD BALANCE			EXPORTABILITY					
								IN MWD SYSTEM (AF)	STORED IN KERN (AF) Strand and Stockdale	Kern Fan (W.Enos)	OWED BY DUDLEY RIDGE WD	TOTAL (AF)	EXPORTABLE TO IRWD (AF)	NON-EXPORTABLE (AF)		FOR USE ON JACKSON RANCH (DRWD)
Semitropic Water Storage District	NA	2008	Purchase	SWP Article 21	NA	NA	2,842		2,403			2,403		2,403		Yes
Carpinteria Valley Water District	2-for-1	2008	Short-Term	SWP Table A	277		250		250			250		250		Yes
Buena Vista Water Storage District ¹	2-for-1	2010	Pilot	Kern River	4,108		3,903									Yes
	2-for-1	2011	Long-Term	Kern River	29,763	8,452	28,189		11,032	60		11,092		11,092		
Antelope Valley East Kern Water Agency	2-for-1	2011	Pilot	SWP Table A	2,229		2,337	2,337				2,337	2,337			No
Carpinteria Valley Water District	2-for-1	2011	Pilot	SWP Table A	624		655	655				655	655			No
Dudley Ridge Water District (SWPAO #13012)	2-for-1	2013	SWPAO	SWP Table A	1,876		1,876	1,876				1,876	1,876			Yes
				SWP Article 21	1,553		1,554	1,554				1,554	1,554			Yes
Metropolitan Water District ²	1-for-1	2014	Short-Term	SWP Table A	NA	NA	4,000	4,000				4,000	4,000			No
Dudley Ridge Water District (SWPAO #17030)	2-for-1	2018	SWPAO	SWP Table A	1,801	790	1,872	1,055	816			1,872	1,872		790	Yes
Central Coast Water Authority (SWPAO #17001)	2-for-1	2017	Short-Term	SWP Table A	258		258	258				258	258			No
Dudley Ridge Water District ³ (SWPAO #19001)	1-for-1	2017	Long-Term	SWP Table A			7,123		7,003	120		7,123	15,000			No
				Credit			7,877			7,877	7,877				No	
Central Coast Water Authority (SWPAO #19031)	2-for-1	2019	Short-Term	SWP Table A	298		323	298	25			323	323			No
Total:					42,787	9,242	63,059	12,033	21,529	180	7,877	41,620	27,874	13,745	790	NA

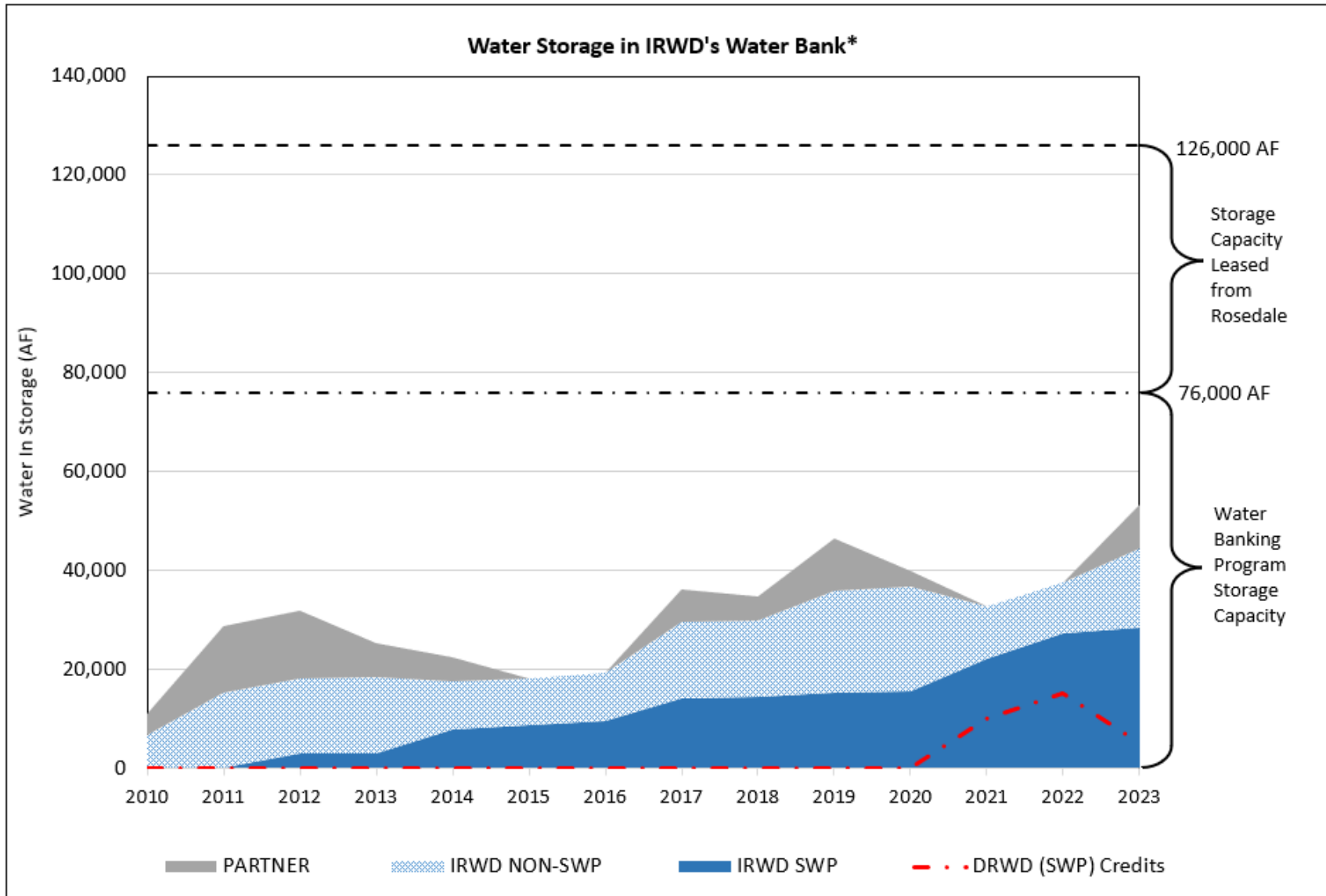
¹ Water acquired through BVWSD will be exportable after it is exchanged for SWP Table A through 1-for-1 exchange with Dudley Ridge Water District.

² Source of water was Buena Vista Water Storage District Kern River high flow water.

³ To account for the SWP water that will be returned to IRWD, the amount of water owed is shown as a credit. The total net of losses is 15,000 AF.

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Exhibit "E"



*After losses

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Exhibit "F"

TABLE 5
IRWD Dedicated Water Banking Capacities for Existing and Proposed Exchange Programs
 July 20, 2023

STORAGE CAPACITY

Program	Dedicated Storage Capacity Strand Ranch (AF)	Dedicated Storage Capacity Stockdale West (AF)	Dedicated Storage Capacity Leased Storage Account (AF)	Kern Water Bank Storage Capacity (AF)
Total Capacity	50,000	26,000	50,000	9,495
BVWSD	40,000	-	-	-
DRWD	10,000	-	-	-
AVEK	-	20,000	-	-
Total Dedicated	50,000	20,000	-	-
Total Remaining	-	6,000	50,000	9,495

RECHARGE CAPACITY

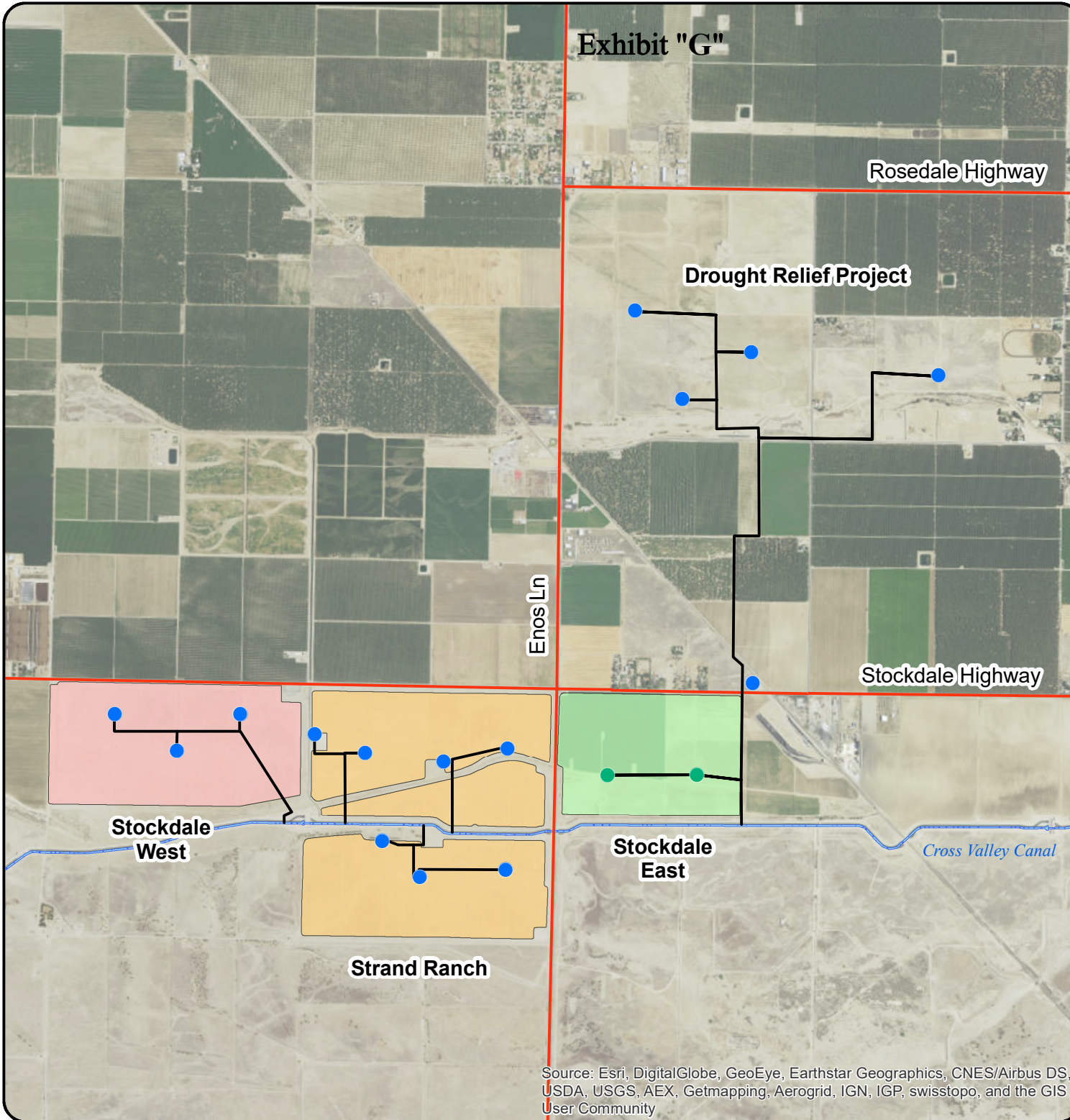
Program	Dedicated Recharge Capacity Strand Ranch (AF)	Dedicated Recharge Capacity Stockdale West (AF)	Dedicated Recharge Capacity Leased Storage Account (AF)	Kern Water Bank Recharge Capacity (AF)
Total Capacity	17,500	27,100	-	3,200
BVWSD	17,500	-	-	-
DRWD	-	-	-	-
AVEK	-	20,000	-	-
Total Dedicated	17,500	20,000	-	-
Total Remaining	-	7,100	-	3,200

RECOVERY CAPACITY

Program Partner	Dedicated Recovery Capacity Strand Ranch (AF)	Dedicated Recovery Capacity Stockdale West (AF)	Dedicated Recovery Capacity Leased Storage Account (AF)	Kern Water Bank Recovery Capacity (AF)
Total Capacity	17,500	11,250	-	1,520
BVWSD	6,667	-	-	-
DRWD	-	-	-	-
AVEK	-	3,333	-	-
IRWD	10,833	7,084	-	1,520
Total Dedicated	17,500	10,417	-	1,520
Total Remaining	-	833	-	-

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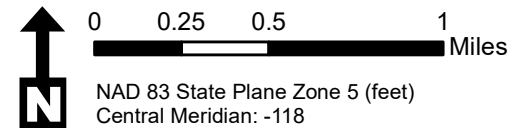
**Location Map:
IRWD Water Banking Projects
Wells and Turnin Pipelines**



MAP FEATURES

- Extraction Well
- Extraction Well
- Well Discharge Pipelines
- Stockdale East
- Stockdale West
- Strand Ranch

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



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Exhibit "H"

Rosedale Highway



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

MAP FEATURES

- ▲ Turnouts
- Stockdale West
- Strand Ranch

Existing Siphon
50 CFS Capacity
From Strand

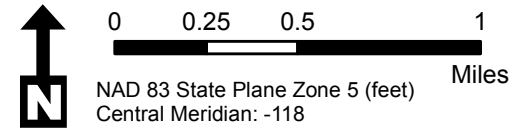
Stockdale Highway

Stockdale West
Turnout
100 CFS Capacity

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

Cross Valley Canal

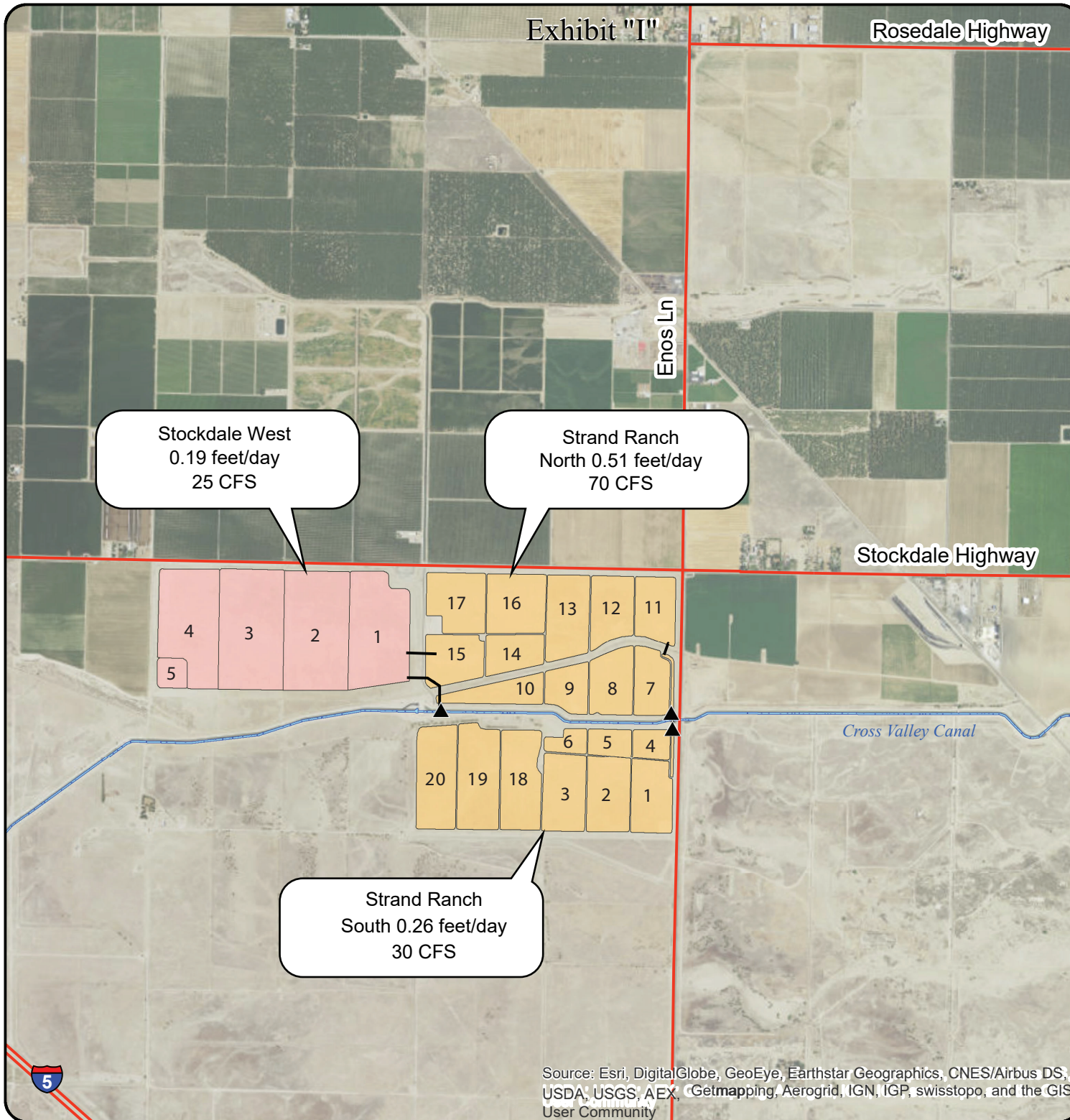
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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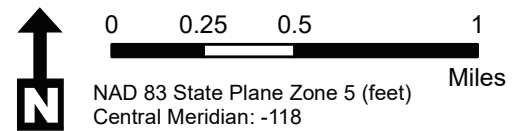
Location Map: IRWD Water Banking Projects Recharge Rates



MAP FEATURES

- ▲ Turnouts
- Stockdale West
- Strand Ranch

This figure shows the location of recharge basins and their associated recharge rates as of July 14, 2023.



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

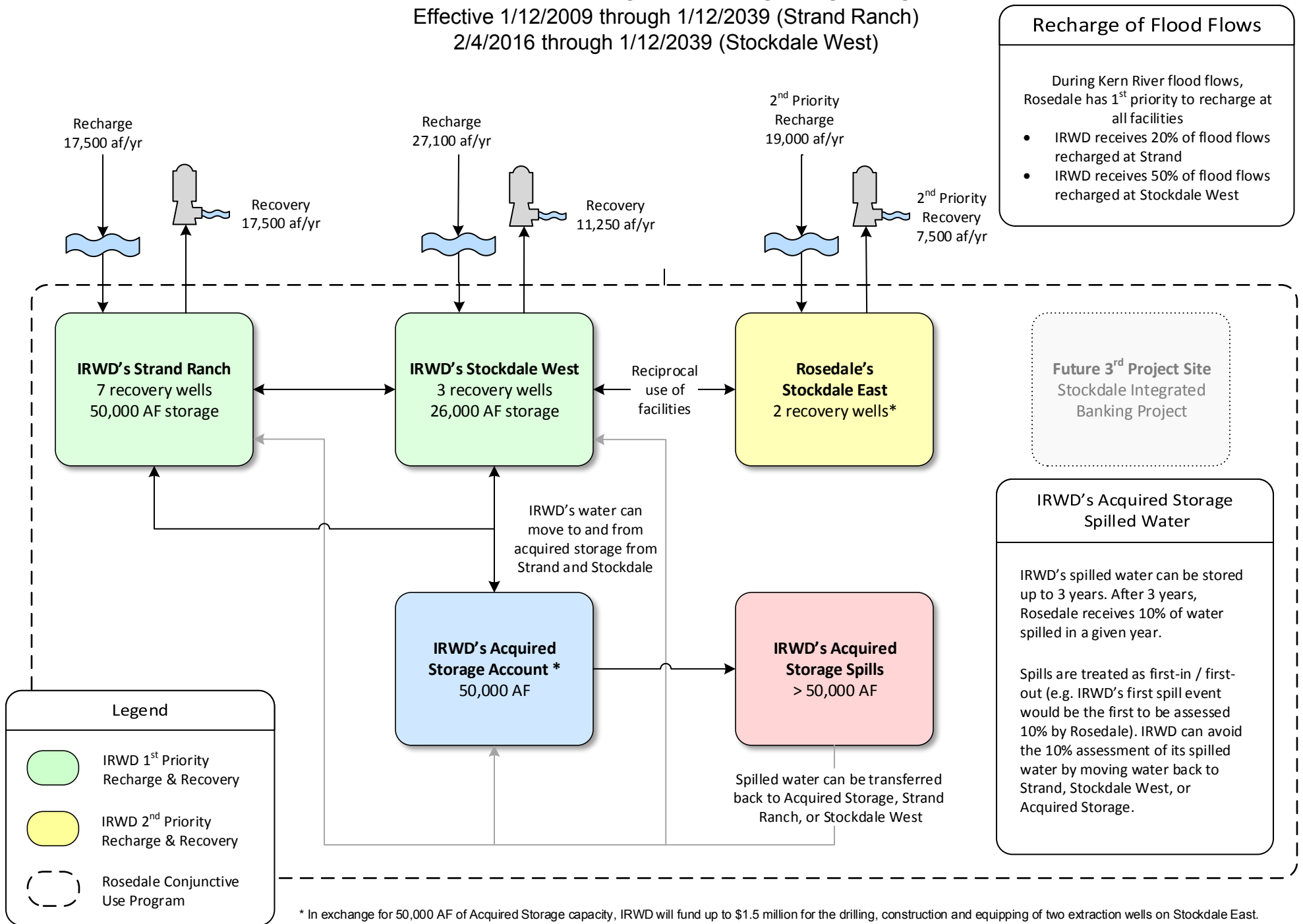
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Exhibit "J"

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)



* In exchange for 50,000 AF of Acquired Storage capacity, IRWD will fund up to \$1.5 million for the drilling, construction and equipping of two extraction wells on Stockdale East.

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Exhibit "K"

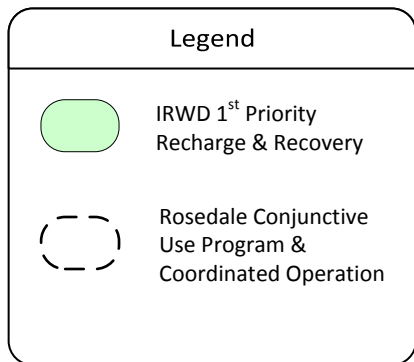
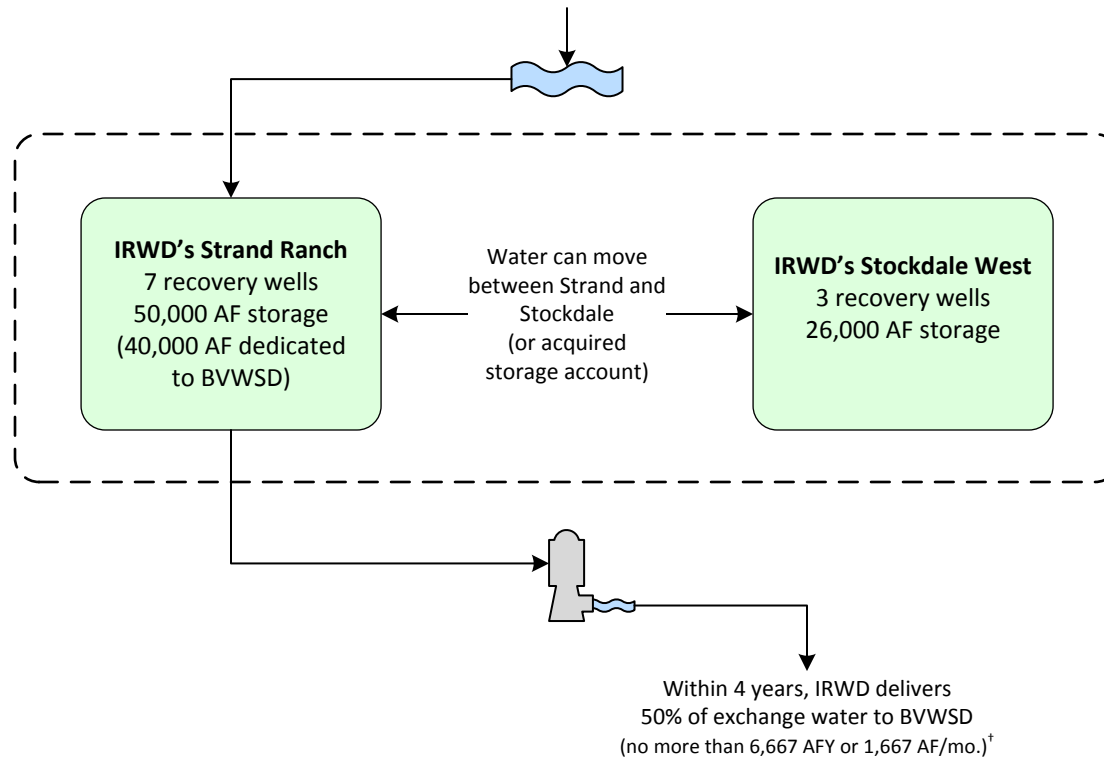
Buena Vista Water Storage District Long Term Water Exchange Program

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

BVWSD delivers non-SWP water to Strand Ranch

(IRWD receives 50%)

(Up to 17,500 AFY or 4,375 AF/mo.)

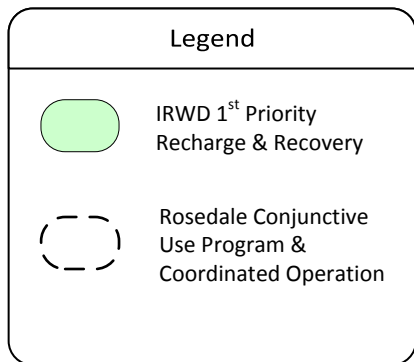
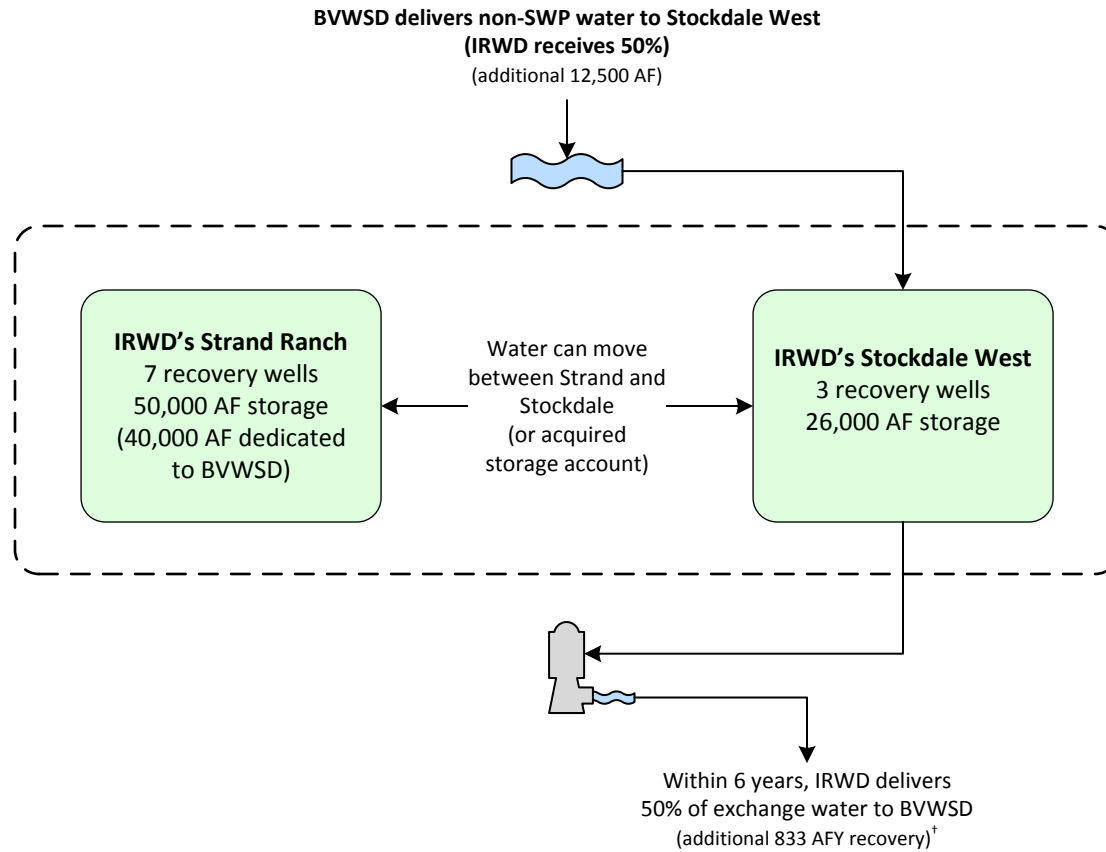


†IRWD shall remit one-half of the exchanged supply less one-half of reasonable losses back to BV no later than December 31st of the 4th year following the associated recharge event. IRWD pays for recovery of water returned to BV. Water to be remitted back to BV may remain in storage at Strand Ranch beyond 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%

Buena Vista Water Storage District One-Year Program to Augment Recharge Using Stockdale West Recharge Facilities

Effective 4/1/2017 through 3/30/2018



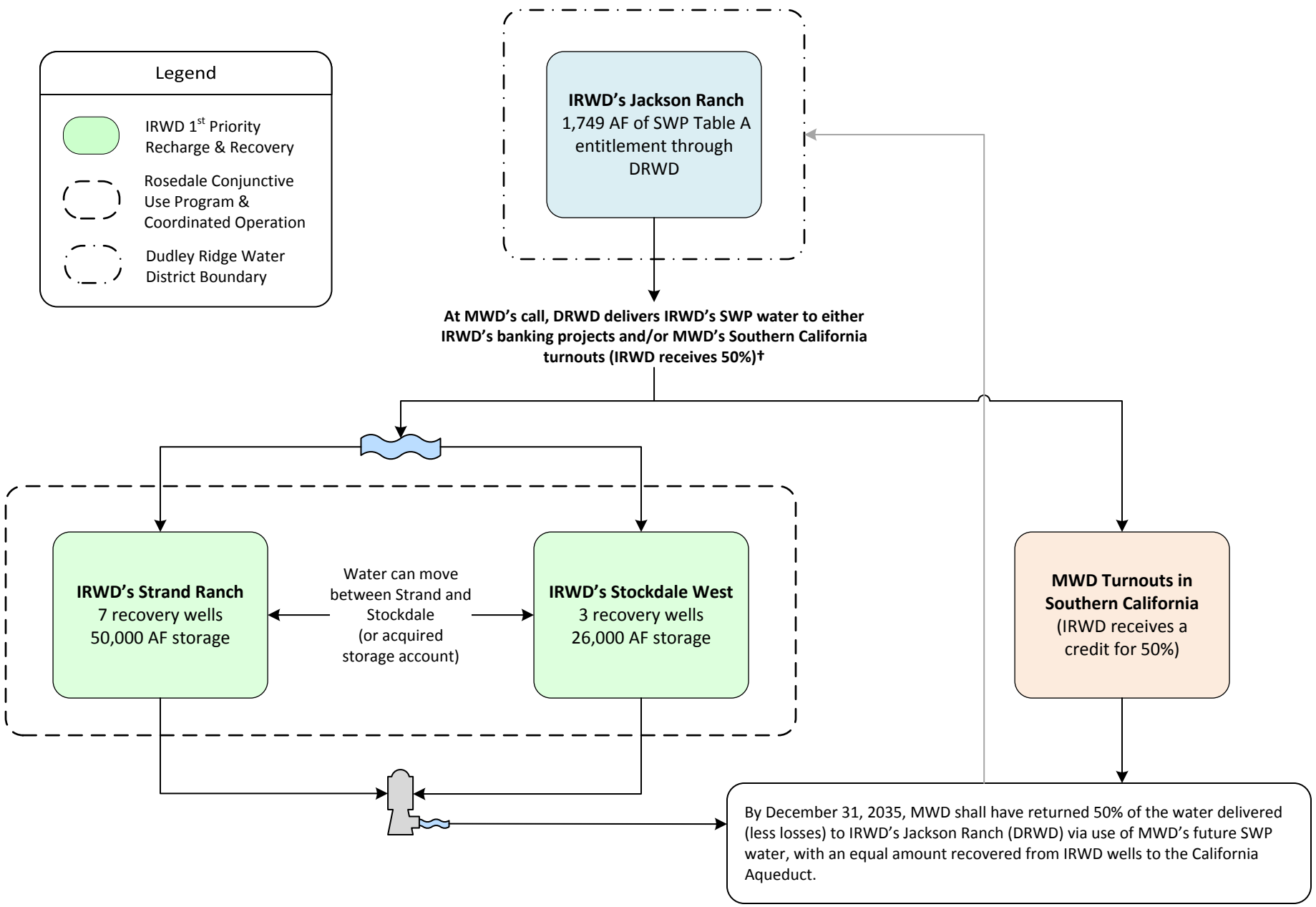
†IRWD shall remit one-half of the exchanged supply less one-half of reasonable losses back to BV no later than December 31st of the 6th year following the associated recharge event. IRWD pays for recovery of water returned to BV. Water to be remitted back to BV may remain in storage at Strand Ranch beyond the 6th 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	50%	50%
6	50%	50%
7	75%	25%
8	100%	0%
9	100%	0%

Exhibit "L"

Dudley Ridge Water District (DRWD) Unbalanced Exchange Program

Up to 12,240 AF delivered from 6/7/2018 through 12/31/2027



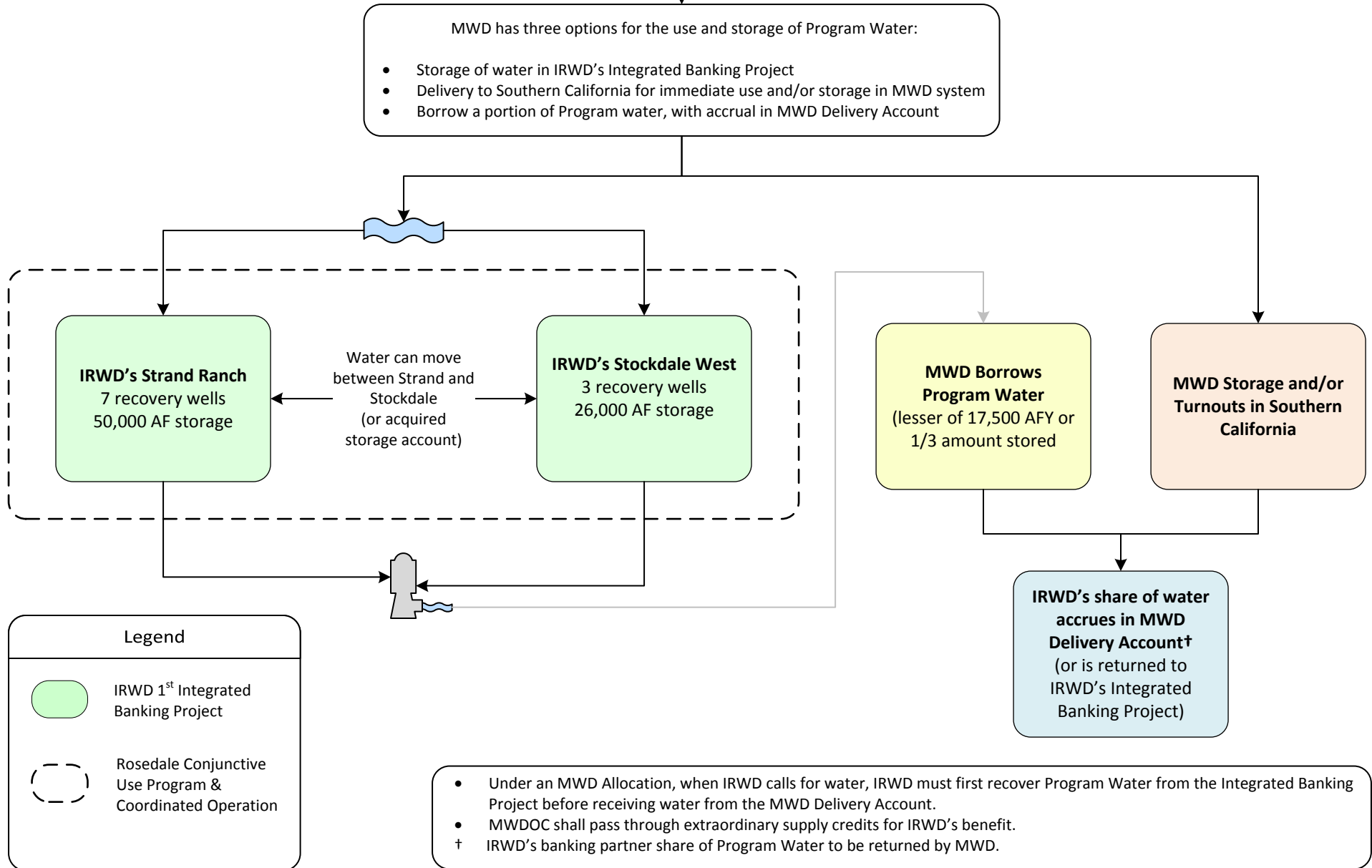
†Consistent with IRWD-MWD coordinated operating agreement.

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Exhibit "M"

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

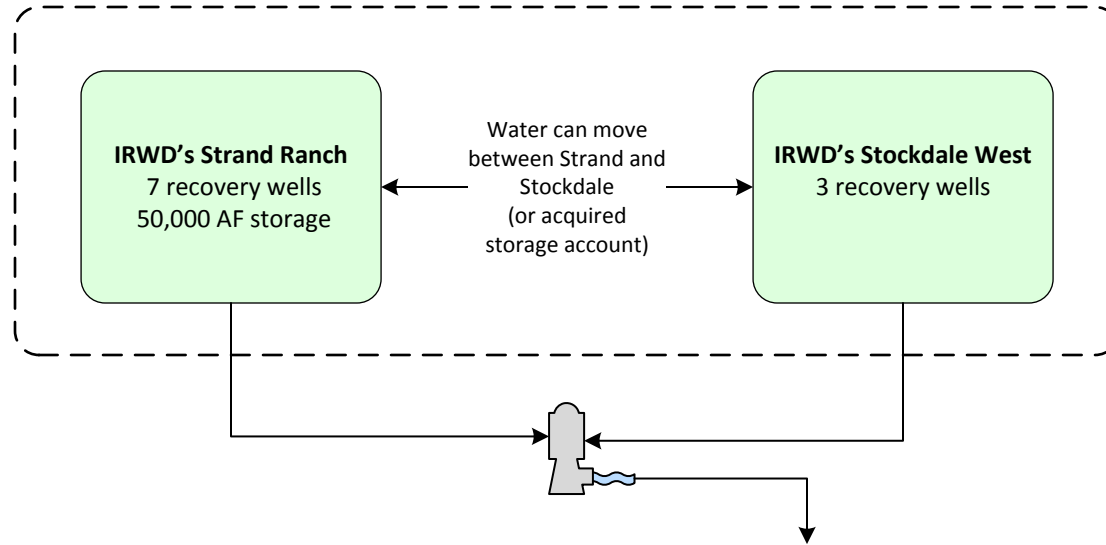
With MWD's consent, IRWD secures SWP water (Program Water) through exchanges with IRWD Banking Partners for use as extraordinary supply under MWD Water Supply Allocation Plan



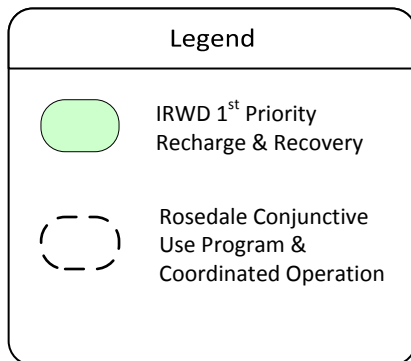
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Exhibit "N"

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



IRWD recovers its share of non-SWP water from its Integrated Banking Projects for use as extraordinary supply under a declared MWD Water Supply Allocation. MWD will coordinate the conveyance and delivery of recovered water to be used within IRWD's Service Area. Delivery can also occur through an operational exchange.*



*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.

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Exhibit "O"

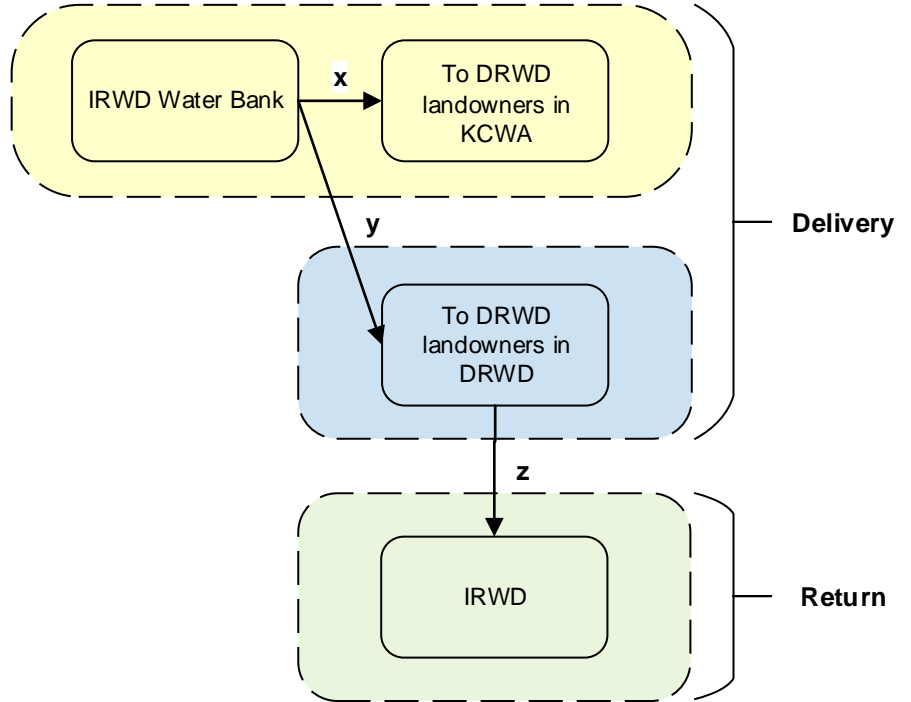
Dudley Ridge Water District Long Term 1-for-1 Water Exchange Program Effective 5/31/2017 through 11/4/2035

Scenario A

(Per Sections 2, 3, 4.1.1, and 4.1.3)

x= Non-Project Water required to stay in Kern County
 y= Non-Project Water allowed to leave Kern County
 z= DRWD Table A Water equal to x+y less applicable losses, if any

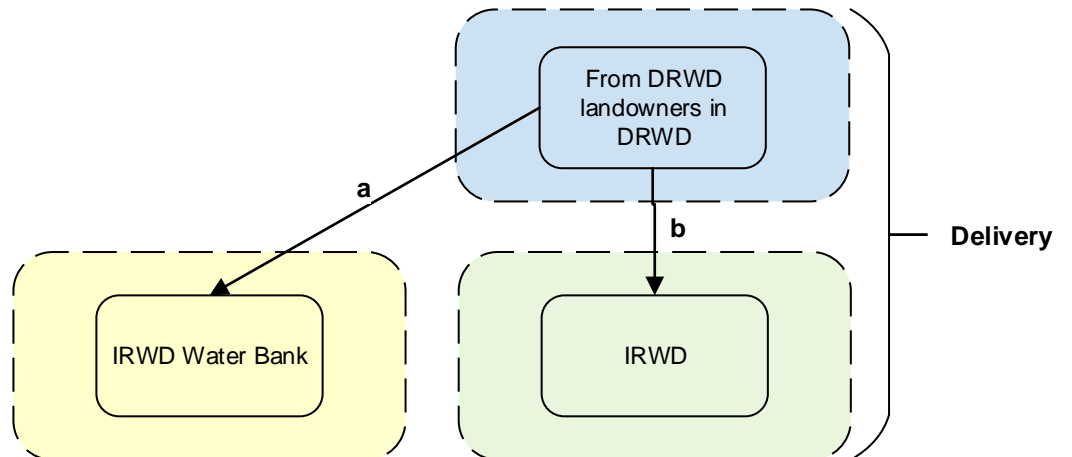
Per Section 4.1.3, z can be delivered to IRWD via in-ground transfer to IRWD, SWP delivery to IRWD banking facilities, or SWP delivery to MWDSC



Scenario B

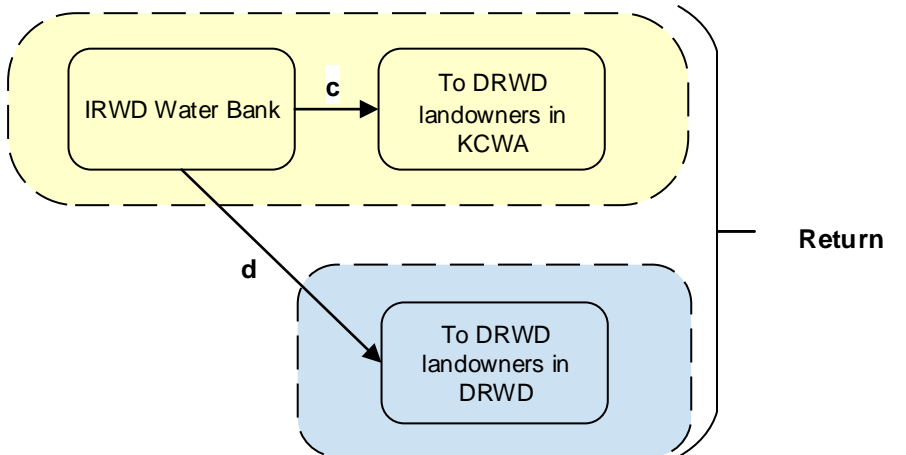
(Per Sections 2, 3, and 4.1.2)

$a + b = c + d$
 (less applicable losses, if any)



Legend

- KCWA Service Area
- DRWD Service Area
- IRWD Service Area



†The cost of water exchanged between IRWD and DRWD will be equalized

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Exhibit "P"

TABLE 6
IRWD Water Banking Program Costs of Water Summary
 July 20, 2023

Program Partner	Time Period	Water Type	IRWD Amount (AF)	Variable costs ² (\$/AF) (A)	Fixed Cost Component ³ (\$/AF) (B)	Fixed & Variable (\$/AF) (C)	Capital Component ⁴ (\$/AF) (D)	Cost of Water (\$/AF) (E)	Estimated Recovery of Water ⁵ (\$/AF) (F)	2023 MWD Tier 1 Untreated Rate + SAC Surcharge ⁶ (\$/AF) (G)	Cost of Water in IRWD Service Area (\$/AF) (H)
						<i>A+B</i>		<i>C+D</i>			<i>E+F+G</i>
Buena Vista	2010-2015	Kern River	12,832	\$ 75.98	\$ 48.36	\$124.34	\$ 190.00	\$ 314.34	\$ 120.00	\$ 855.00	\$ 1,289.34
Buena Vista ¹	2017-2021	Kern River	11,256	\$ 159.16	\$ 48.36	\$207.52	\$ 190.00	\$ 397.52	\$ 120.00	\$ 855.00	\$ 1,372.52
AVEK	2012-2014	SWP Table A	2,229	\$ 11.70	\$ 48.36	\$ 60.06	\$ 190.00	\$ 250.06	\$ 120.00	\$ 855.00	\$ 1,225.06
AVEK ⁷	2012-2014	SWP Table A	108	\$ 11.70	\$ 48.36	\$ 60.06	\$ 190.00	\$ 250.06	\$ -	\$ 855.00	\$ 1,105.06
Carpinteria	2010-2015	SWP Table A	874	\$ 27.04	\$ 48.36	\$ 75.40	\$ 190.00	\$ 265.40	\$ 120.00	\$ 855.00	\$ 1,240.40
Carpinteria ⁷	2010-2015	SWP Table A	31	\$ 27.04	\$ 48.36	\$ 75.40	\$ 190.00	\$ 265.40	\$ -	\$ 855.00	\$ 1,120.40
Central Coast ⁷	2017-2021	SWP Table A	556	\$ 30.34	\$ 48.36	\$ 78.70	\$ 190.00	\$ 268.70	\$ -	\$ 855.00	\$ 1,123.70
DRWD ⁷	2014-2021	SWP Table A /Article 21	4,452	\$ 362.67	\$ 48.36	\$411.03	\$ 190.00	\$ 601.03	\$ -	\$ 855.00	\$ 1,456.03
Total			32,338								

¹ Water purchased in 2019 includes commodity charge of \$110/AF

² Variable Costs include recharge variable operating costs (\$5.00/AF), Rosedale administration fees (\$3.00/AF), CVC pumping (\$9.00/AF), operating and stand-by fees (\$3.50/AF), and KCWA fees (\$5.00/AF) plus \$3,000 per transaction request. IRWD pays Buena Vista recovery costs. (Net of partner payments to IRWD for their share of water)

³ Fixed costs include IRWD share of fixed operating costs (\$25.00/AF), annual property taxes (\$88,000), PG&E standby costs (up to \$5,000/year) GSP fees (\$8,450/year) and CVC expansion costs (\$28,000/year)

⁴ Capital component does not include land costs. Add \$40/AF to include water banking land purchase costs.

⁵ Increased PG&E costs for recovering water.

⁶ Assumes IRWD would take delivery as extraordinary supply through Irvine Lake to the Baker Water Treatment Plant.

⁷ No recovery costs for DRWD water delivered in 2014-2016 and water recovered in 2022 as part of MWD borrowing.

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Exhibit “Q”

Summary of IRWD’s Coordinated Operating, Water Storage, Exchange and Delivery Agreement with Metropolitan Water District and Municipal Water District of Orange County (MWDOC)

Agreement approved (unanimously) by the IRWD Board on November 22, 2010;
Agreement Term: April 21, 2011 to November 4, 2035

Summary of Benefits to IRWD:

1. IRWD benefits from all State Water Project (SWP) water IRWD secures; Metropolitan’s borrowing of this water is temporary.
2. On behalf of IRWD, Metropolitan uses its SWP exchange and conveyance capacities to move IRWD’s water for banking.
3. IRWD can “store” water in Metropolitan’s system as a credit, freeing up space in IRWD’s Water Bank with the water stored closer to the IRWD service area.
4. IRWD does not incur conveyance or evaporation losses on its water that is conveyed in Metropolitan’s system and stored in Metropolitan’s reservoirs.
5. IRWD avoids groundwater recovery (pumping) costs when Metropolitan issues a credit for IRWD’s SWP supplies in Southern California (currently \$122/AF¹).
6. IRWD pays Metropolitan’s melded system power rate – currently \$167/AF, not DWR’s current power costs of \$395/AF² (\$228/AF savings).
7. Deliveries are on-demand to IRWD at its service connections in Orange County, which are not subject to lower priorities for wheeling.
8. Metropolitan pays all SWP costs, including variable OMP&R supply costs, associated with SWP water secured by IRWD³.
9. IRWD pays Metropolitan’s Full-Service Tier-1 Untreated Rate, which is currently \$799/AF, for deliveries at its service connections allowing IRWD to avoid higher Metropolitan wheeling charges currently estimated at \$856/AF⁴.
10. IRWD only pays once for supply at the current Tier-1 Supply Rate of \$243/AF.
11. Deliveries to IRWD’s service area qualify as Extraordinary Supply during a Water Supply Allocation, allowing IRWD to avoid Metropolitan’s Allocation Surcharge of between \$1,480/AF and \$2,960/AF.
12. IRWD increases local water supply reliability for its ratepayers.

¹ Estimated from IRWD’s current groundwater pumping costs and Water Bank related operations costs. Metropolitan has the option to extinguish credits by returning water to the IRWD Water Bank. In recent borrowing letter agreement, Metropolitan agreed to waive its ability to return borrowed water to the Water Bank.

² Melded system and actual power costs were taken from Metropolitan’s April 2022 Bi-Annual Budget Report and 2022 Cost of Service Study.

³ Does not include fixed costs paid by IRWD’s unbalanced exchange partners. In 2014 and 2017, Metropolitan’s SWP costs were \$1,097/AF and \$359/AF, respectively.

⁴ The Coordinated Agreement requires IRWD to pay Metropolitan its Full-Service Tier 1 Rate for exchange deliveries at IRWD service connections. IRWD is expected to take delivery of such deliveries to the Baker Water Treatment Plant. Metropolitan’s current Tier-1 Untreated Rate = \$799/AF. Current Metropolitan wheeling charges of \$856/AF are estimated using Metropolitan’s current System Access Rate (\$389/AF), estimated demand management charge (\$72/AF), and actual power costs (\$395/AF).

Summary of Benefits to MWD:

1. Metropolitan maintains control of all SWP supplies entering its service area as required by its SWP Contract with California Department of Water Resources (DWR).
2. Metropolitan's investments in the SWP are protected by not causing a reduction in revenue received by Metropolitan for payment of SWP fixed charge obligations.
3. Metropolitan can temporarily borrow SWP water secured by IRWD.
4. Metropolitan is assured that IRWD is not competing for water supplies.
5. Increased regional water supply reliability.

Exhibit "R"

IRWD 2023 Recharge Operations

July 20, 2023

Actual and Forecasted Amounts:

Month	Central Coast (AF)	IRWD Table A (AF)	BV (AF)	DRWD 1:1 (AF)	IRWD Article 21 (AF)	AVEK (AF)	Total (AF)	Status	Expected Recharge (AF)	Expected Recharge Rate (CFS)
March	-	1,312	-	-	-	-	1,312	prelim	1,312	200
April	-	437	5,083	5,088	-	-	10,608	prelim	10,608	178
May	-	-	6,775	1,923	-	-	8,698	prelim	8,698	141
June	-	-	5,286	591	-	-	5,877	prelim	5,877	98.8
West Enos (June)	-	-	356	-	-	-	356	prelim	356	7.8
	-	1,749	17,500	7,602	-	-	26,851		26,851	
July	-	-	922	922	-	-	1,845		1,845	30
West Enos (July)	-	-	278	278	-	-	555		555	14
	-	1,749	18,700	8,802	-	-	29,251		2,400	44
August	450	-	-	-	-	1,395	1,845		1,845	30
West Enos (Aug)	-	-	-	-	-	1,107	1,107		1,107	18
	450	1,749	18,700	8,802	-	2,501	32,203		2,951	48
September	-	-	-	-	-	1,785	1,785		1,785	30
West Enos (Sept)	-	-	-	-	-	1,071	1,071		1,071	18
	450	1,749	18,700	8,802	-	5,358	35,059		2,856	48
October	-	-	-	-	-	1,845	1,845		1,845	30
West Enos (Oct)	-	-	-	-	-	1,107	1,107		1,107	18
	450	1,749	18,700	8,802	-	8,309	38,010		2,951	48
November	-	-	635	-	530	620	1,785		1,785	30
West Enos (Nov)	-	-	-	-	-	1,071	1,071		1,071	18
	450	1,749	19,335	8,802	530	10,000	40,866		2,856	48
December	-	-	1,558	-	287	-	1,845		1,845	30
West Enos (Dec)	-	-	1,107	-	-	-	1,107		1,107	18
	450	1,749	22,000	8,802	817	10,000	43,818		2,951	48
Recharge goal	450	1,749	17,500	10,000	8,000	10,000	47,699			
Additional BV			4,500							

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