



Irvine Ranch
WATER DISTRICT

WATER BANKING EXTRAORDINARY SUPPLY NEEDS

MARCH 19, 2020

SUPPLY RELIABILITY PROGRAMS COMMITTEE

AGENDA

- IRWD Water Banking, Transfers, and Wheeling Policy
- Overview of Extraordinary Supply
- Description of previous and new needs analyses
- Scenarios evaluated
- IRWD extraordinary supply and storage needs
- Strand and Stockdale cannot meet all IRWD needs
- Benefits of Kern Fan Groundwater Storage Project
- Capacities that might be available for partnerships

WATER BANKING, TRANSFERS, AND WHEELING POLICY

- Need for supplemental supplies and storage facilities for use during droughts and major supply interruptions (e.g., Delta Levee failures)
- Secure low cost and diverse water supplies to benefit our customers
- Develop partnerships for mutually beneficial exchanges
- Long term equity ownership of facilities
- Minimize third party impacts
- Share water supply reliability benefits after meeting IRWD needs

WHAT IS EXTRAORDINARY SUPPLY?

- During MWD Water Supply Allocations, member agencies are allocated imported water
- MWD member agencies (such as MWDOC) apply allocations to retail agencies
- Extraordinary supply provides protection against reduced allocations and penalties
 - Cannot be a base loaded supply;
 - Cannot be from an MWD source;
 - Can only be used during MWD allocations or emergencies;
 - Improves water supply reliability; and
 - Can be moved between qualified extraordinary supply programs.

PREVIOUS WATER BANKING NEEDS ANALYSIS

- Previous analysis capacity requirements (February 2019):
 - 100,000 acre-feet of contingency storage
 - 33,000 acre-feet per year of recovery
- What was analysis based on?
 - Imported water needs at 2035 buildout
 - With and without Recycled Water Penalty and Syphon Reservoir Project
 - Existing and future groundwater banking capacities
 - Relied on Water Resources Master Plan and 2017 Water Supply Reliability Evaluation

INFORMATION CONSIDERED IN NEW ANALYSIS

- Water Resources Master Plan
- 2017 Water Supply Reliability Evaluation
- 2018 Groundwater Work Plan
- 2018 Water Shortage Contingency Plan
- Non-potable Mass Balance Model
- Metropolitan/MWDOC WSAP and allocation formulas

ASSUMPTIONS ADDRESSED IN NEW ANALYSIS

- Evaluates worst case conditions:
 - Extended multi-year drought
 - Major earthquake with Delta levee failures
 - Stressed Orange County Groundwater Basin with final GWRS expansion
- Underlying assumptions that apply to all scenarios:
 - 2035 buildout water demands
 - 10% MWD allocation
 - 60 % Basin Production Percentage (BPP)
 - Existing IRWD share of Water Bank storage = 88,000 acre-feet
 - Strand, Stockdale and leased storage
 - Excludes capacity allocated to exchange partners

SCENARIOS ADDRESSED IN NEW ANALYSIS

- Scenarios developed to reflect Board discretion in implementing IRWD's Water Shortage Contingency Plan
- Three Water Shortage Contingency Plan scenarios analyzed:
 1. 10% demand reduction – Level 1
 2. 30% demand reduction – Level 3
 3. 50% demand reduction – Level 5

IRWD EXTRAORDINARY SUPPLY AND STORAGE NEEDS

Description	Imported Treated Adjusted Demands (AF)	Imported Untreated Demands (AF)‡	Total Imported Demands (AF)	MWD Allocation (AF)	Annual IRWD Extraordinary Supply Requirement (AFY)	Water Bank Contingency Storage Requirement (Rounded up to Nearest 5,000 AF)
IRWD Board Declares Level 1 Shortage (10% Demand Reduction)						
No RW Penalty and With Syphon	21,983	7,000	28,983	3,193	25,790	80,000
No RW Penalty and Without Syphon	21,983	8,510	30,493	3,380	27,113	85,000
With RW Penalty and With Syphon	32,315	7,000	39,315	4,525	34,790	105,000
With RW Penalty and Without Syphon	32,315	8,510	40,825	4,731	36,094	110,000
IRWD Board Declares Level 3 Shortage (30% Demand Reduction)						
No RW Penalty and With Syphon	17,098	7,000	24,098	2,718	21,380	65,000
No RW Penalty and Without Syphon	17,098	8,510	25,608	2,914	22,694	70,000
With RW Penalty and With Syphon	25,134	7,000	32,134	3,809	28,325	85,000
With RW Penalty and Without Syphon	25,134	8,510	33,644	4,027	29,617	90,000
IRWD Board Declares Level 5 Shortage (50% Demand Reduction)						
No RW Penalty and With Syphon	12,213	7,000	19,213	2,245	16,968	55,000
No RW Penalty and Without Syphon	12,213	8,510	20,723	2,456	18,267	55,000
With RW Penalty and With Syphon	17,953	7,000	24,953	3,085	21,868	70,000
With RW Penalty and Without Syphon	17,953	8,510	26,463	3,323	23,140	70,000

STRAND AND STOCKDALE RECOVERY CAPACITY IS LIMITING

Description	Annual IRWD Extraordinary Supply Requirement (Rounded) (AFY)	IRWD Share of Strand and Stockdale Storage Capacity (AF)	IRWD Share of Strand and Stockdale Recovery Capacity (AF)	Annual Extraordinary Supply from Strand and Stockdale (AFY)	Additional Annual Amount of Extraordinary Supply Required (Rounded) (AFY)
IRWD Board Declares Level 1 Shortage (10% Demand Reduction)					
No RW Penalty and With Syphon	26,000	88,000	17,900	17,900	8,000
No RW Penalty and Without Syphon	27,000	88,000	17,900	17,900	9,000
With RW Penalty and With Syphon	35,000	88,000	17,900	17,900	17,000
With RW Penalty and Without Syphon	36,000	88,000	17,900	17,900	18,000
IRWD Board Declares Level 3 Shortage (30% Demand Reduction)					
No RW Penalty and With Syphon	21,500	88,000	17,900	17,900	3,500
No RW Penalty and Without Syphon	22,500	88,000	17,900	17,900	5,000
With RW Penalty and With Syphon	28,500	88,000	17,900	17,900	10,500
With RW Penalty and Without Syphon	29,500	88,000	17,900	17,900	12,000
IRWD Board Declares Level 5 Shortage (50% Demand Reduction)					
No RW Penalty and With Syphon	17,000	88,000	17,900	17,000	0
No RW Penalty and Without Syphon	18,500	88,000	17,900	17,900	500
With RW Penalty and With Syphon	22,000	88,000	17,900	17,900	4,000
With RW Penalty and Without Syphon	23,000	88,000	17,900	17,900	5,000

BENEFITS OF KERN FAN PROJECT

Description	Additional Annual Amount of Extraordinary Supply Required (Rounded) (AFY)	Total Kern Fan Storage Dedicated to IRWD (AF)	Kern Fan Recovery Capacity Dedicated to IRWD (AFY)	Annual Extraordinary Supply from Kern Fan Project (AFY)	Total Kern Fan Storage Needed by IRWD (AF)	Unfulfilled Annual Extraordinary Supply Requirement (Rounded) (AFY)
IRWD Board Declares Level 1 Shortage (10% Demand Reduction)						
No RW Penalty and With Syphon	8,000	37,500	21,700	8,000	24,000	0
No RW Penalty and Without Syphon	9,000	37,500	21,700	9,000	27,000	0
With RW Penalty and With Syphon	17,000	37,500	21,700	12,500	37,500	4,500
With RW Penalty and Without Syphon	18,000	37,500	21,700	12,500	37,500	5,500
IRWD Board Declares Level 3 Shortage (30% Demand Reduction)						
No RW Penalty and With Syphon	3,500	37,500	21,700	3,500	10,500	0
No RW Penalty and Without Syphon	5,000	37,500	21,700	5,000	15,000	0
With RW Penalty and With Syphon	10,500	37,500	21,700	10,500	31,500	0
With RW Penalty and Without Syphon	12,000	37,500	21,700	12,000	36,000	0
IRWD Board Declares Level 5 Shortage (50% Demand Reduction)						
No RW Penalty and With Syphon	0	37,500	21,700	0	0	0
No RW Penalty and Without Syphon	500	37,500	21,700	500	1,500	0
With RW Penalty and With Syphon	4,000	37,500	21,700	4,000	12,000	0
With RW Penalty and Without Syphon	5,000	37,500	21,700	5,000	15,000	0

REMAINING CAPACITIES AVAILABLE FOR PARTNERS

Description	Recovery Capacity Available in Strand and Stockdale (AFY)	Storage Capacity Available in Strand and Stockdale (AF)	Recovery Capacity Available in Kern Fan Project (AFY)	Storage Capacity Available in Kern Fan Project (Rounded) (AF)	Comments
IRWD Board Declares Level 1 Shortage (10% Demand Reduction)					
No RW Penalty and With Syphon	None	N/A	14,000	14,000	KFP Necessary
No RW Penalty and Without Syphon	None	N/A	12,500	10,000	KFP Necessary
With RW Penalty and With Syphon	None	N/A	0	0	KFP Unable to Meet all Req.
With RW Penalty and Without Syphon	None	N/A	0	0	KFP Unable to Meet all Req.
IRWD Board Declares Level 3 Shortage (30% Demand Reduction)					
No RW Penalty and With Syphon	None	N/A	18,000	27,000	KFP Necessary
No RW Penalty and Without Syphon	None	N/A	17,000	23,000	KFP Necessary
With RW Penalty and With Syphon	None	N/A	11,000	6,000	KFP Necessary
With RW Penalty and Without Syphon	None	N/A	10,000	2,000	KFP Necessary
IRWD Board Declares Level 5 Shortage (50% Demand Reduction)					
No RW Penalty and With Syphon	932	2,795	21,700	38,000	Strand/Stockdale Meet Need
No RW Penalty and Without Syphon	None	N/A	21,000	36,000	KFP Necessary
With RW Penalty and With Syphon	None	N/A	18,000	26,000	KFP Necessary
With RW Penalty and Without Syphon	None	N/A	16,500	22,000	KFP Necessary

SUMMARY

- Board has the discretion to declare WSCP stage
- Implementation of various WSCP stages has a direct impact on:
 - Extraordinary supply needs of IRWD
 - Groundwater banking capacities available for partners
- Range of needs varies based on WSCP stage:
 - 55,000 – 110,000 acre-feet of storage
 - 17,000 – 36,000 acre-feet per year of recovery capacity
- Kern Fan Project essential in meeting needs



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QUESTIONS?
