SAN JOAQUIN RIVER RESTORATION PROGRAM

Water Management Technical Feedback Meeting

September 19, 2014
Visalia, CA

SAN JOAQUIN RIVER RESTORATION PROGRAM

Agenda Overview

- Comments on Recent Meeting Notes
- Water Supply Briefing
- Restoration Flows Releases
- Restoration Flow Guidelines
- Recapture / Recirculation
- Investment Strategy
- Part III
- Lecture Series: Recapture & Recirculation EIS
- Public Comment / Next Meeting Dates and Locations

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Comments on Meeting Notes

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Water Supply Briefing

SCCAO

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Friant Dam Operations

- Today at 1000 hours:
  - 1300 cfs to 1100 cfs
- September 22nd at 1000 hours:
  - 1100 cfs to 900 cfs
- Riparian base flows by September 30

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Restoration Flow Releases

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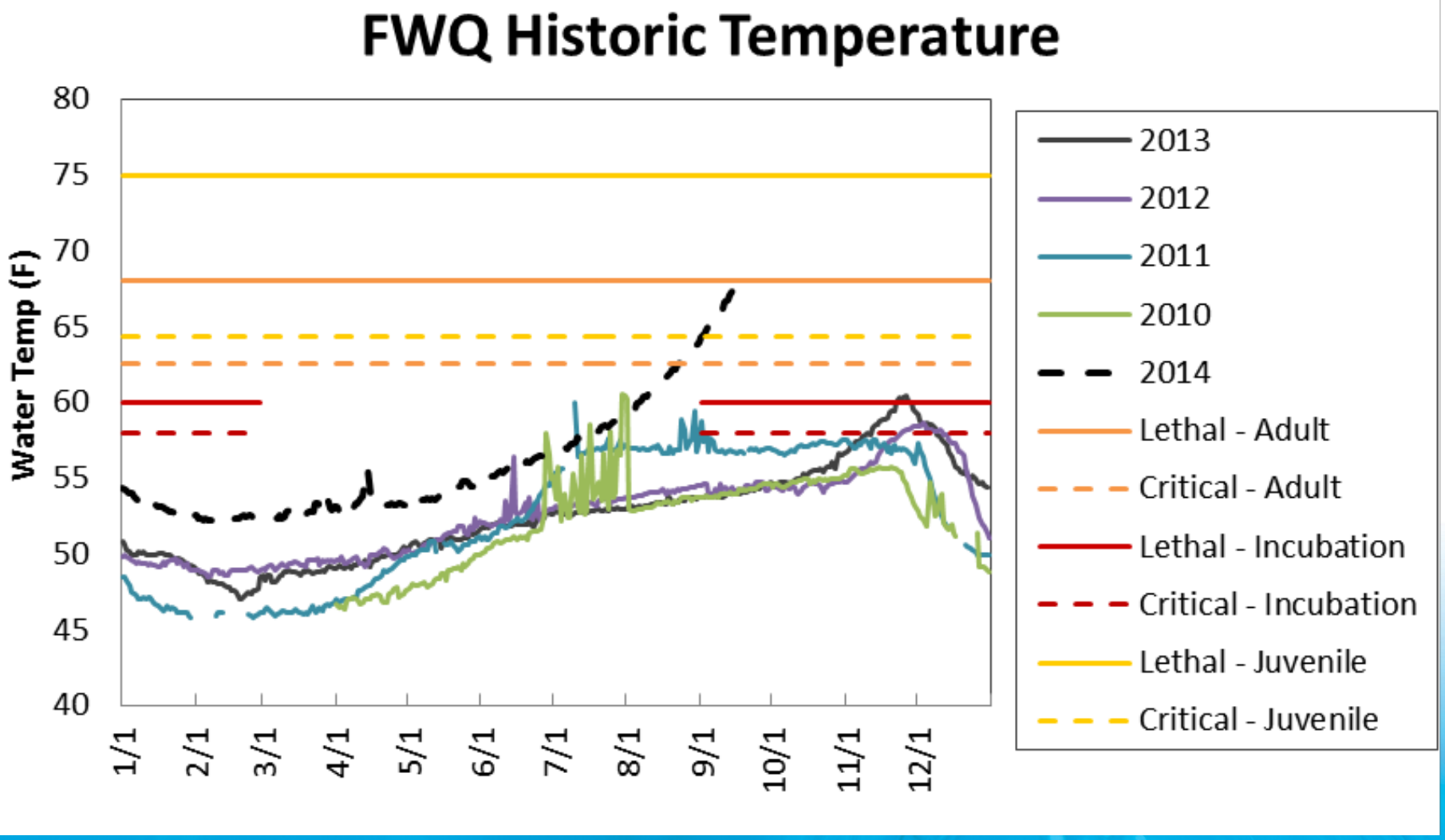
2014 Restoration Flows

- No Restoration Flows to date
- Fall Restoration Flows unlikely due to:
  - Curtailment Notice
  - Exchange Contractors
  - Public Health and Safety
  - Actual Conditions

Friant Release Water Temperature



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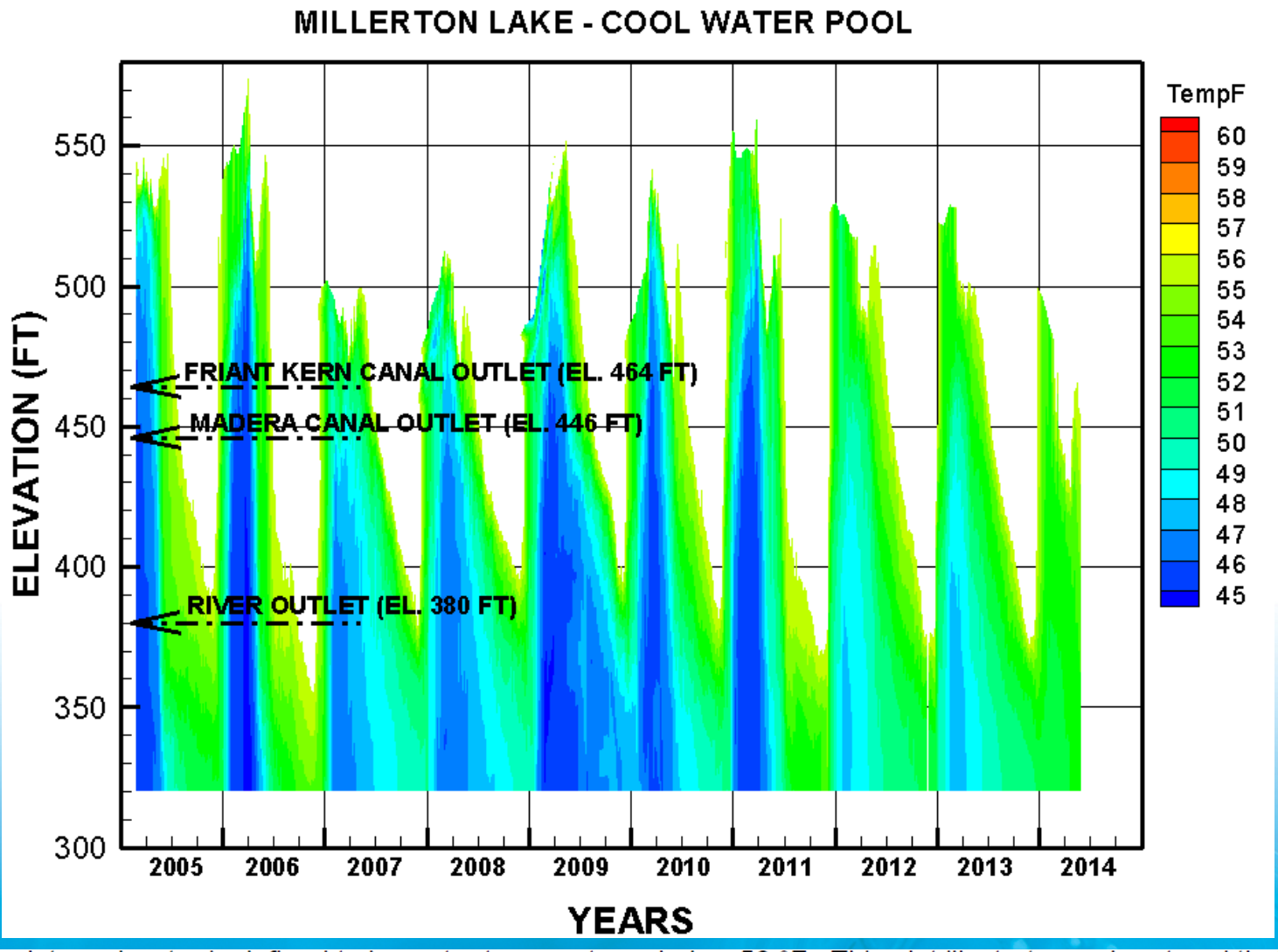
Reservoir Temperature Summary

- Current SJR release temperatures are much warmer than historic (2005 – 2013) September temperatures
  - FWQ: 10.6 – 13.4 ° F warmer
- Current Friant release temp trend is increasing
- Upstream temperatures are on the high side of historic
- Current upstream temperature trend is flat

Reservoir Temperatures – Cold Water Pool



Note: For this plot, cool water is defined to be water temperatures below 56 °F. This plot illustrates a clear trend that the cool water pool volume and temperature is greatly reduced in 2012, 2013, and 2014. With current drought conditions, May 2014 cool water pool temperatures are about 3.8°F warmer than in May 2013.

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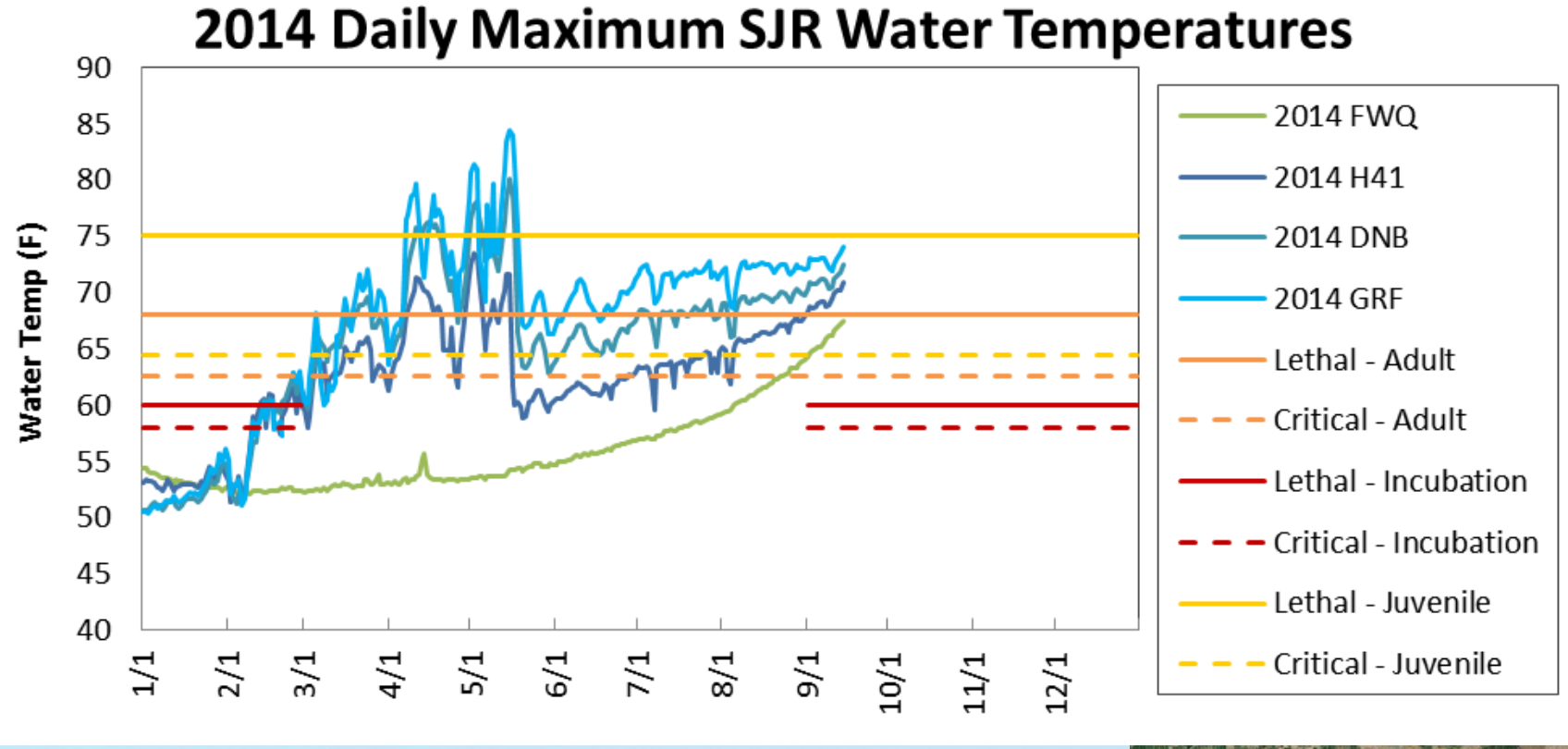
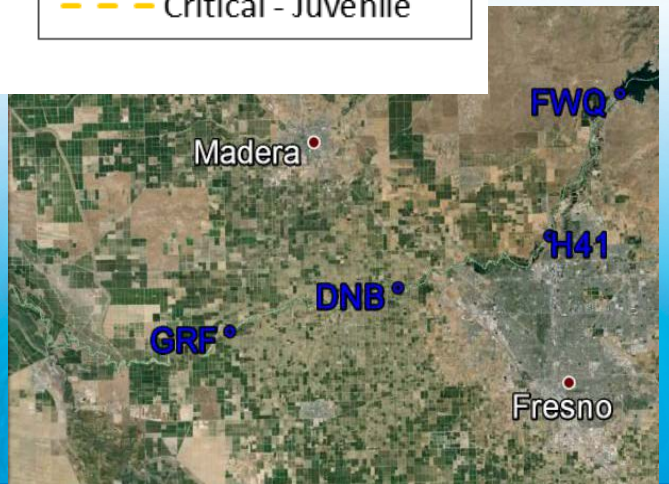
River Temperatures - 2014





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Conclusions

- Release temps will start decreasing in November
- May be above adult thresholds into November
- May be above spawning targets into December (depending on air temps)

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Restoration Flow Guidelines

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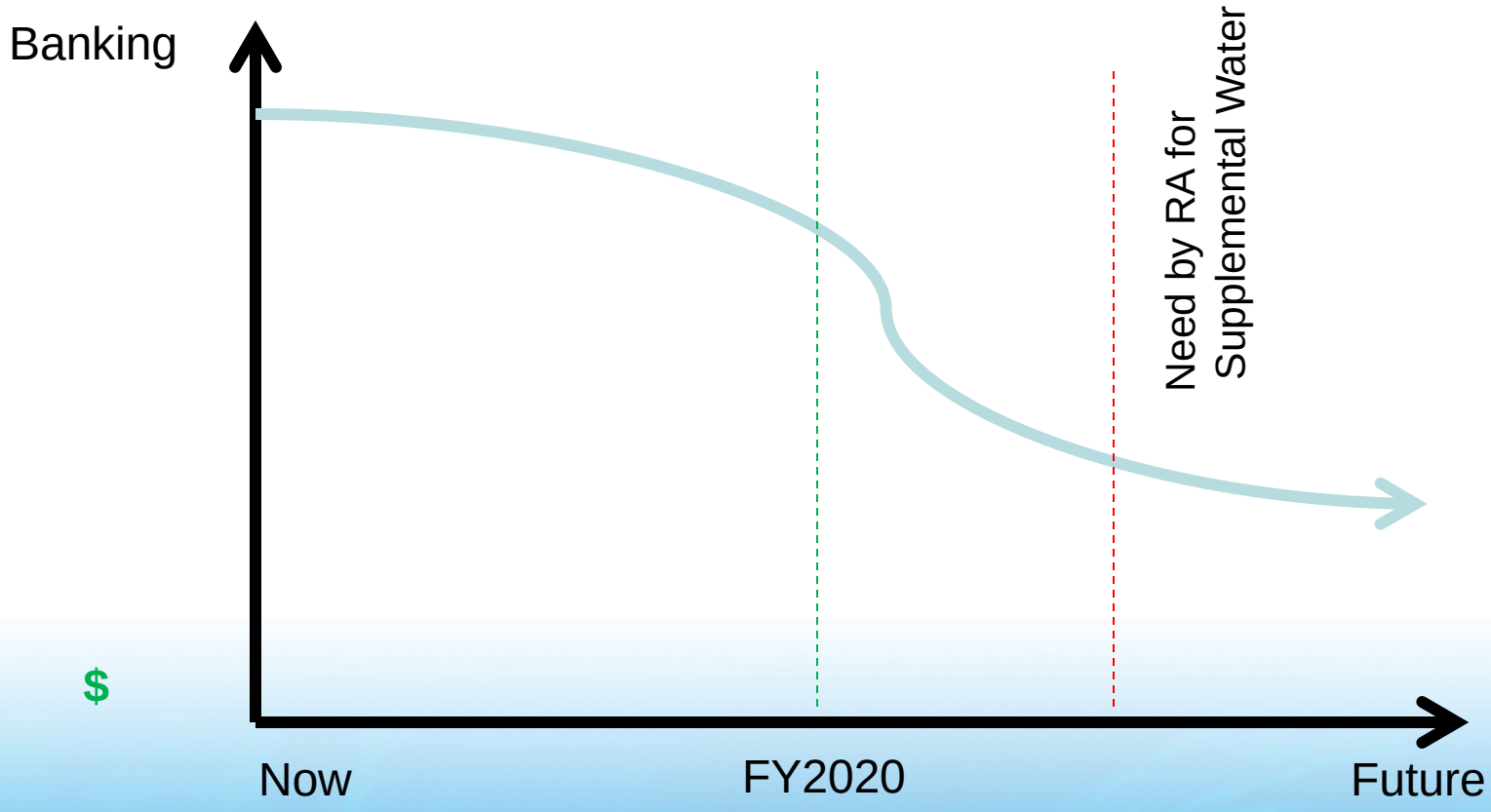
Restoration Flow Guidelines 2.0

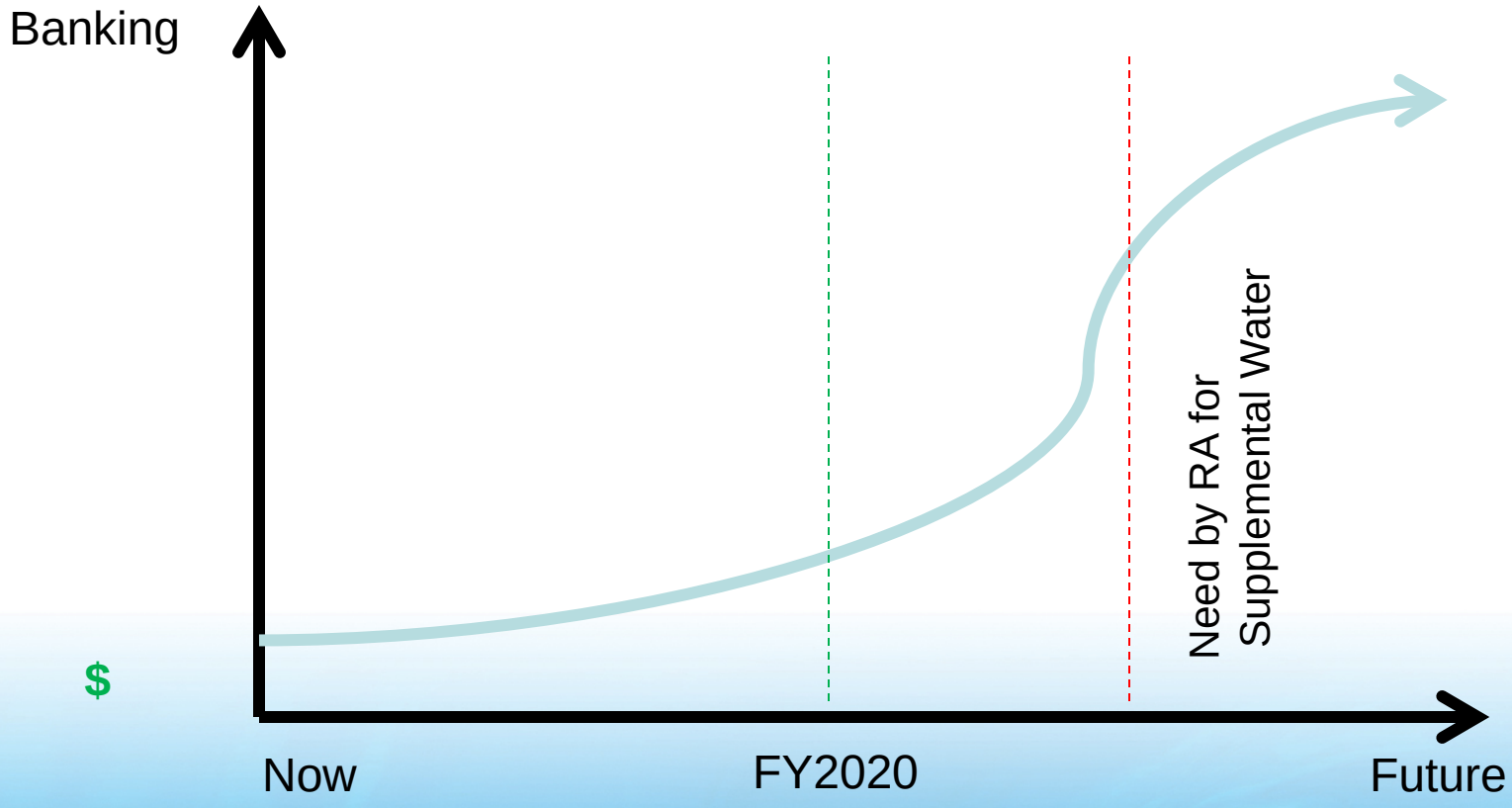
- Forecasting Restoration Flows, including tools for mitigating uncertainty.
- Gravelly Ford, minimum compliance point or flow target.
- Managing flood management releases to best meet riparian recruitment needs.

13(i) Management



Note: Not to scale. Conceptual only.

13(i) w/Instant Access to Revenue



Note: Not to scale. Conceptual only.

Recapture / Recirculation

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R&R Plan

- Recirculation Chapter drafted with Friant Contractor input
- Critical Path: Recapture Chapter and associated operations agreements
- Plan progress on hold due to resource needs for drought and current FWA lawsuit
- Resume work on recapture after litigation resolved

Unreleased Restoration Flows (URFs)

- February 2014, Settling Parties suspended Restoration Flows in response to drought
- 12,694 af of URFs banked with FID
- 11,000 af to Class 1 contractors in 2014
  - 23 Agreements executed
  - 7,066 af delivered to date

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Investment Strategy

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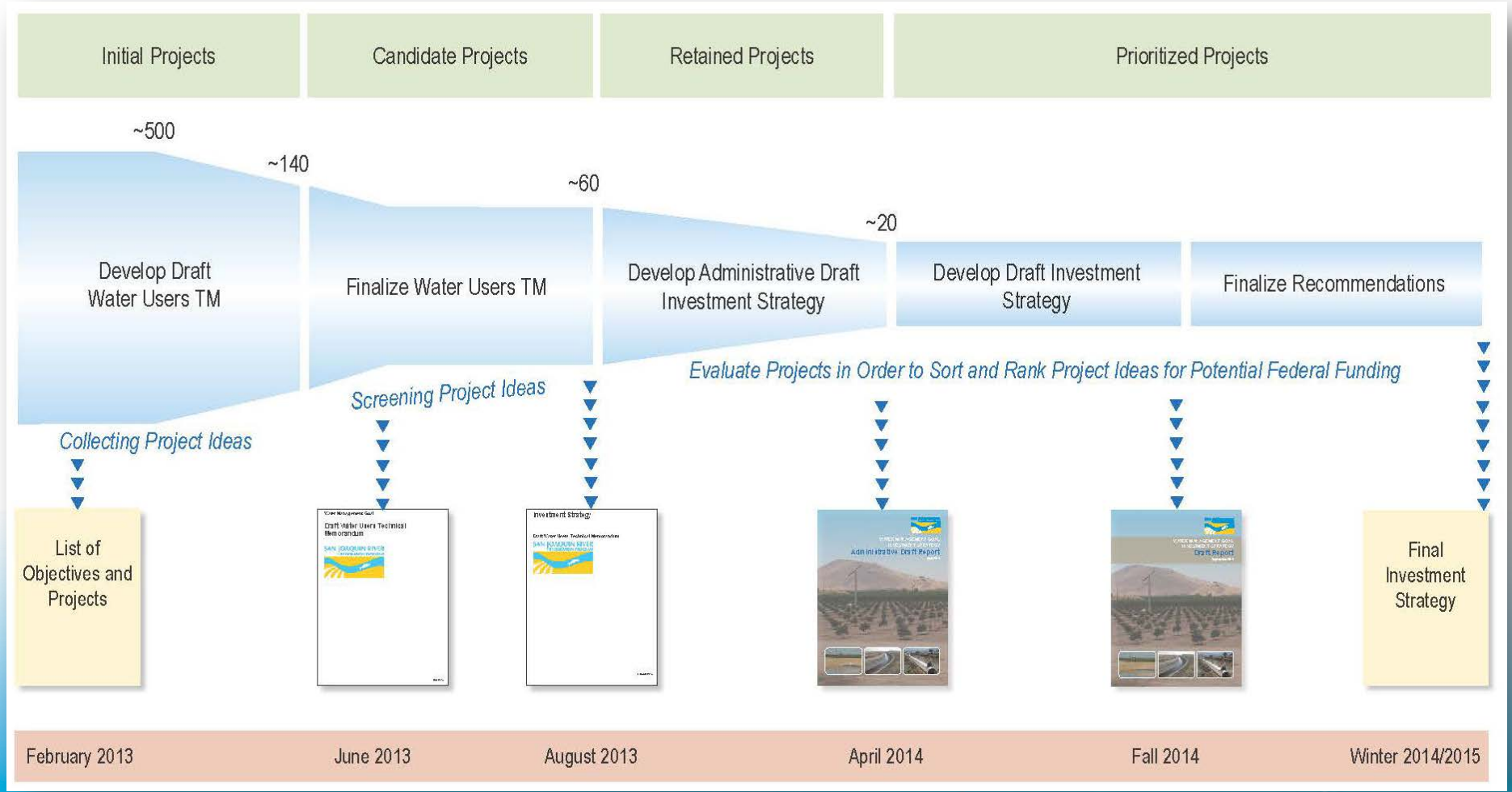
Investment Strategy Approach



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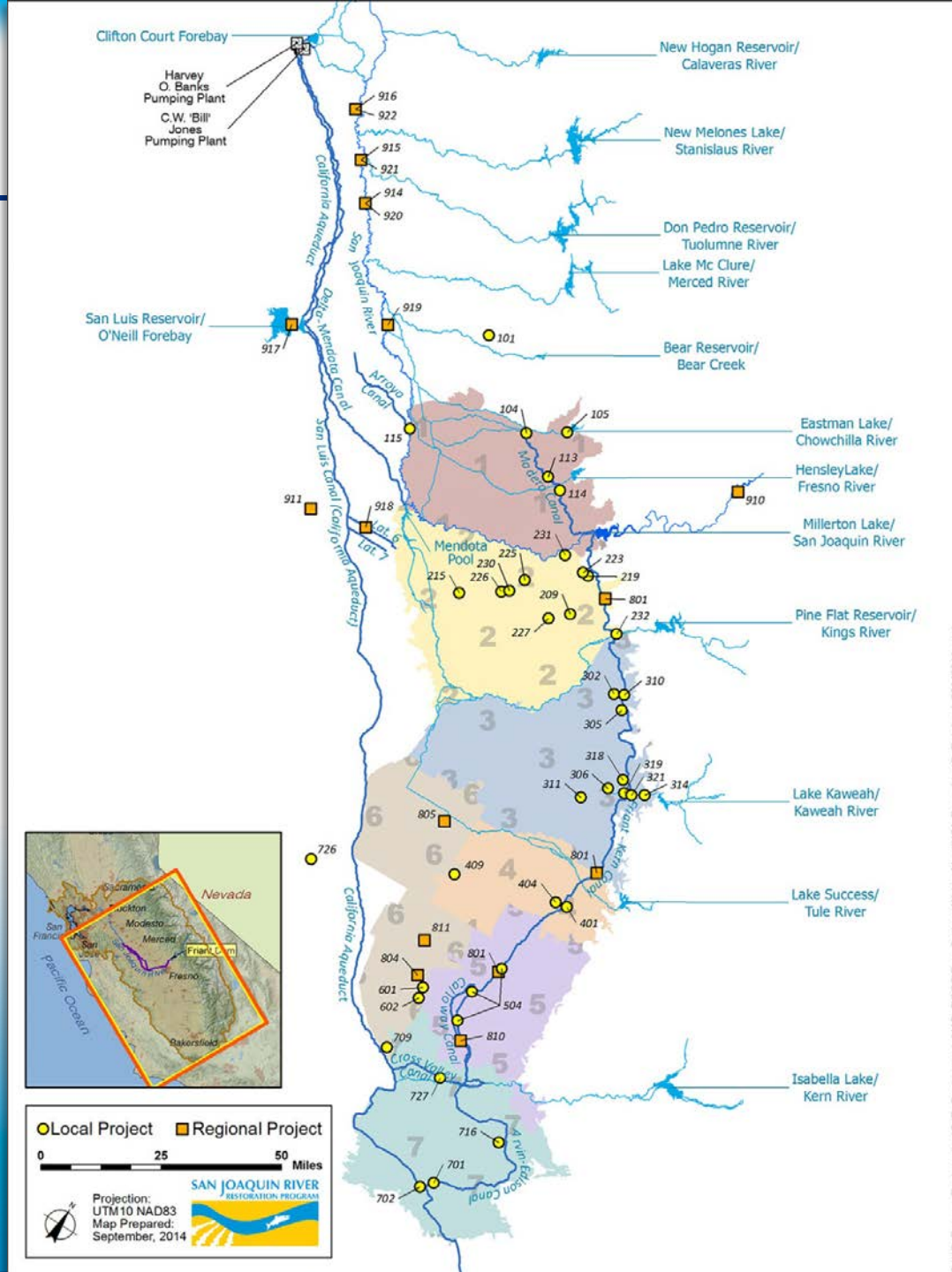
Candidate Projects

- 60 Local and Regional Projects



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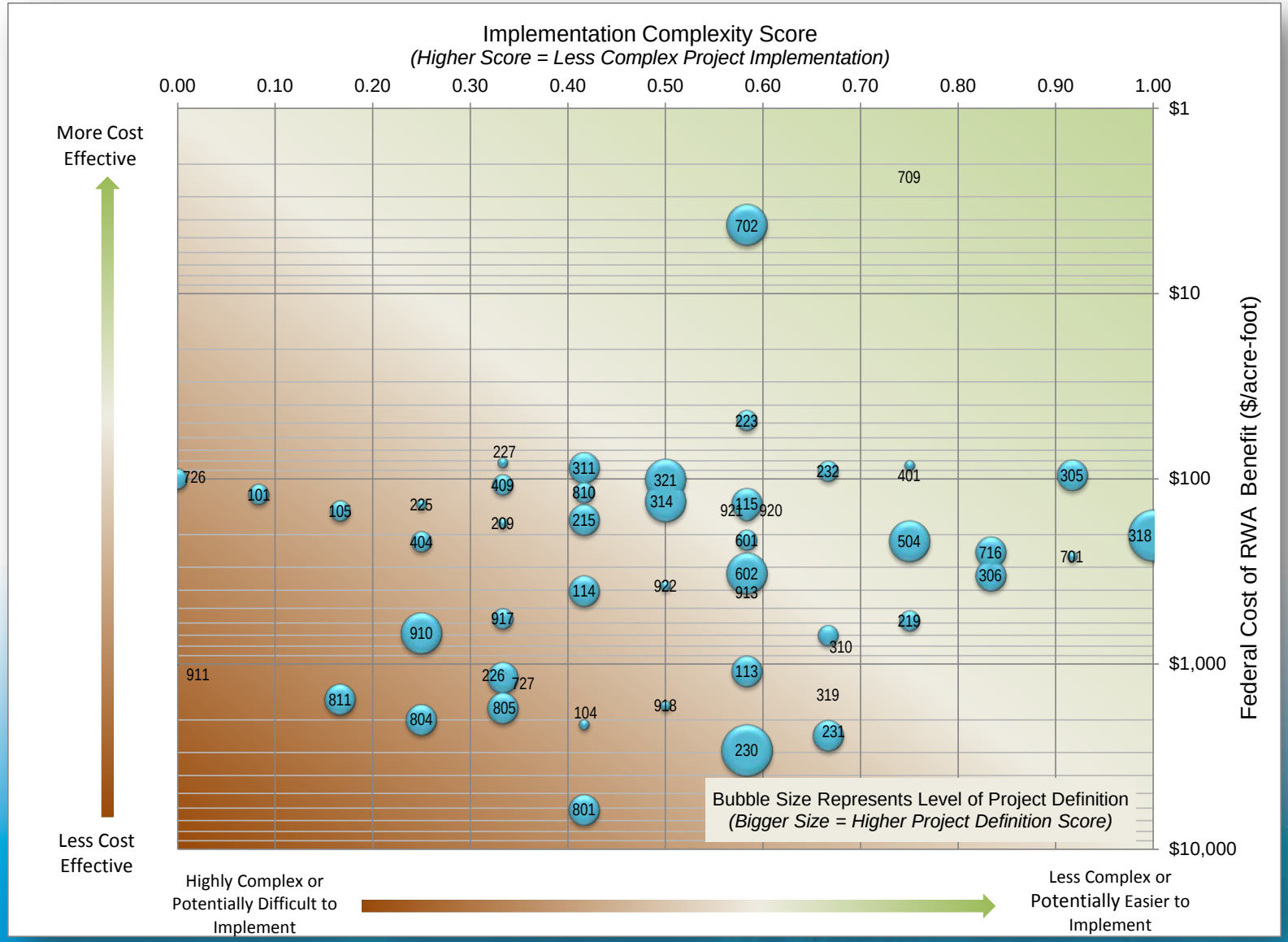
Evaluation of Candidate Projects



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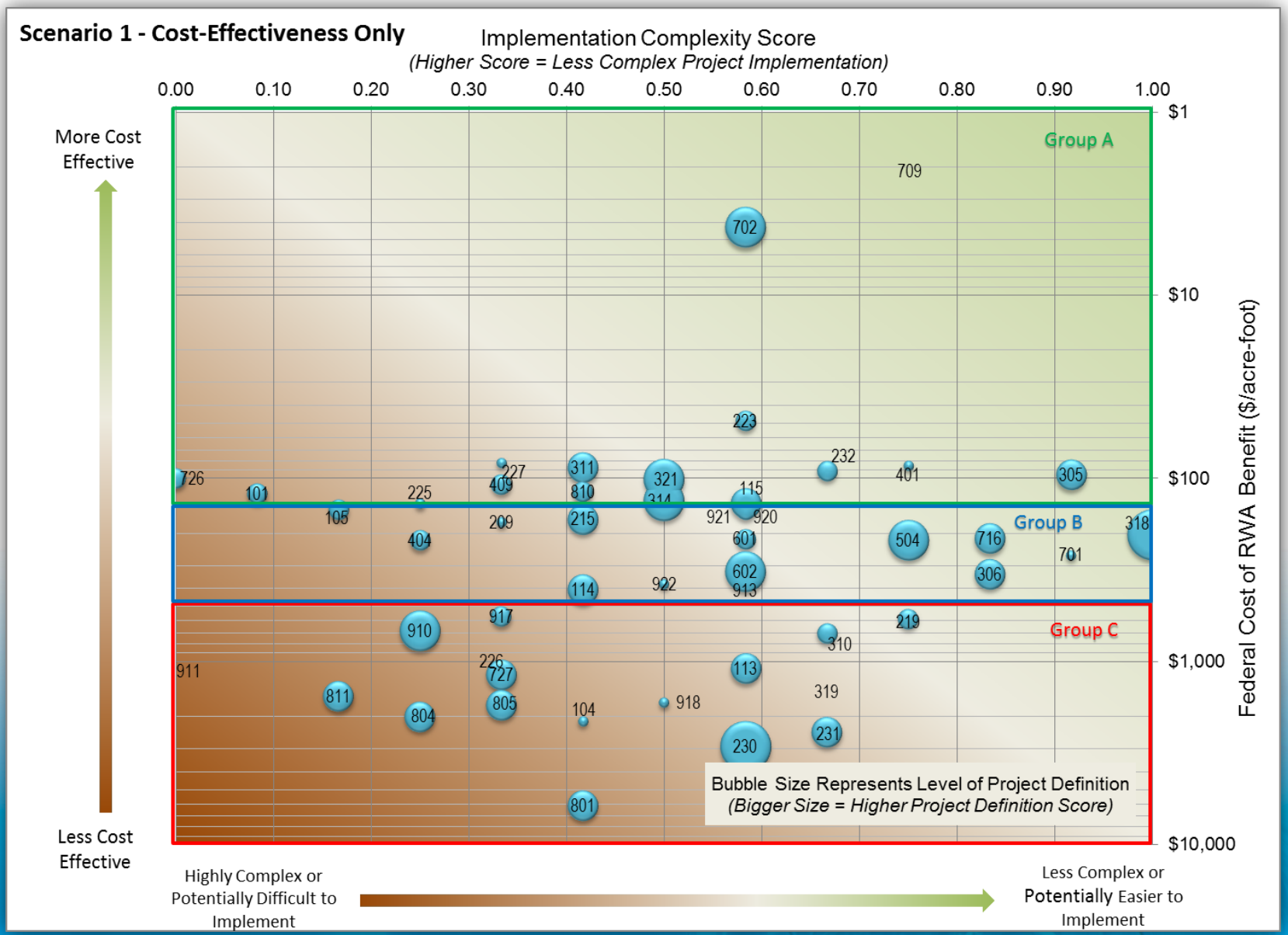
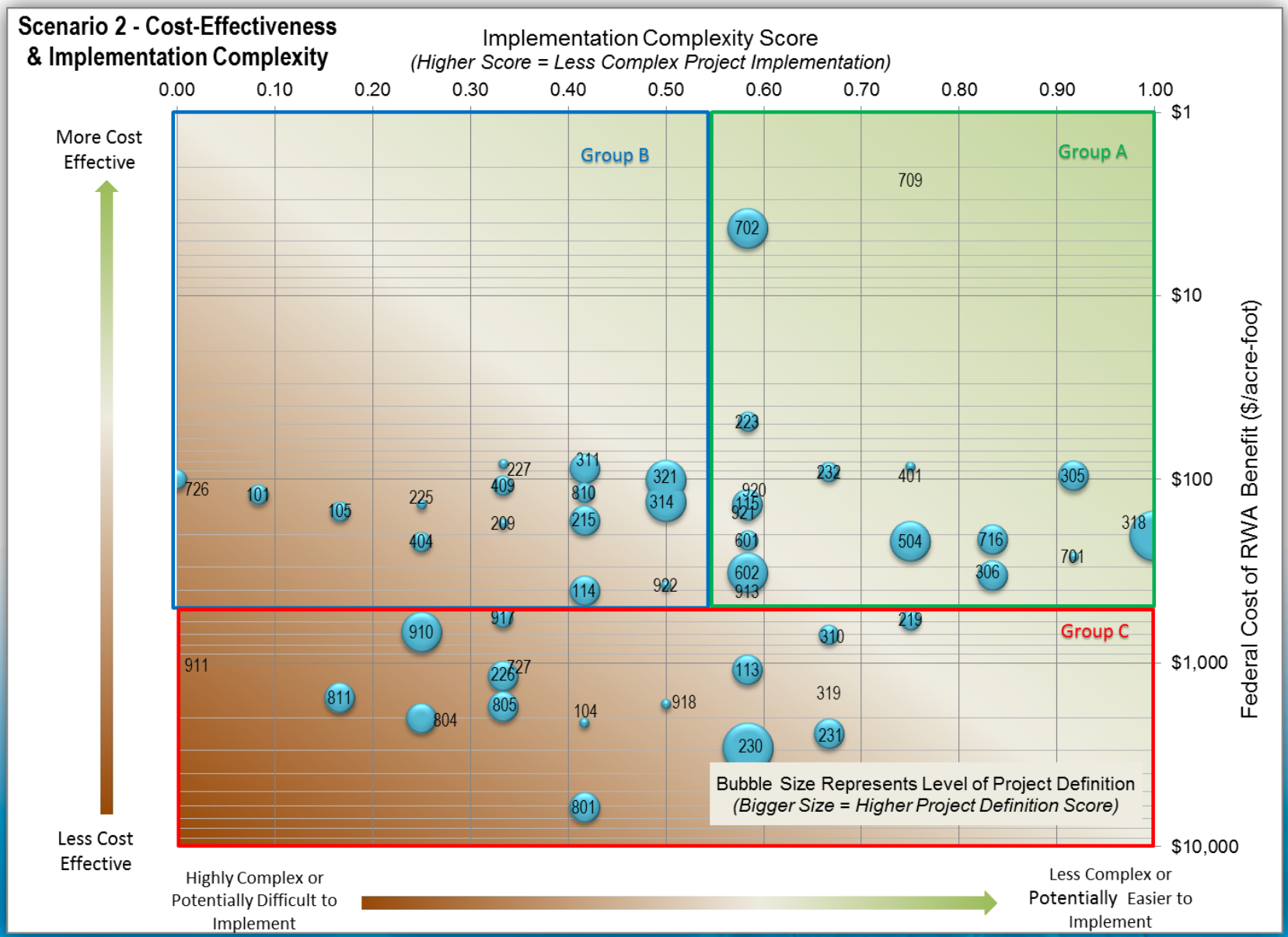
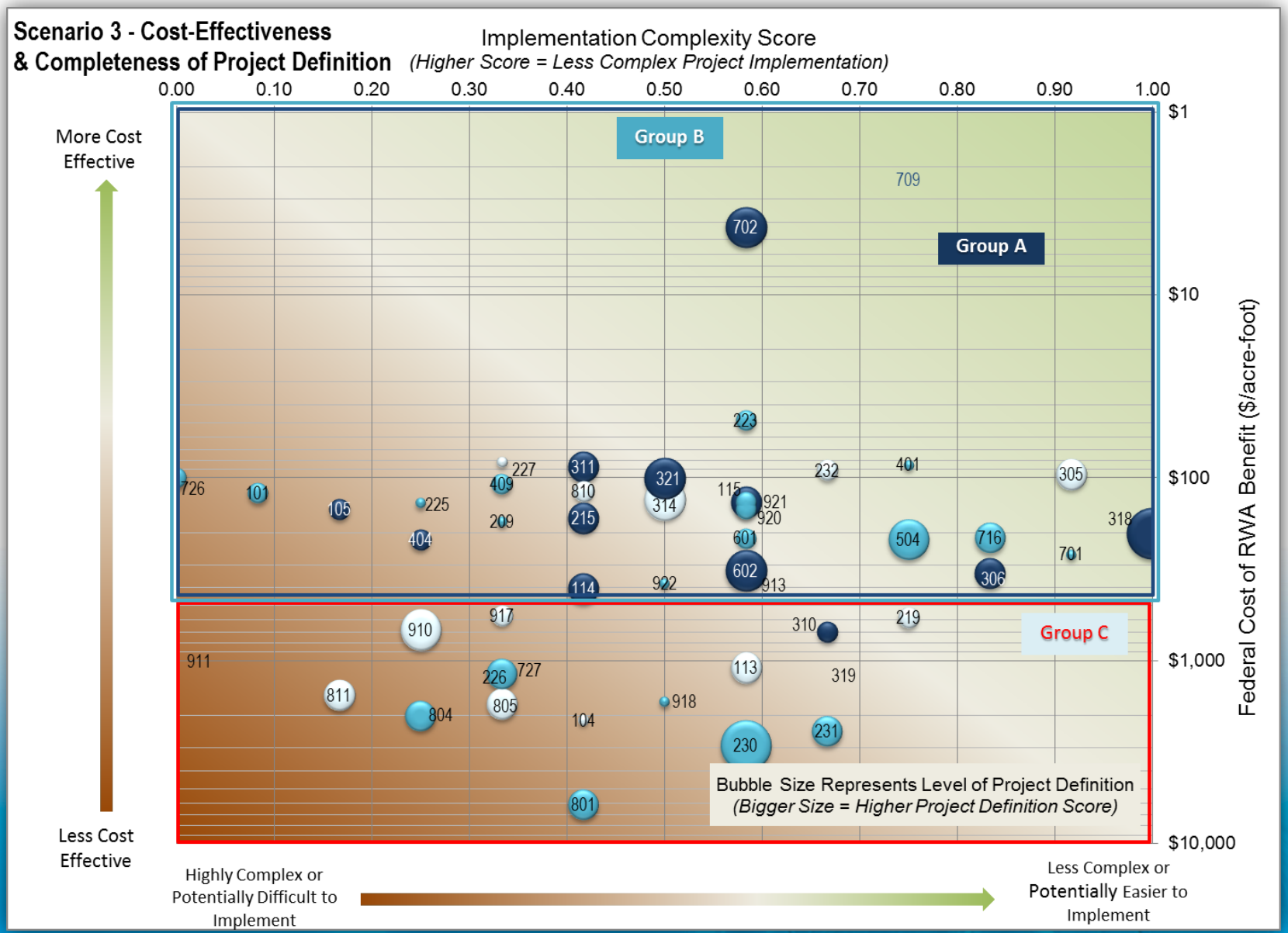
Scenario 1 - Cost-Effectiveness Only



Scenario 2 - Cost-Effectiveness & Implementation Complexity



Scenario 3 - Cost-Effectiveness & Completeness of Project Definition



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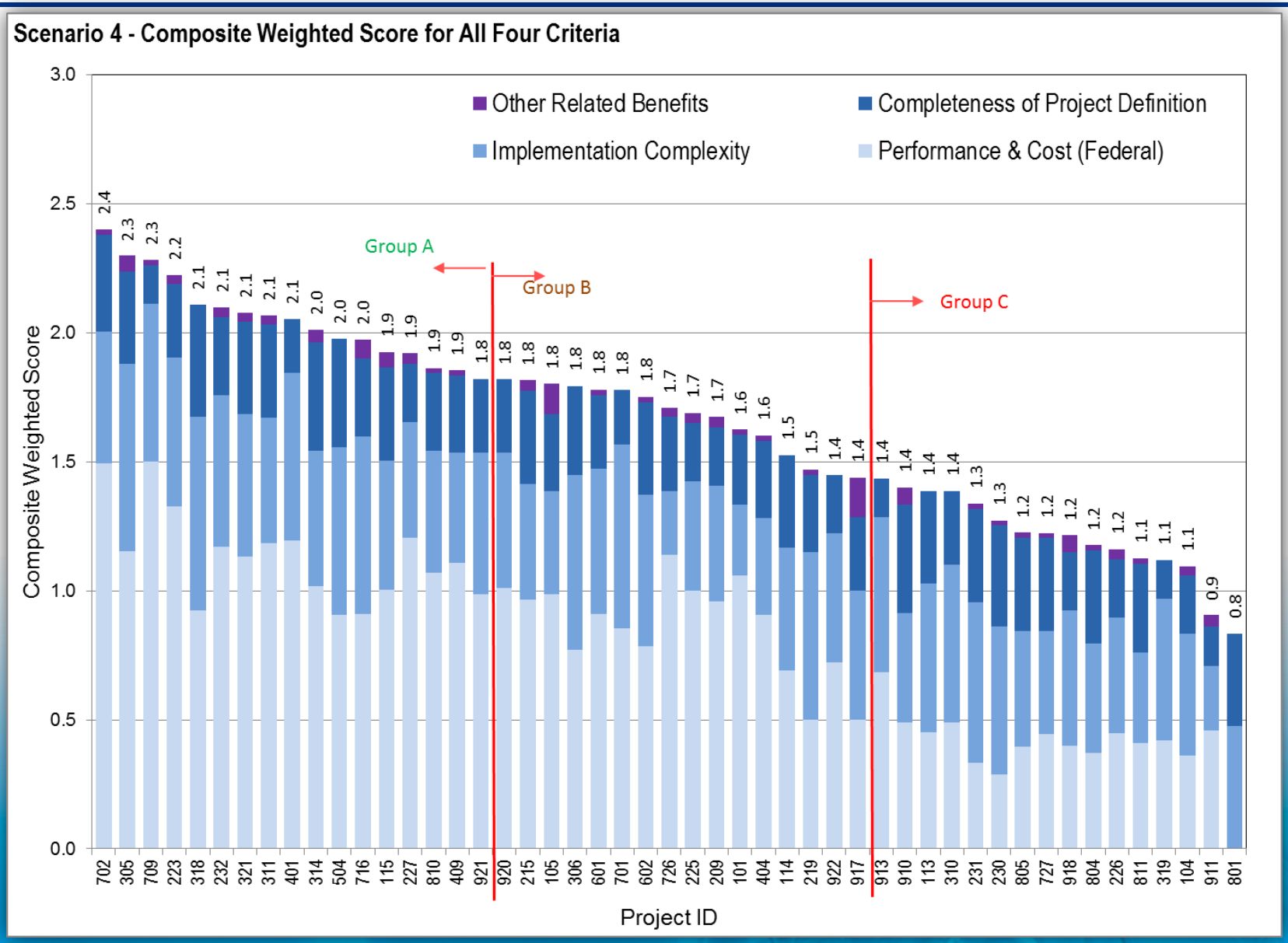
Scenario 4 - Composite Weighted Score



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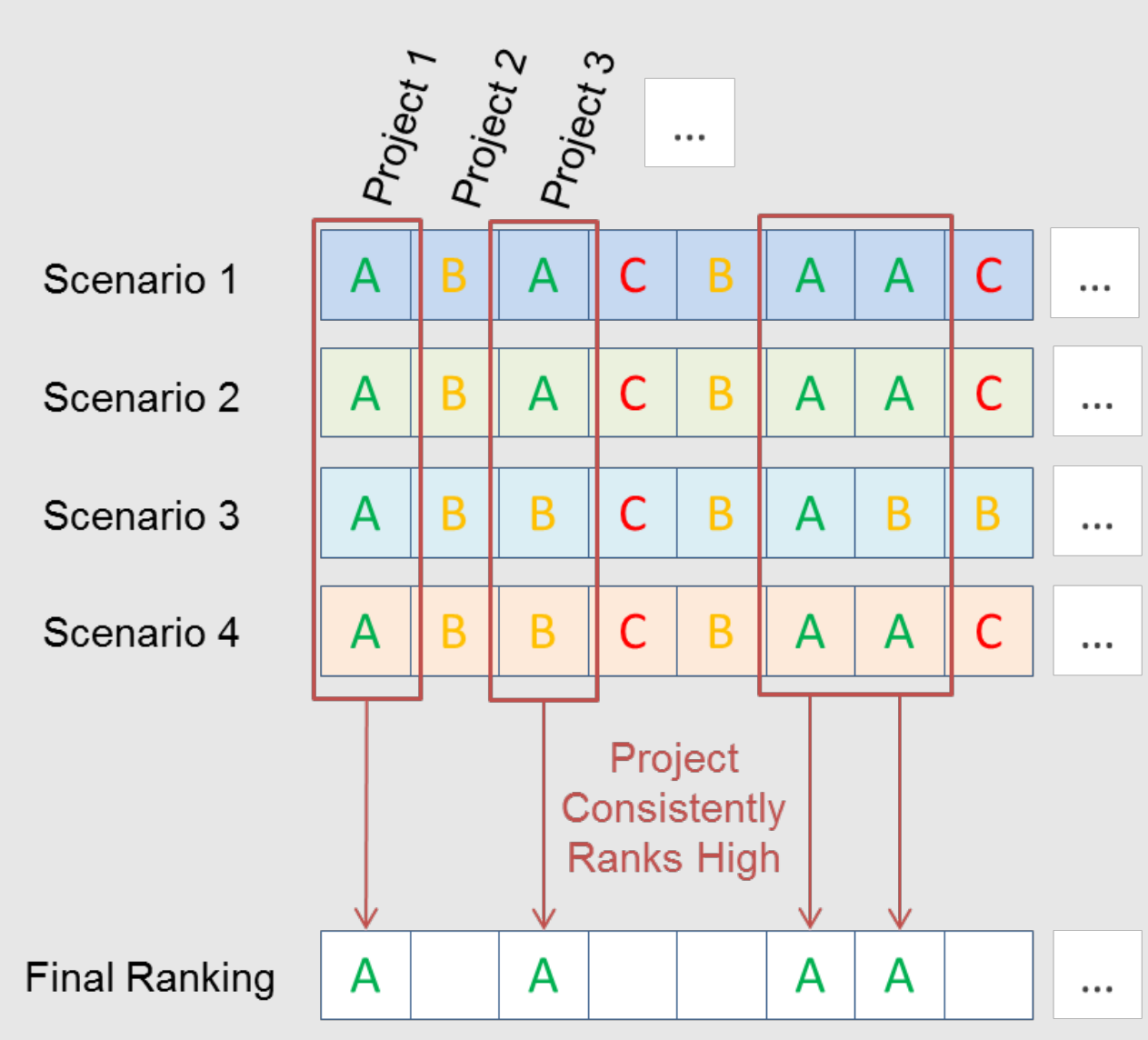
Process for Selecting Priority Projects



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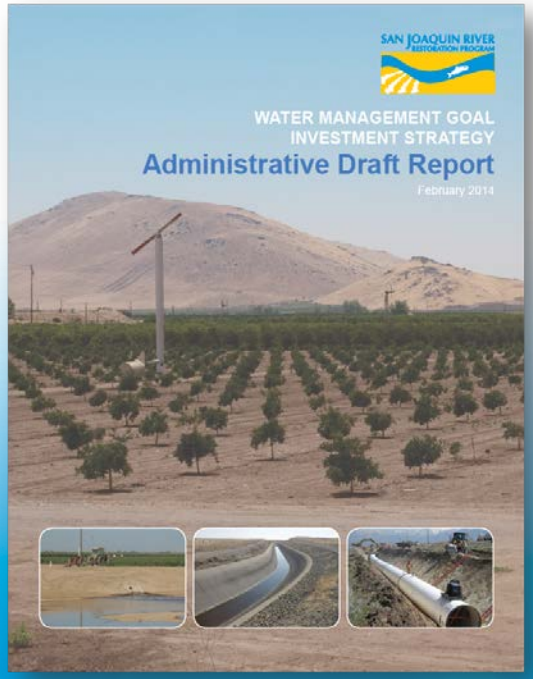
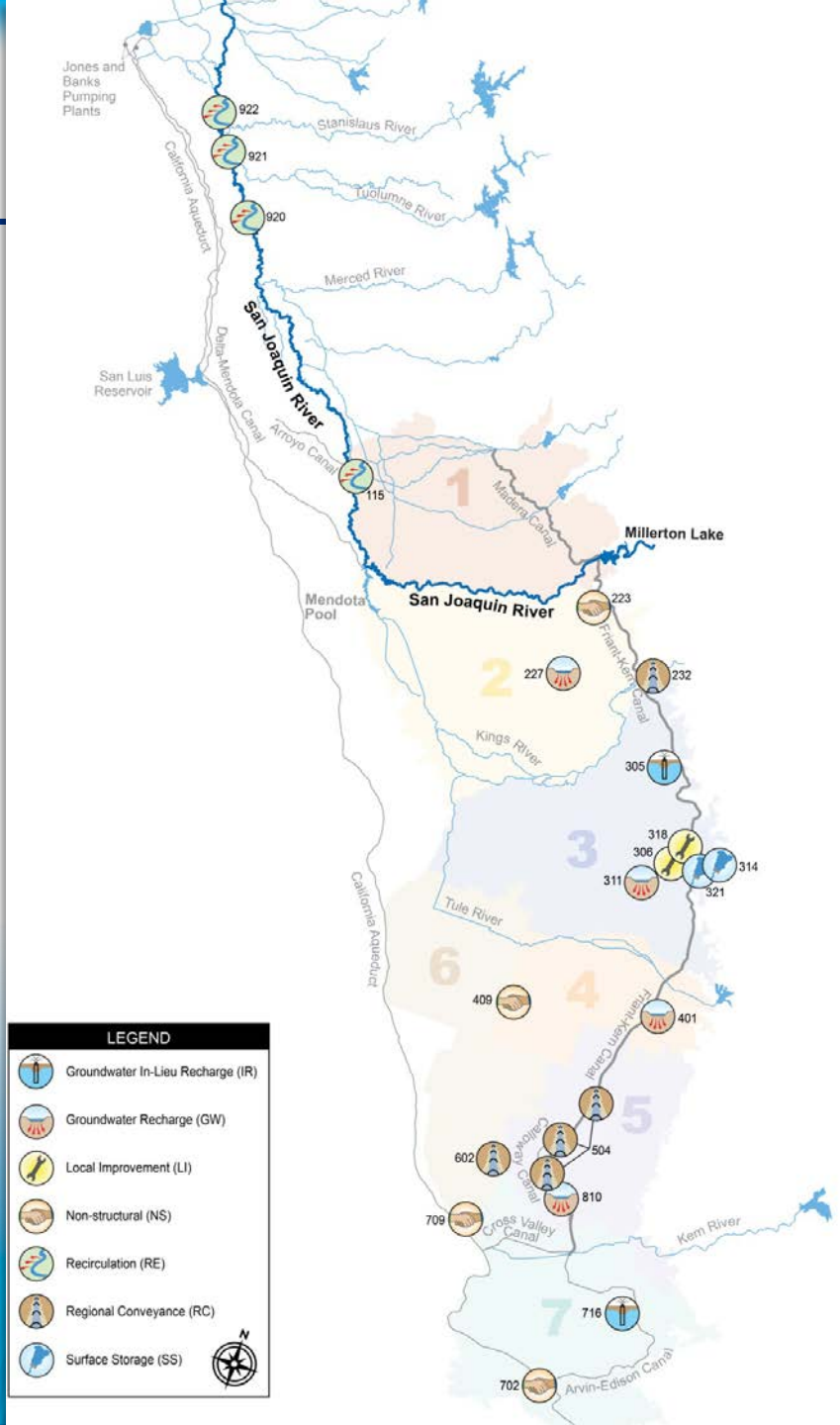
Priority Projects

- 20 Priority Projects identified





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Evaluation of Priority Projects

- Appraisal-level designs and cost estimates
- Project implementation schedule and budget requirements for major project phases
  - Planning / NEPA / CEQA
  - Design, Permitting
  - Acquisitions, Agreements
  - Construction
- Rank Priority Projects for Future Funding

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Project Site Visits & Meetings

- Madera ID
- City of Fresno
- Fresno ID
- Orange Cove ID
- Lower Tule ID
- Kaweah Delta WCD
- Ivanhoe ID
- Delano-Earlimart ID
- Porterville ID, Saucelito, ID, Terra Bella ID
- Tulare ID
- Shafter Wasco ID
- Arvin-Edison WSD
- Paterson ID, Banta Carbona ID, West Stanislaus ID
- Friant Water Authority

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Evaluation Criteria & Metrics

Project Information				Performance & Cost							Implementation Complexity						Completeness of Project Definition			Other Multi-Benefits						
ID	Name	Type	Water Source	Yield - Long-term Average (TAF/year)	RWA Balance Reduction (TAF/year)	Duration of Benefits/ Project Useful Life	Total Cost ($)	Non-Federal Cost Share ($)	Overall Cost-Effectiveness ($/AF)	Federal Cost of RWA Benefit ($/AF)	Environmental Compliance Requirements	Permitting Requirements	Water Rights	Institutional	Land Acquisition	Timeframe for Implementation (months)	Facilities & Costs	Yield & RWA Reduction Approach	Finance	Groundwater Overdraft Reduction	Hydropower	Flood Damage Reduction	Recreation	Ecosystem	Water Quality
115	Recapture and Exchange of Restoration Flows to Red Top	RE	REC	11.0	11.0	2	$ 4,000,000	$ 2,000,000	$ 26	$ 13	2	2	3	2	3	13	3	2	3	3	0	0	0	0	0
227	Fresno Groundwater Recharge Facility	GW	ESK	8.0	8.0	2	$ 9,900,000	$ 4,950,000	$ 90	$ 45	2	1	3	2	2	19	3	2	2	3	0	1	0	1	0
232	Gould Canal Friant-Kern Canal Permanent Intertie	RC	Oth	8.3	8.3	2	$ 5,400,000	$ 2,700,000	$ 47	$ 24	2	2	3	2	3	24	3	3	2	1	0	0	0	1	0
305	Orange Cove ID In-District In-Lieu Groundwater Management	IR	Oth	2.5	2.5	2	$ 2,000,000	$ -	$ 58	$ 29	3	3	3	2	3	20	2	3	2	3	0	0	0	0	0
306	Tulare ID Siphon Replacement Program	LI	SJK	16.0	16.0	2	$ 4,400,000	$ 2,200,000	$ 20	$ 10	2	2	3	3	3	21	3	2	2	0	0	0	0	0	0
311	Tulare ID Recharge Basin Complex	GW	SJK	4.4	4.4	2	$ 10,300,000	$ 5,150,000	$170	$ 85	2	2	3	3	1	26	3	2	2	3	0	1	0	0	0
314	McKay Point Reservoir	SS	SJK	2.3	1.1	2	$ 15,000,000	$ 7,500,000	$474	$ 495	1	2	3	2	3	198	3	3	2	1	1	1	0	0	0
318	Wutchumna Pumping Plant Improvements	LI	KRS	0.9	0.9	2	$ 6,800,000	$ 3,400,000	$549	$ 274	2	2	3	3	3	27	3	3	2	0	0	0	0	0	0
321	Hannah Ranch Project	SS	SJK	3.6	3.6	2	$ 6,219,712	$ 3,109,856	$126	$ 63	1	1	3	2	3	32	3	3	3	0	0	1	0	1	0
401	Deer Creek Groundwater Recharge Basin	GW	SJS	0.7	0.7	2	$ 7,000,000	$ 3,500,000	$726	$ 363	2	2	3	2	3	27	3	3	2	3	0	0	0	0	0
504	Reverse Flow Pump-Back Facilities on the Friant-Kern Canal	RC	REC	14.0	14.0	2	$ 3,300,000	$ -	$ 17	$ 17	2	2	3	2	3	28	3	3	1	1	0	0	0	0	0
602	Shafter-Wasco ID Madera Avenue Intertie	RC	Oth	8.0	8.0	2	$ 11,800,000	$ 6,700,000	$107	$ 46	2	3	3	1	2	22	3	3	3	3	0	0	0	0	0
716	Arvin-Edison WSD In-Lieu Banking Program	IR	Oth	8.0	8.0	2	$ 43,000,000	$ 21,500,000	$390	$ 195	2	2	3	3	2	36	3	3	2	3	0	0	0	0	0
810	Calloway Canal Improvements and Groundwater Recharge	GW	SJS	16.8	16.8	2	$ 30,000,000	$ 15,000,000	$130	$ 65	2	2	3	2	2	23	3	3	2	3	0	0	0	0	3
920	SJR Recapture at Patterson ID Conveyed through Delta-Mendota Canal to San Luis Reservoir	RE	REC	21.0	21.0	2	$ 53,580,000	$ -	$185	$ 185	2	2	2	1	3	44	3	3	1	1	0	0	0	0	0
921	SJR Recapture at West Stanislaus District ID Conveyed through Delta-Mendota Canal to San Luis Reservoir	RE	REC	27.0	27.0	2	$ 11,228,100	$ -	$ 30	$ 30	2	2	2	1	3	25	3	3	1	1	0	0	0	0	0
922	SJR Recapture at Banta Carbona ID Conveyed through Delta-Mendota Canal to San Luis Reservoir	RE	REC	3.0	3.0	2	$ 6,200,000	$ -	$150	$ 150	3	3	2	2	3	24	3	3	1	1	0	0	0	0	0

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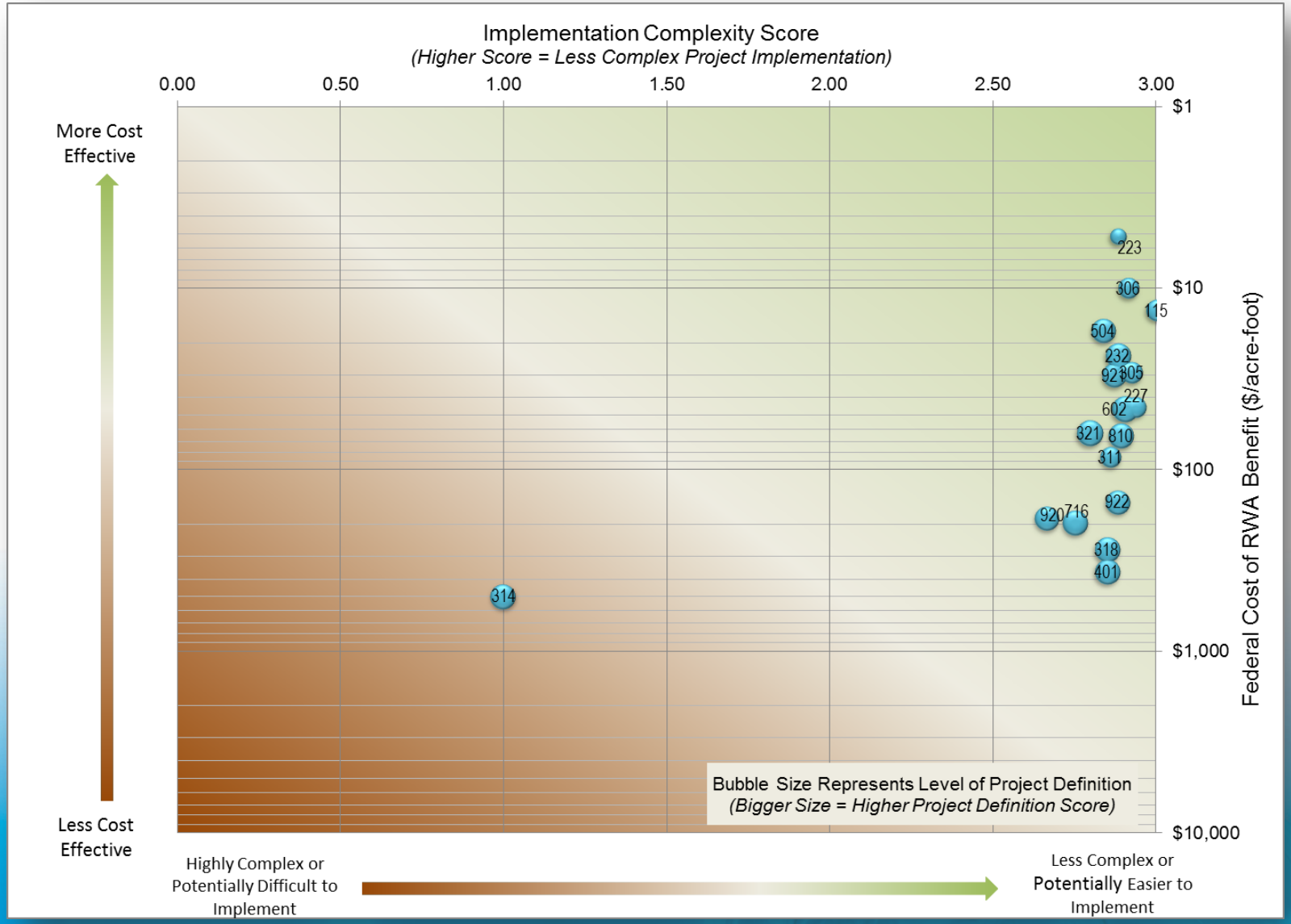
Result of Priority Projects Evaluation



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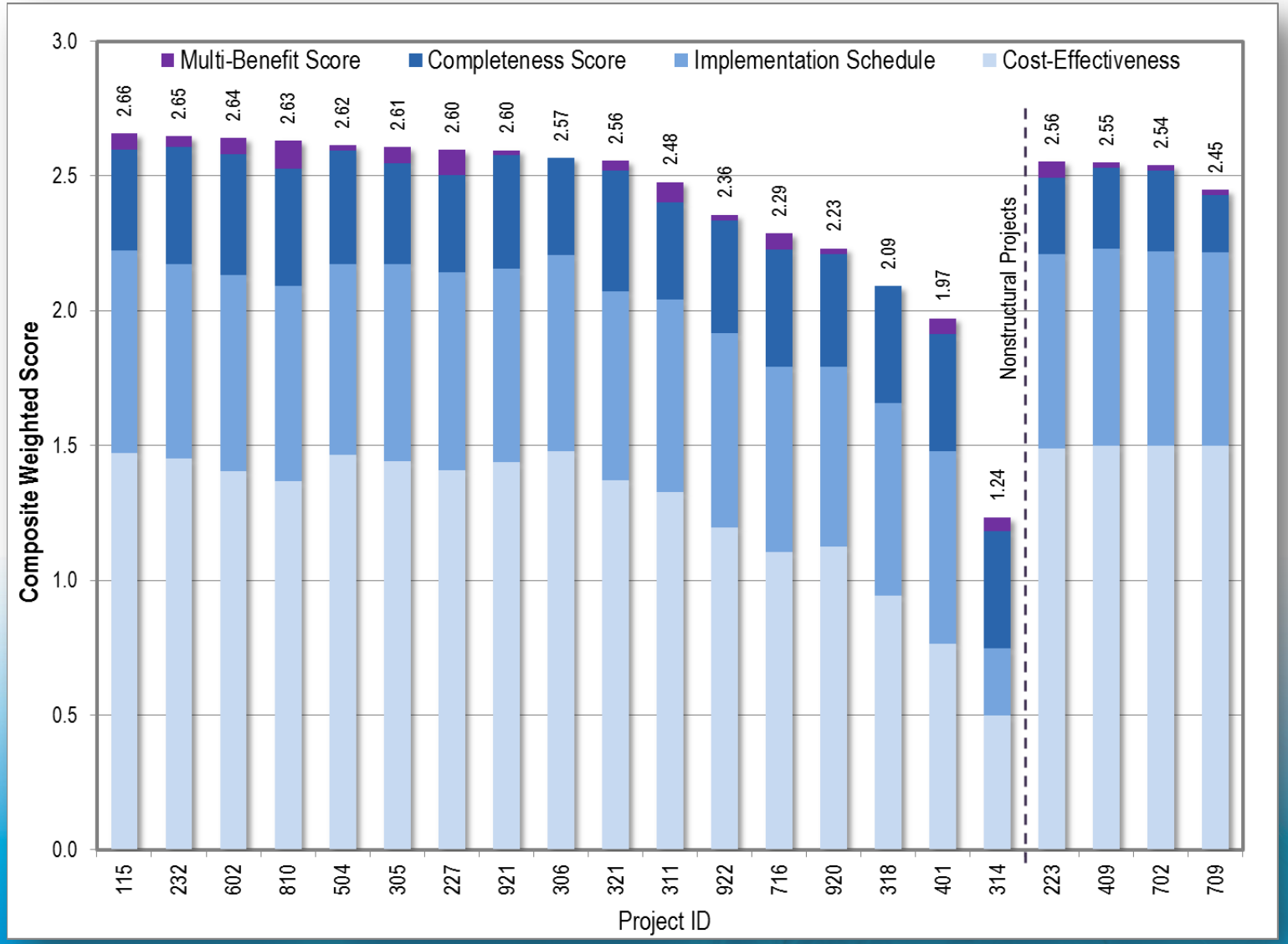
Initial Ranking of Priority Projects



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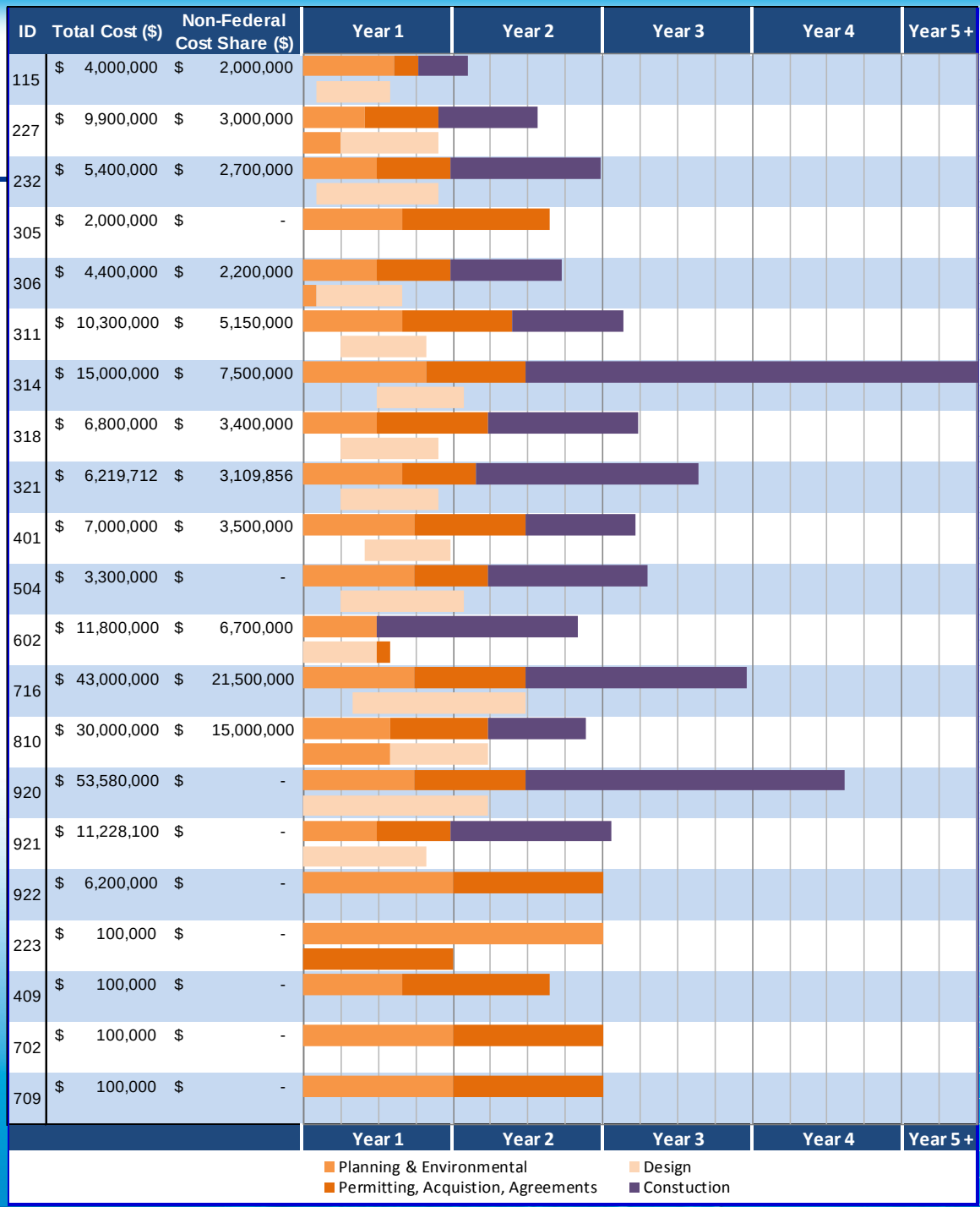
Implementation Cost & Schedule

ID	Total Cost ($)	Non-Federal Cost Share ($)
115	$ 4,000,000	$ 2,000,000
227	$ 9,900,000	$ 3,000,000
232	$ 5,400,000	$ 2,700,000
305	$ 2,000,000	$ -
306	$ 4,400,000	$ 2,200,000
311	$ 10,300,000	$ 5,150,000
314	$ 15,000,000	$ 7,500,000
318	$ 6,800,000	$ 3,400,000
321	$ 6,219,712	$ 3,109,856
401	$ 7,000,000	$ 3,500,000
504	$ 3,300,000	$ -
602	$ 11,800,000	$ 6,700,000
716	$ 43,000,000	$ 21,500,000
810	$ 30,000,000	$ 15,000,000
920	$ 53,580,000	$ -
921	$ 11,228,100	$ -
922	$ 6,200,000	$ -
223	$ 100,000	$ -
409	$ 100,000	$ -
702	$ 100,000	$ -
709	$ 100,000	$ -



Water Supply and Conveyance Competition Analysis

- Individual yields calculated assuming that each project was the only one being implemented (i.e., no competition)
- No consideration of the effects of multiple projects on available supply/capacity

Above assumptions are reasonable but not realistic

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Priority Projects Water Supplies

Water Supplies	Project ID	# of Projects
Surplus San Joaquin River Flows	227, 232, 306, 311, 314, 321, 401, 602, 716	9
Surplus Kaweah River Flows	306, 311, 314, 318, 321	5
Recaptured before Delta and Downstream from Merced River	920, 921, 922	3
Recirculation of Recaptured Supplies	115, 232, 504, 602, 709, 716, 810	7

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Priority Based Allocation of Supplies

Available Supply, Project (#1) Demand, Available Capacity and other project (#1) constraints

Calculate Yield for Priority #1 Project

Calculate Remaining Supply, Remaining Available Capacity

Project (#2) Demand, and other project (#2) constraints

Calculate Yield for Priority #2 Project

Delivery Priority Permutations

Delivery Priority	Project A	Project B	Project C
Option 1	1	2	3
Option 2	2	3	1
Option 3	3	1	2
Option 4	1	3	2
Option 5	2	1	3
Option 6	3	2	1

Supply	Kaweah Surplus	San Joaquin River Surplus	Restoration Flow Recaptured at Delta	Restoration Flows Recaptured in the San Joaquin River
Number of Projects	5	9	7	3
Permutations	120	362880	5040	6

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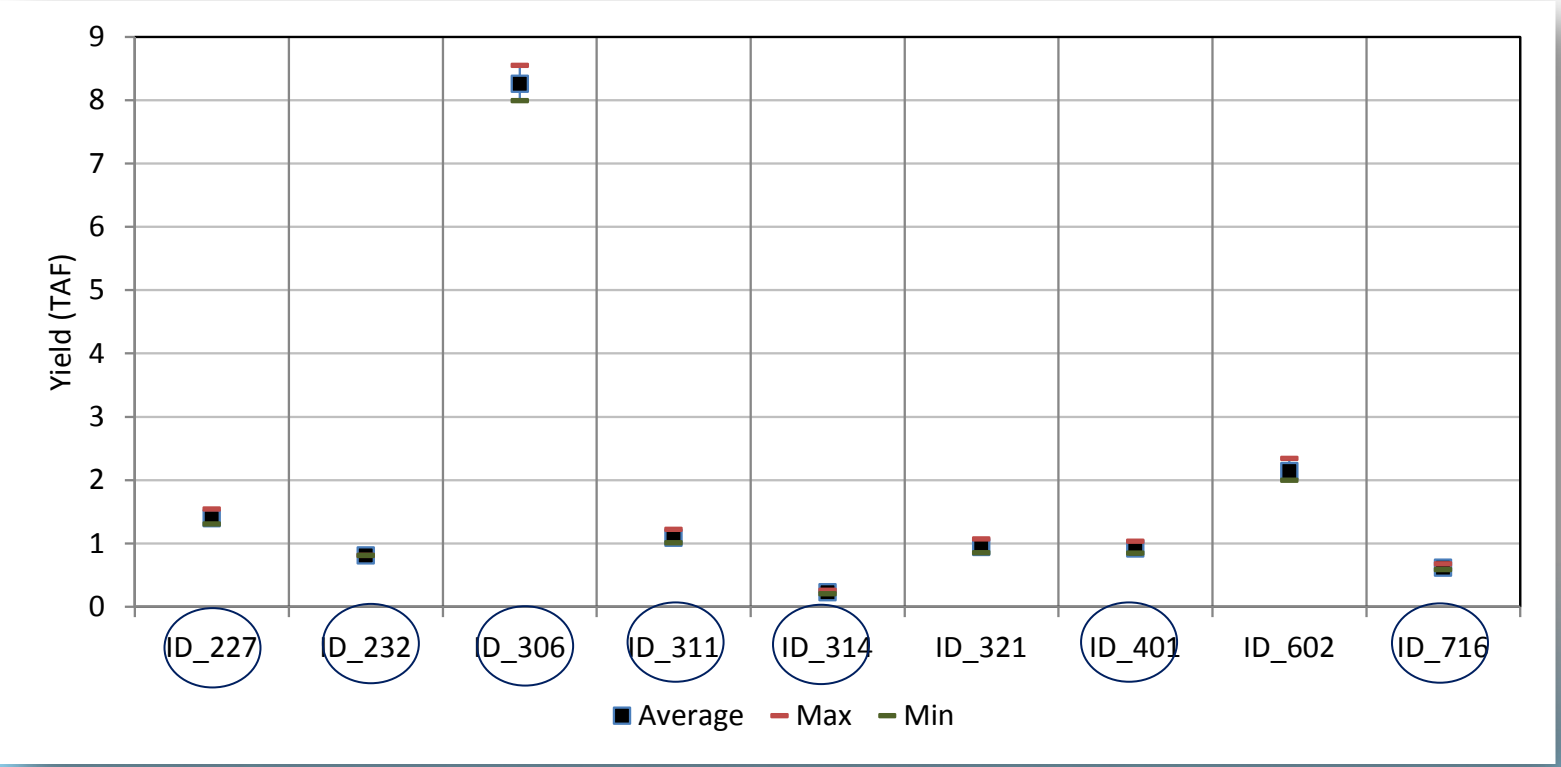
Surplus San Joaquin River Flows-Results



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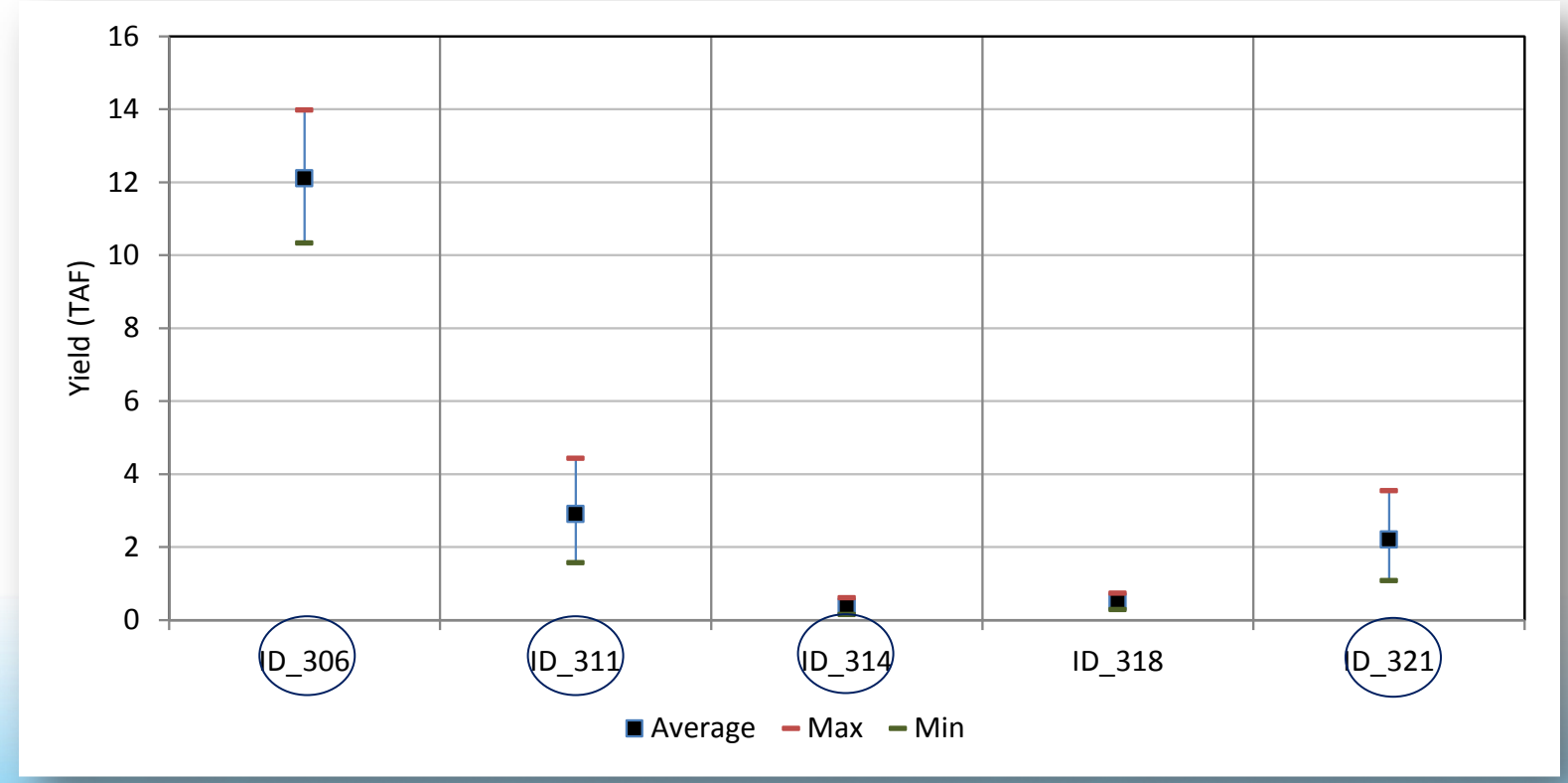
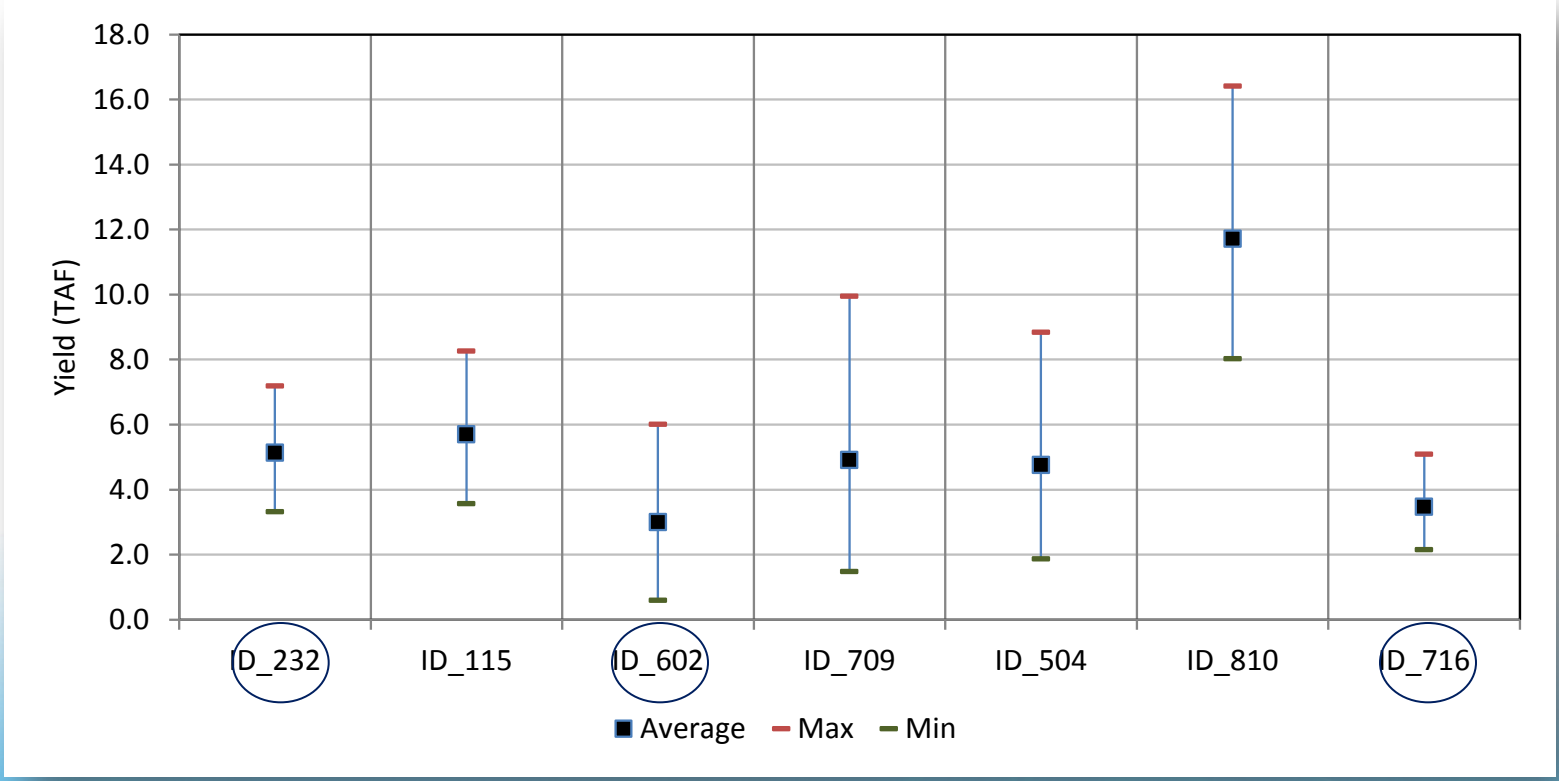
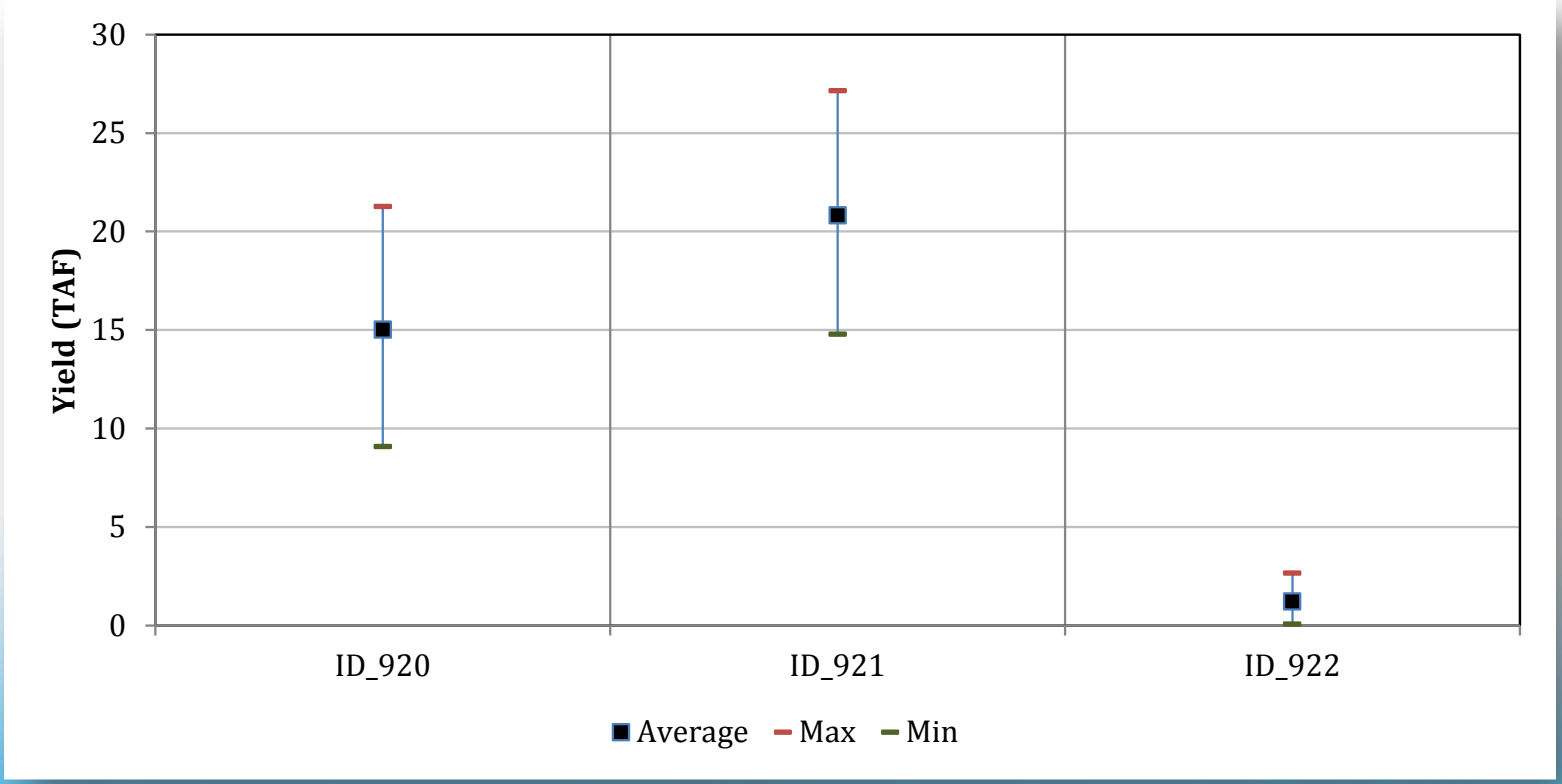
Surplus Kaweah River Flows



Recirculated Restoration Flows Recaptured at Delta



Recirculated Restoration Flows Recaptured Before Delta and D/S Merced River Confluence



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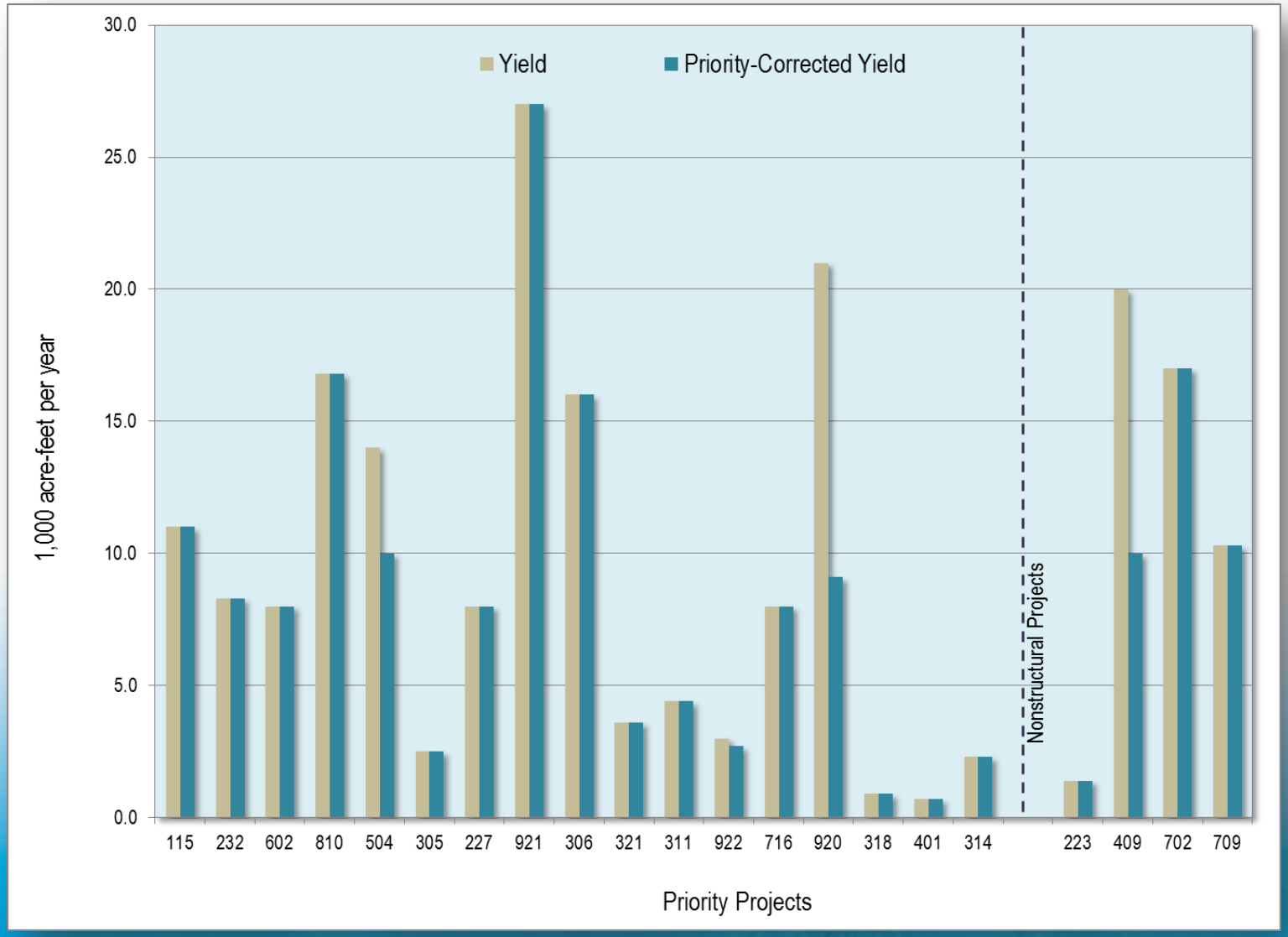
Priority-Adjusted Yield



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Key Findings

- Implementation of multiple projects that use the same water supply source can reduce the yield of each project. This would occur for the following sources:
  - Surplus Kaweah River flows
  - SJR Recapture of Restoration Flows
  - Recirculated water supplies
- Surplus SJR flows are sufficient to implement all evaluated projects with no expected yield reduction
- Recapture quantities are uncertain

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Next Step

- Complete cost estimates
- Refine Priority Projects ranking, and seek input from Friant Districts
- Define the process for inclusion of new projects
- Define the process for updating the Investment Strategy Priority List

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Draft Investment Strategy Dates

- July 2014 – Draft appraisal studies for review by each project proponent
  - Comments are being received
- Sep 2014 – Draft Investment Strategy Report for review by Friant Districts
- Nov 2014 – Revised Draft Investment Strategy Report

Part III

SAN JOAQUIN RIVER RESTORATION PROGRAM

Friant-Kern Canal Capacity Restoration

- Restore Design Maximum Flow Capacity and current design standards from MP 29.14 to MP 71.3
- Design-level 60%
  - Refining cost estimate earthwork assumptions and identifying non-essential pay items
  - starting modification designs for affected bridges and drains

Madera Canal Capacity Restoration

- Demonstration Project advancing:
  - Low-flow valve at dam outlet
  - Sheet pile along ½ mile canal segment
- Feasibility Study second stakeholder meeting in early October to discuss Alternatives Formulation TM

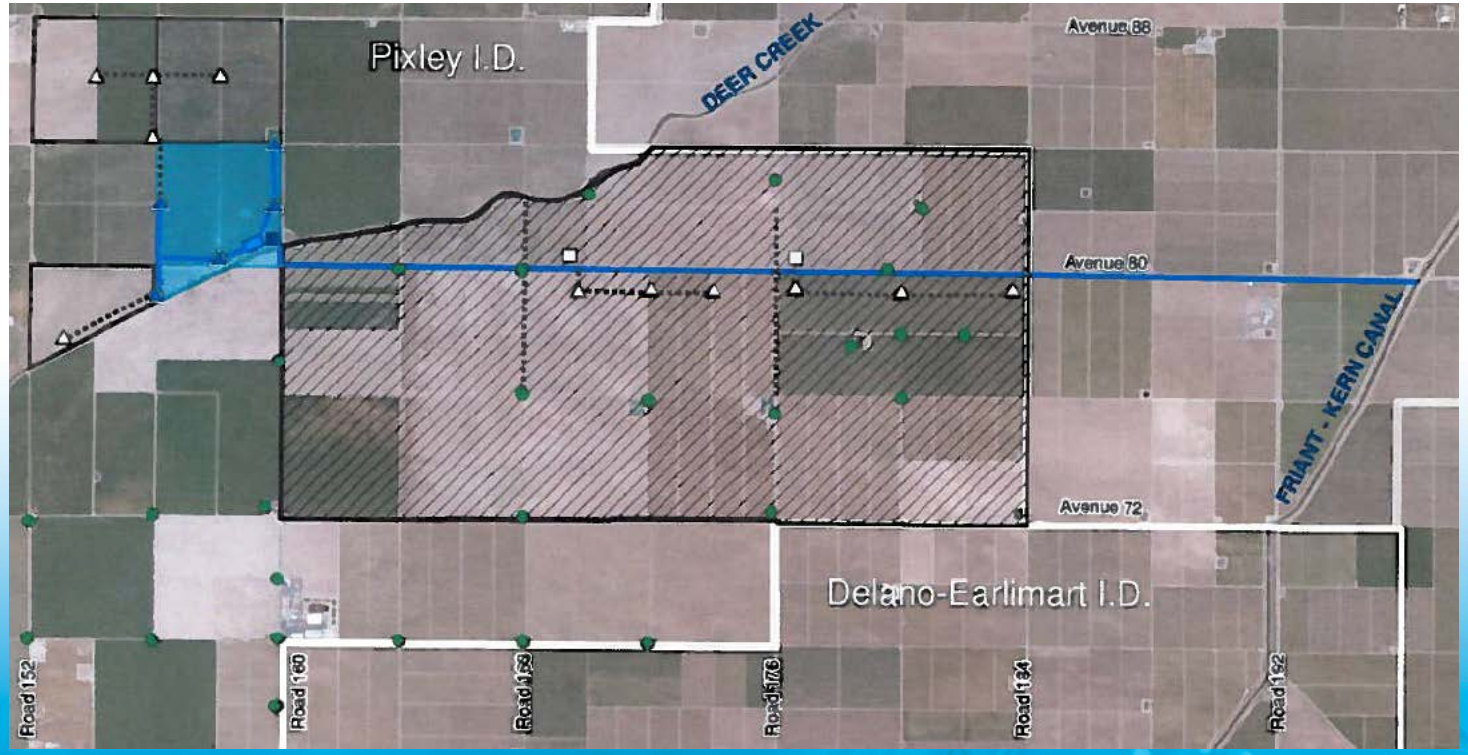
Friant-Kern Canal Reverse Flow Pump-Back Project

- Red Bluff pumps and motors purchased and transported to FWA storage facility
- Feasibility study on hold

Groundwater Financial Assistance

Pixley ID- Joint Groundwater Bank

- 560 acre bank with 4.5 mile pipeline to new FKC turnout
- Construction complete December 2017.



Groundwater Financial Assistance

Porterville ID- In-Lieu Project

- Service area #1 is 1000 acres connected to Wood-Central Ditch
- Service area #2 is 650 acres connected to FKC
- Construction complete December 2016.

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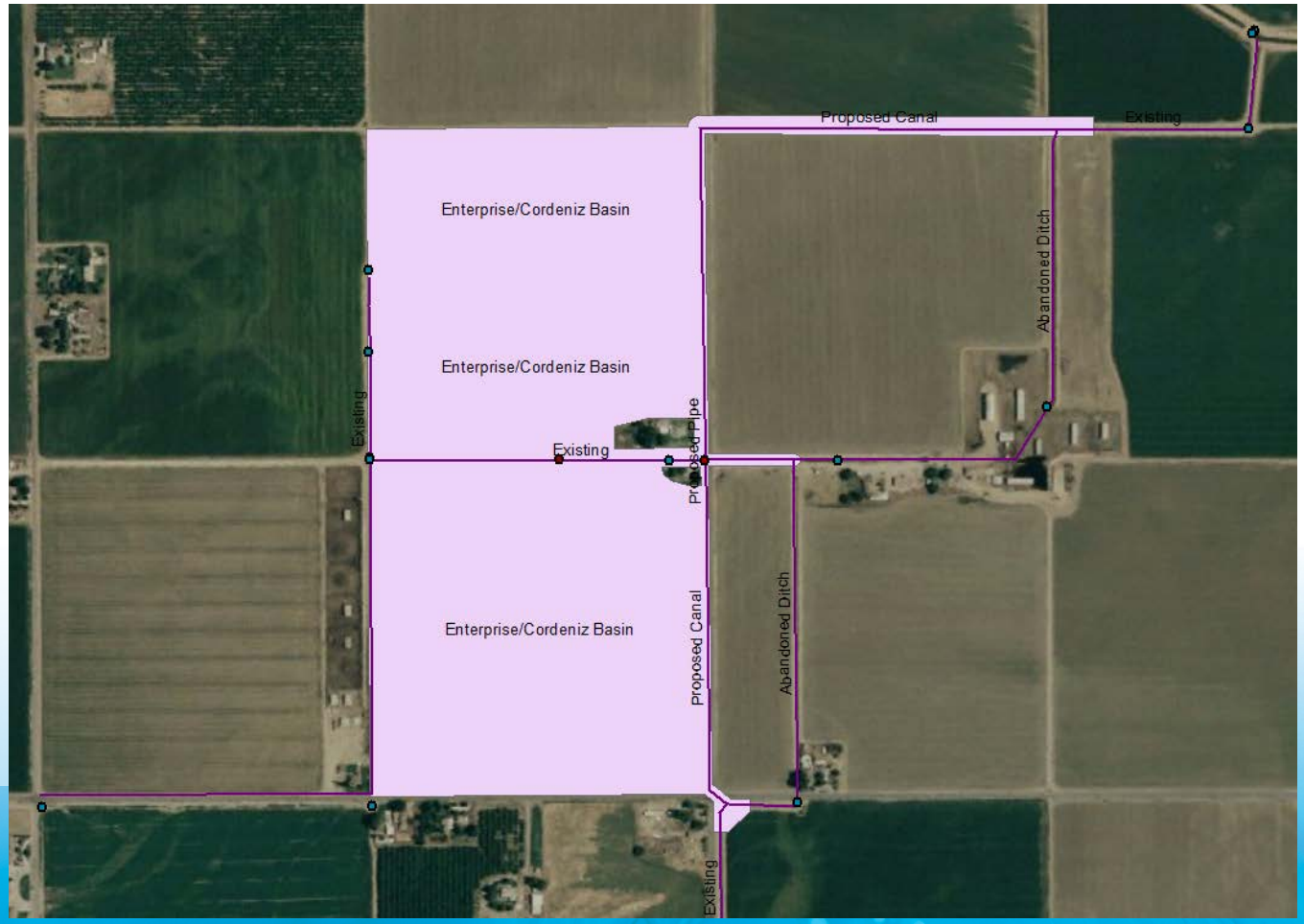
Groundwater Financial Assistance

Tulare ID- Cordeniz Basin Construction & Exchange Program

- 60 acre basin
- Environmental Compliance complete March 2015
- Construction complete July 2016



Groundwater Financial Assistance

Shafter-Wasco ID- Madera Aveune Intertie

- Engineering analysis in progress to update project description.

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Lecture Series:
Recapture & Recirculation EIS

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Recapture & Recirculation EIS/EIR

September 19, 2014

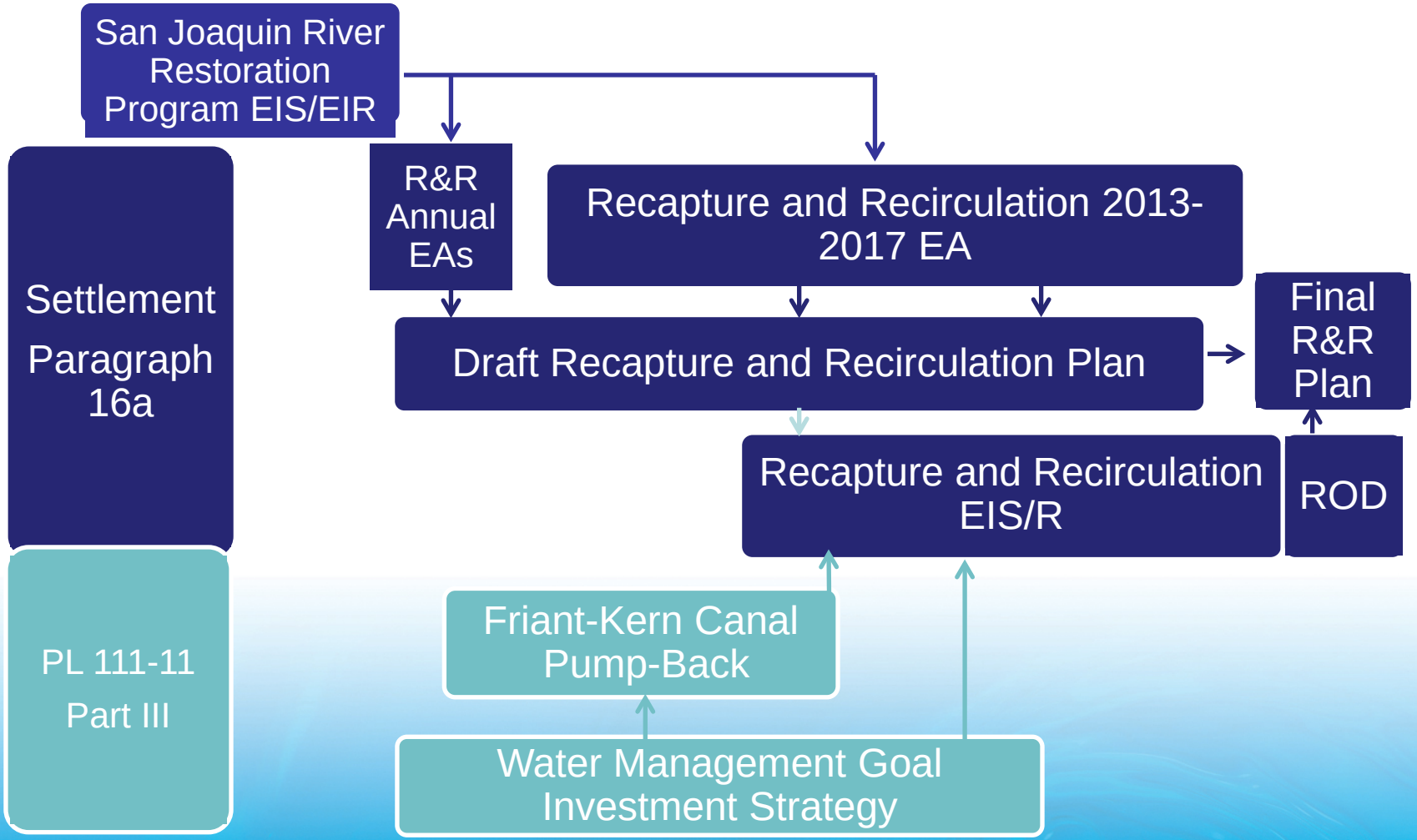
Visalia, CA

SAN JOAQUIN RIVER RESTORATION PROGRAM

Topics

- Background
- NEPA/CEQA Overview
- Alternative formulation process
- Initial concepts
- Milestones and schedule
- Stakeholder and public engagement

Relationship to Water Management Projects



2011 — Future

Preliminary draft – subject to change

NEPA/CEQA OVERVIEW

SAN JOAQUIN RIVER RESTORATION PROGRAM

NEPA and CEQA Overview

- Required for activities financed, implemented or approved by lead agencies
- Evaluate a reasonable range of alternatives
- Analyze and disclose potential impacts
- Identify mitigation measures
- Public review and comment
- Analysis and public comments considered in agency decision

SAN JOAQUIN RIVER RESTORATION PROGRAM

NEPA and CEQA Similarities

NEPA	CEQA
Notice of Intent	Notice of Preparation
Scoping	Scoping
Draft EIS	Draft EIR
Public & Agency Review	Public & Agency Review
Final EIS	Final EIR
Public Review	Public Review
Agency Decision	Agency Decision
Record of Decision	Notice of Determination, Statement of Overriding Consideration, Mitigation Monitoring Reporting Plan

SAN JOAQUIN RIVER RESTORATION PROGRAM

NEPA & CEQA Differences

NEPA	CEQA
Federal agency lead	CA agency lead
Disclose impacts and mitigation measures	Mitigate impacts to less than significant if feasible
Analyze alternatives at an equal level of detail	Analyze alternatives comparatively to proposed project
Alts compared to No Action Alternative	Alts compared to existing conditions

SAN JOAQUIN RIVER RESTORATION PROGRAM

Agency Coordination

NEPA

- **Cooperating Agency**: Federal, state, tribal or local agency having special expertise or jurisdiction by law over the resources under consideration
  - Invited to participate by the NEPA Lead Agency

CEQA

- **Responsible Agency**: Agency with discretionary or funding approval
- **Trustee Agency**: State agency having jurisdiction by law over natural resources held in trust

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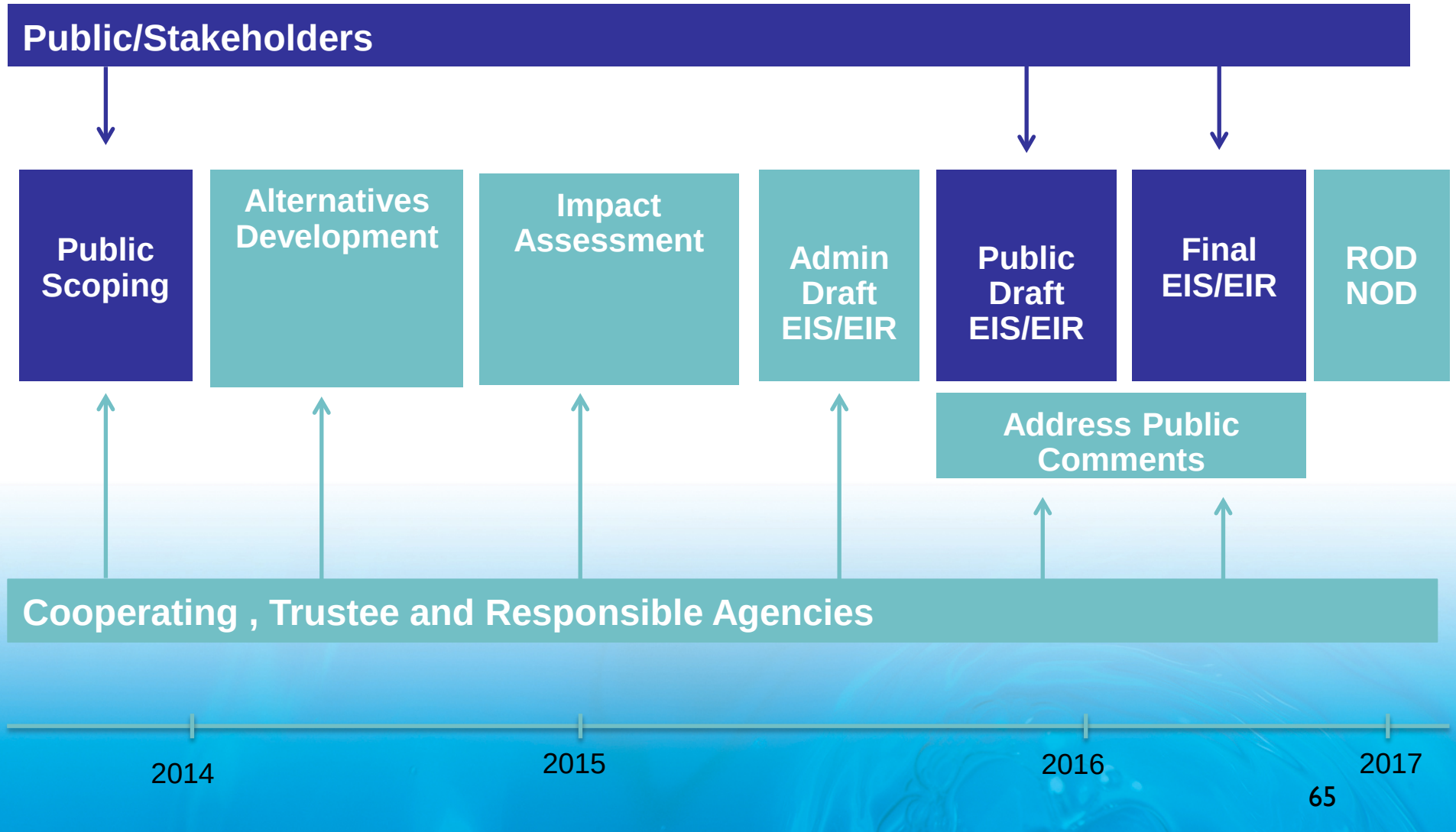
Cooperating Agency Roles

Provide technical input to help identify and evaluate alternatives

Review administrative draft documents

EIS/R Development



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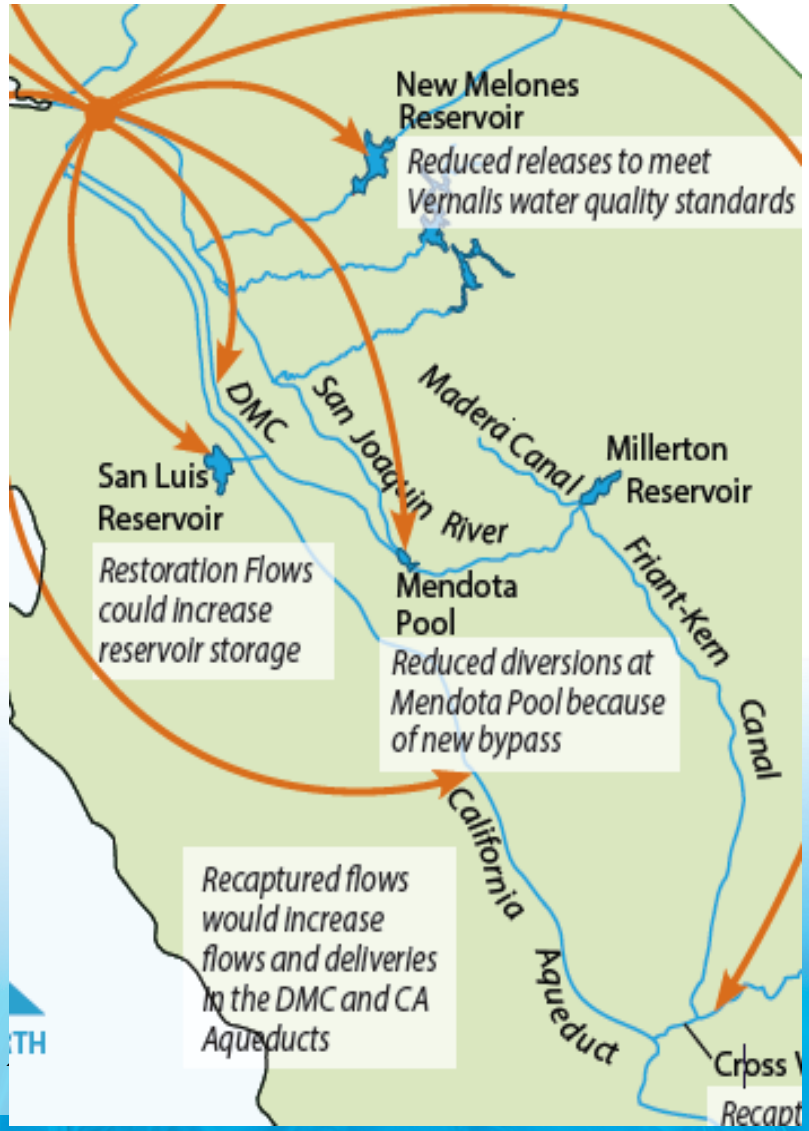
ALTERNATIVES DEVELOPMENT

SAN JOAQUIN RIVER RESTORATION PROGRAM

Alternatives Development

- Reasonable Range of Alternatives
- Analyze "bookends" of alternative effects to provide flexibility
- Alternatives identified through:
  - FWA
  - Published studies
  - Scoping meetings
  - Settling parties



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Alternatives Development

Define Concepts

- Identify Settlement objectives
- Develop a range of concepts for recapture and recirculation from stakeholder input and scoping
- Develop concepts screening criteria
- Screen concepts

Refine Alternatives

- Refine remaining concepts into a range of alternatives
- Conduct detailed engineering analysis and environmental review of the alternatives

INITIAL CONCEPTS

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Potential Study Area

- Potentially affected recapture area
- Friant service area
- Recirculation conveyance areas
- Other potential SWP and CVP areas affected by R&R
- Other areas identified during scoping

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Categories

- Recapture
  - Lower San Joaquin River
  - Delta
- Recirculation
  - Direct Delivery
  - Exchanges
  - Transfers
- Storage Facility Operations

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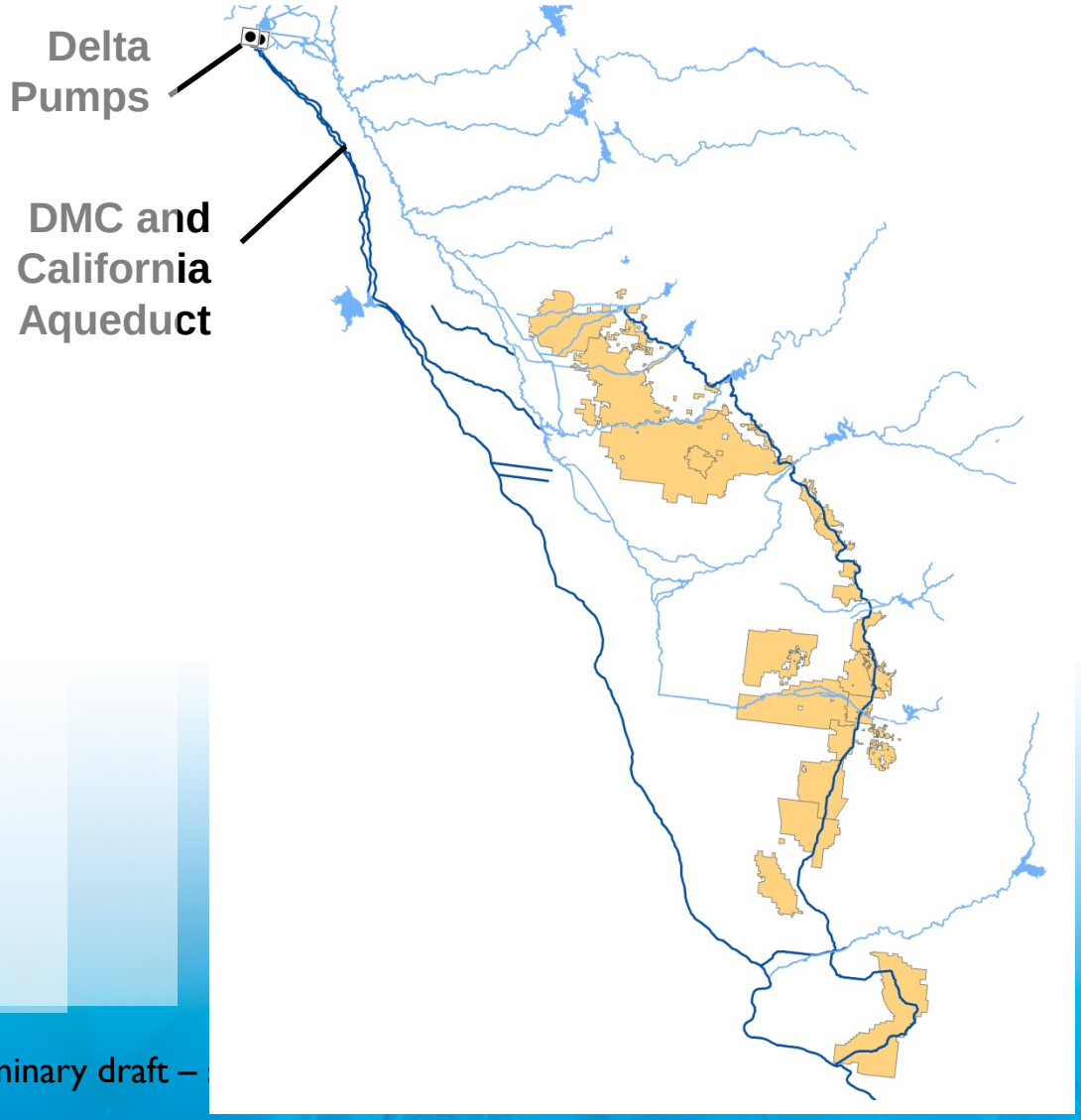
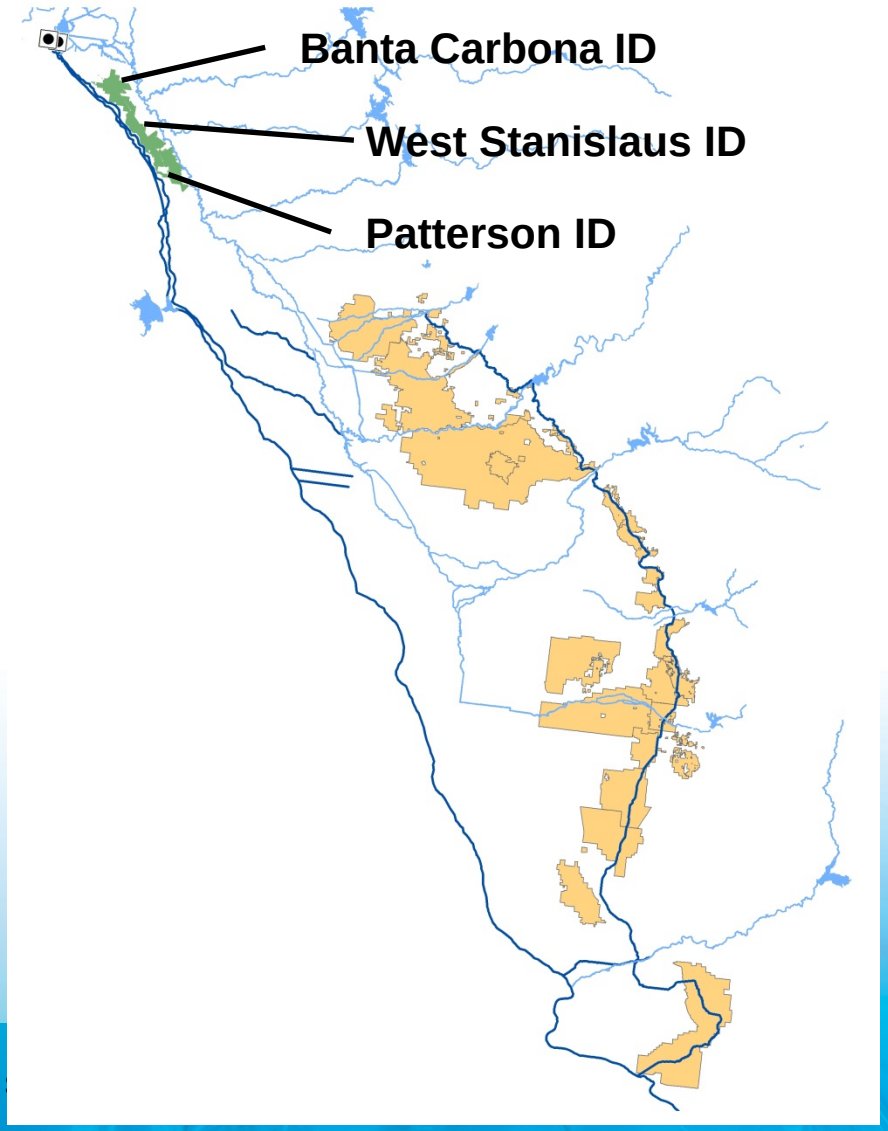
Recapture - Delta

- CVP and Delta Mendota Canal conveyance
- SWP and California Aqueduct conveyance



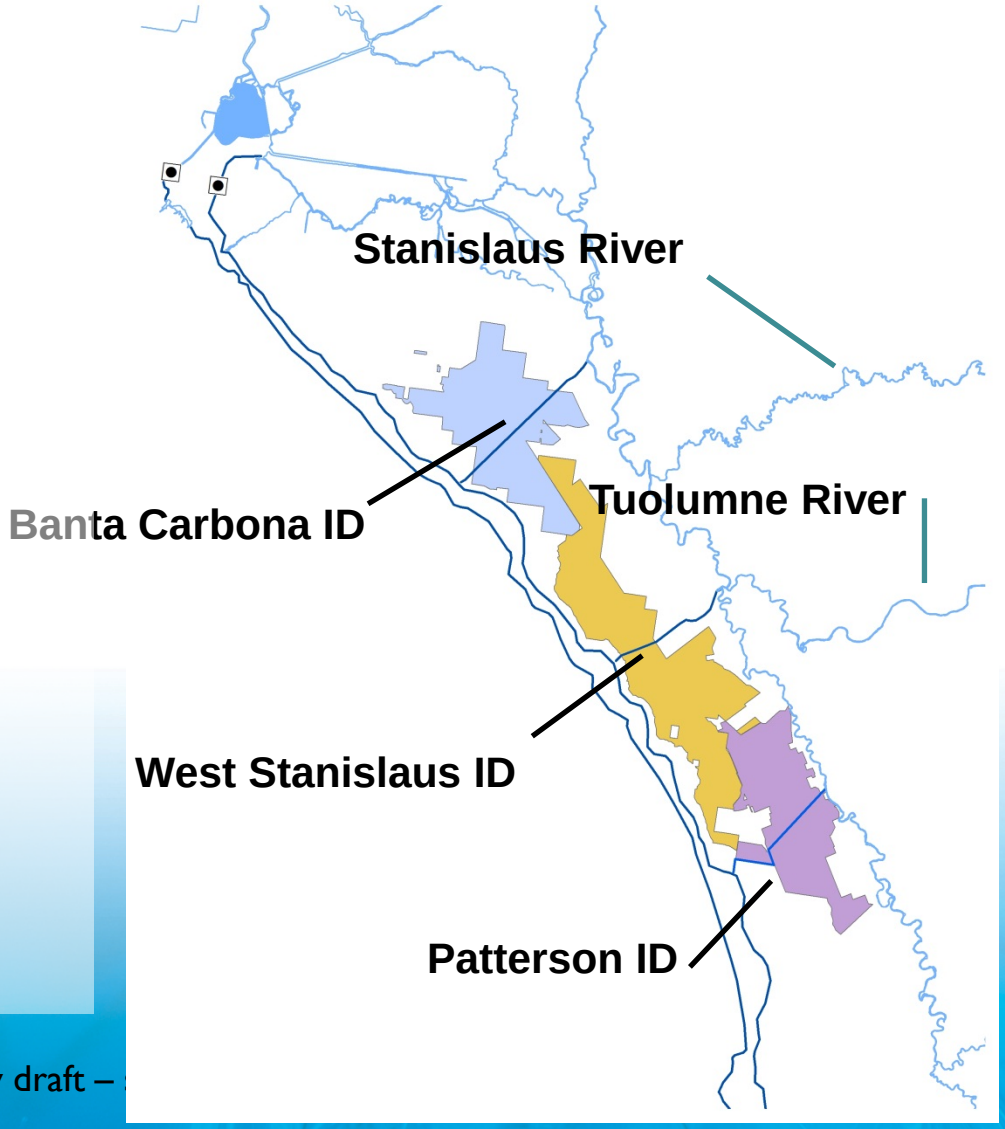
Recapture - Lower San Joaquin River

- Existing Facilities
- Expanded Existing Facilities
- New Pumping Facilities



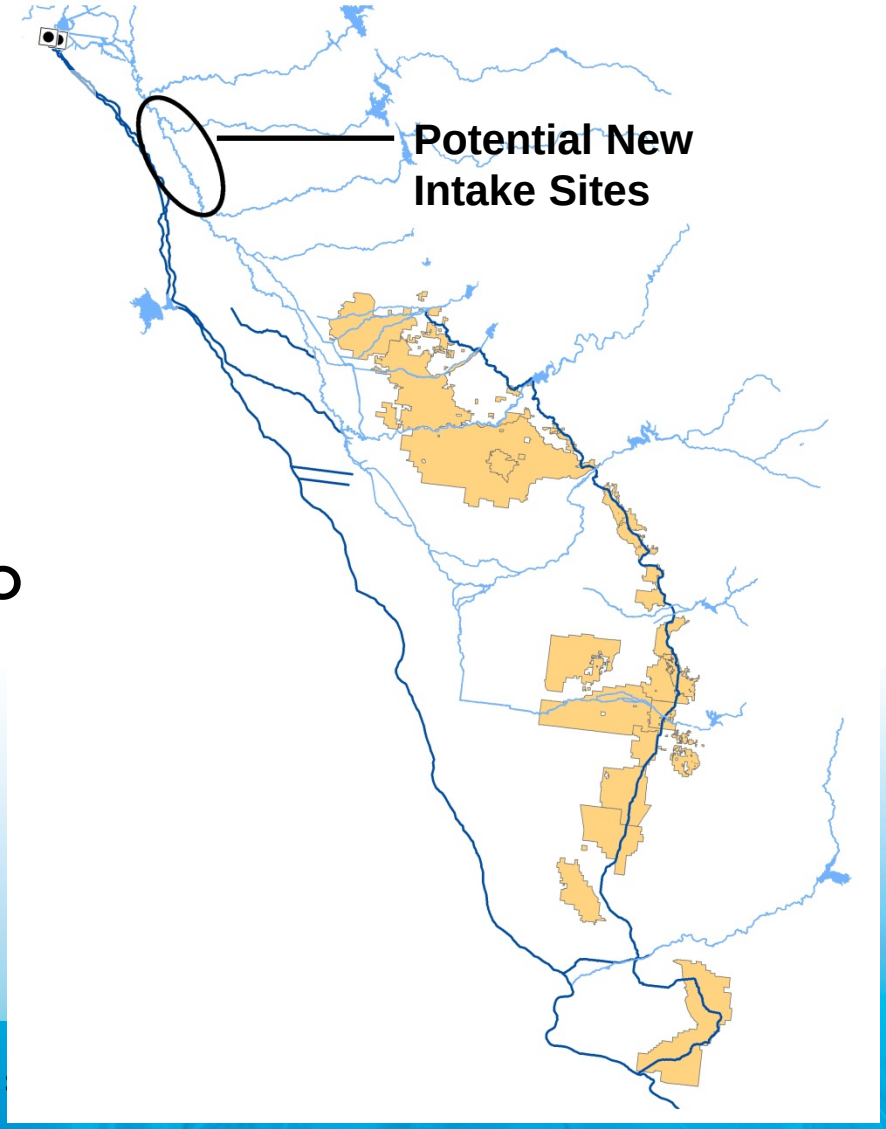
Recapture - Lower San Joaquin River

- Existing Facilities
  - Banta Carbona ID
  - West Stanislaus ID
  - Patterson ID



Recapture – Lower San Joaquin River

- New recapture facility between Merced and Stanislaus Rivers
- 1000 cfs with conveyance to the DMC
- Consider up to 5 locations



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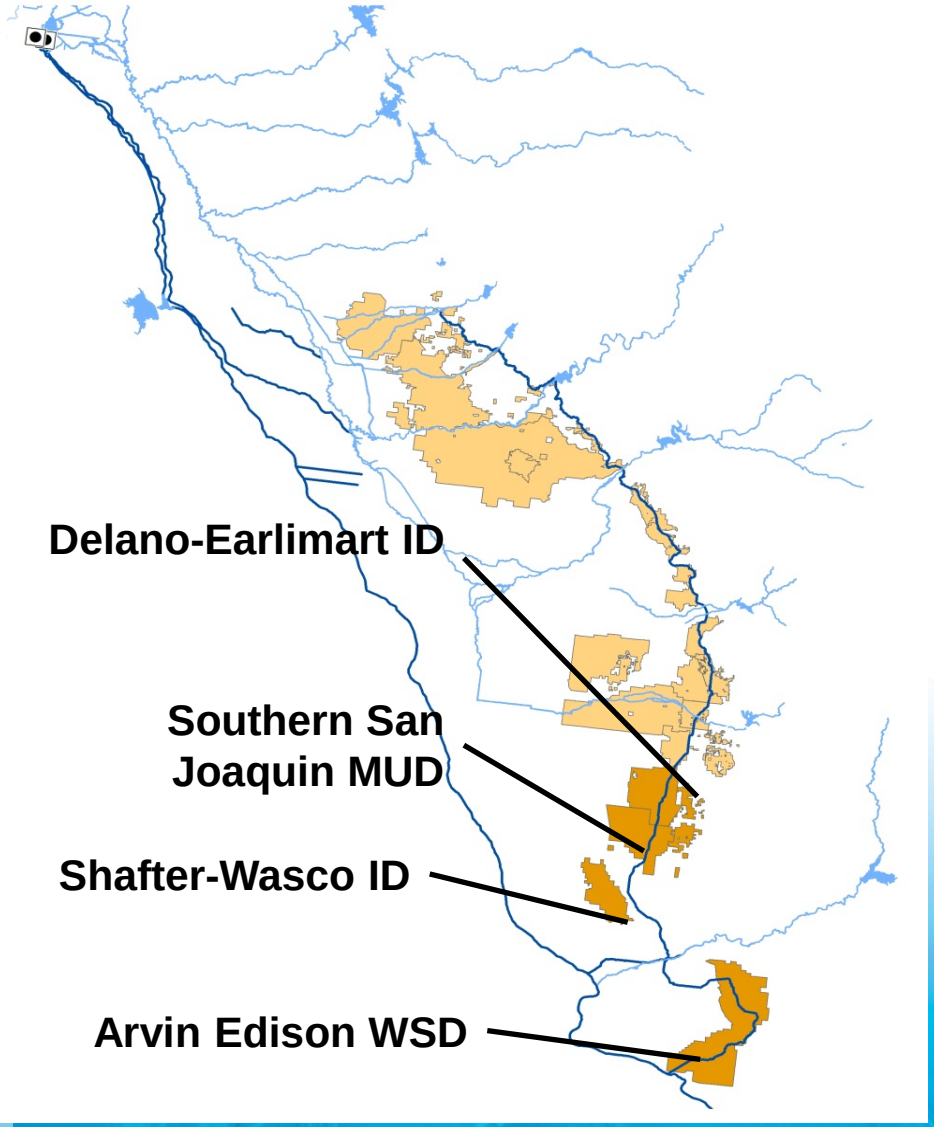
Direct Recirculation

- Direct delivery to Southern Friant Contractors
  - Arvin Edison WSD
  - Cross Valley Canal
  - Friant Kern Canal reverse flow



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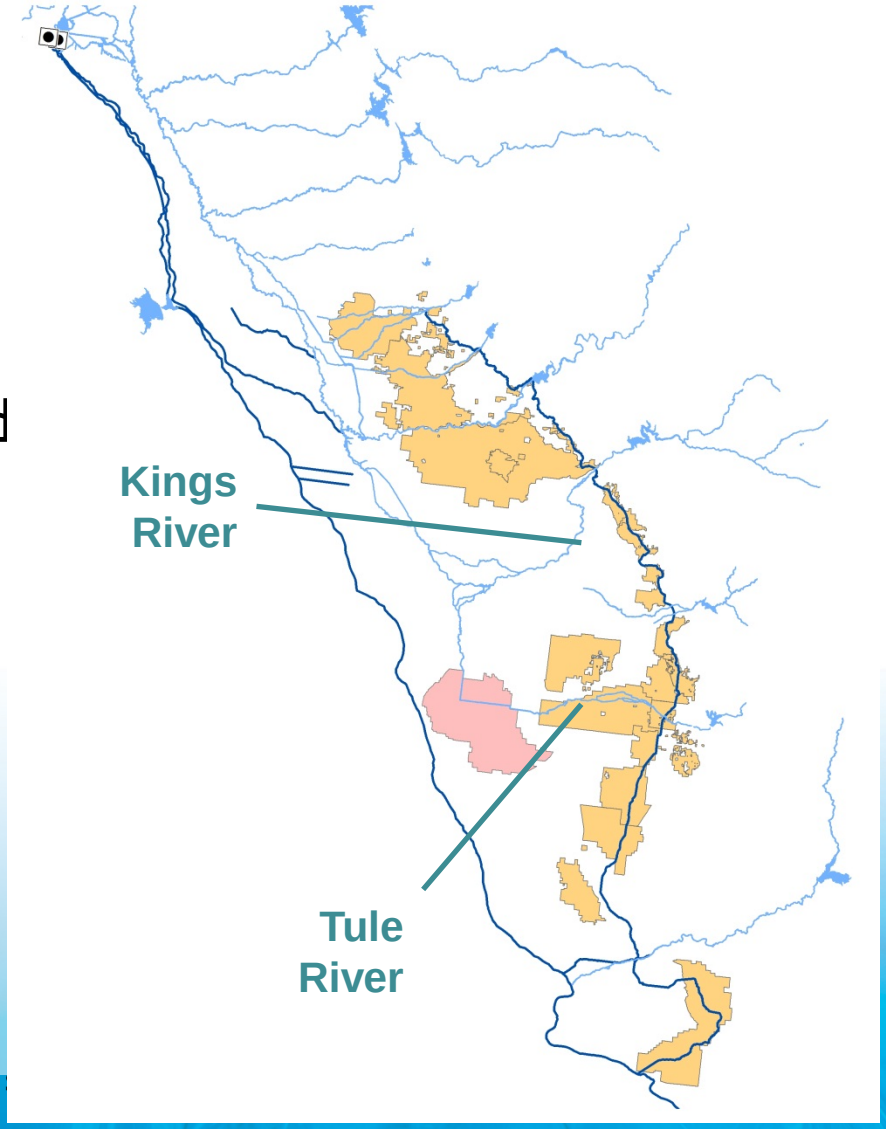
Recirculation – Exchanges

- Exchanges with westside contractors having eastside supplies
  - Recirculation water delivered at SWP turnouts
  - Exchanged non-CVP from Kings, Kaweah, Tule, Kern Rivers



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Recirculation – Transfers

- CVP contractors
- SWP contractors
- Other water agencies

Recirculation – Storage Facility Operations

- San Luis Reservoir
- San Joaquin Valley groundwater banks and surface reservoirs
- Out-of-Basin groundwater banks and reservoirs

MILESTONES AND SCHEDULE

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Schedule

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STAKEHOLDER & PUBLIC ENGAGEMENT

Stakeholder Technical Engagement

- Settling Party Meetings
- Cooperating Agency Meetings
- Water Management Technical Feedback Meetings
- Other Ideas?

Public Engagement

- Public Scoping
- Public Review of Draft EIS/R
- Public Meeting during public review period

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QUESTIONS?

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Public Comment / Next Meetings

SAN JOAQUIN RIVER RESTORATION PROGRAM

Next Meetings

Day	Date	Location
Friday	November 21, 2014	Visalia
TBD	January 2015	Reno
Friday	March 20, 2015	Visalia
Friday	June 19, 2015	Sacramento

SAN JOAQUIN RIVER RESTORATION PROGRAM

Weigh Anchor – it be the end!

International Talk Like a Pirate Day