SAN JOAQUIN RIVER
RESTORATION PROGRAM

Seepage and Conveyance Technical Feedback Group

March 23, 2011

11704 W. Henry Miller Ave.

Dos Palos, CA

SAN JOAQUIN RIVER RESTORATION PROGRAM

Agenda

- Introductions and Technical Feedback Group (TFG) Purpose
- Review updated Charter
- Action Item Review and Update
- 2011 Interim Flows
- Seepage Management Plan Comments
- Seepage Project Locations
- Seepage Project Challenges
- Information & Data Exchange
- Next Steps

Review and Context

TECHNICAL FEEDBACK GROUP PURPOSE AND CHARTER

Technical Feedback Group Purpose

- Provide a constructive forum to improve the information exchange, knowledge, and understanding
  - Among agencies, water districts, landowners, and Settling Parties
  - Regarding Interim and Restoration flows, conveyance, and seepage issues
- Development of prioritized list of seepage avoidance projects

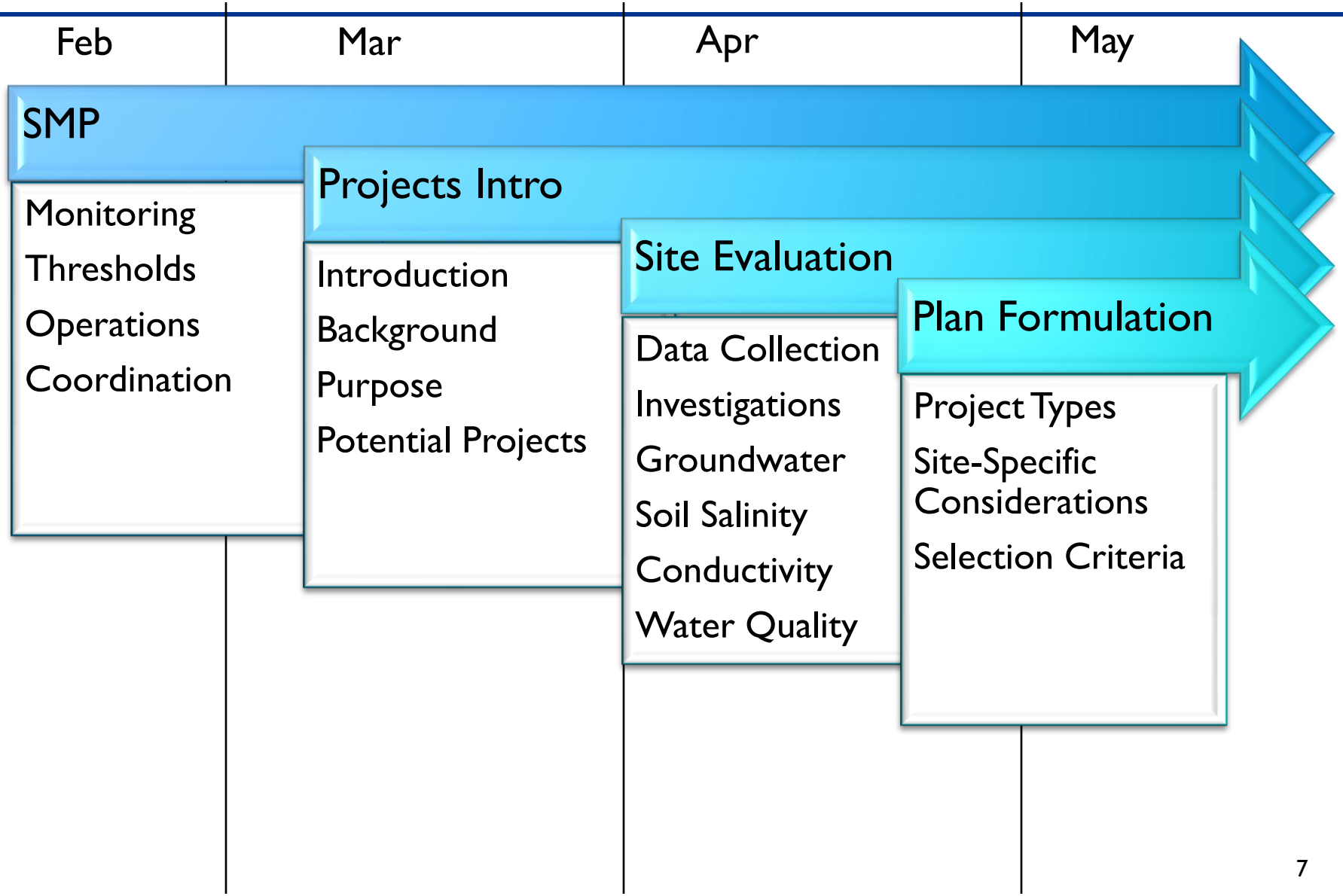
TFG Objectives

- Convey Interim and Restoration Flows while avoiding seepage impacts
- Identify locations for projects with potential for seepage impacts
- Identify potential projects that would avoid seepage impacts
- Set evaluation criteria for projects
- Develop a common understanding of the process, procedures and expectations for projects

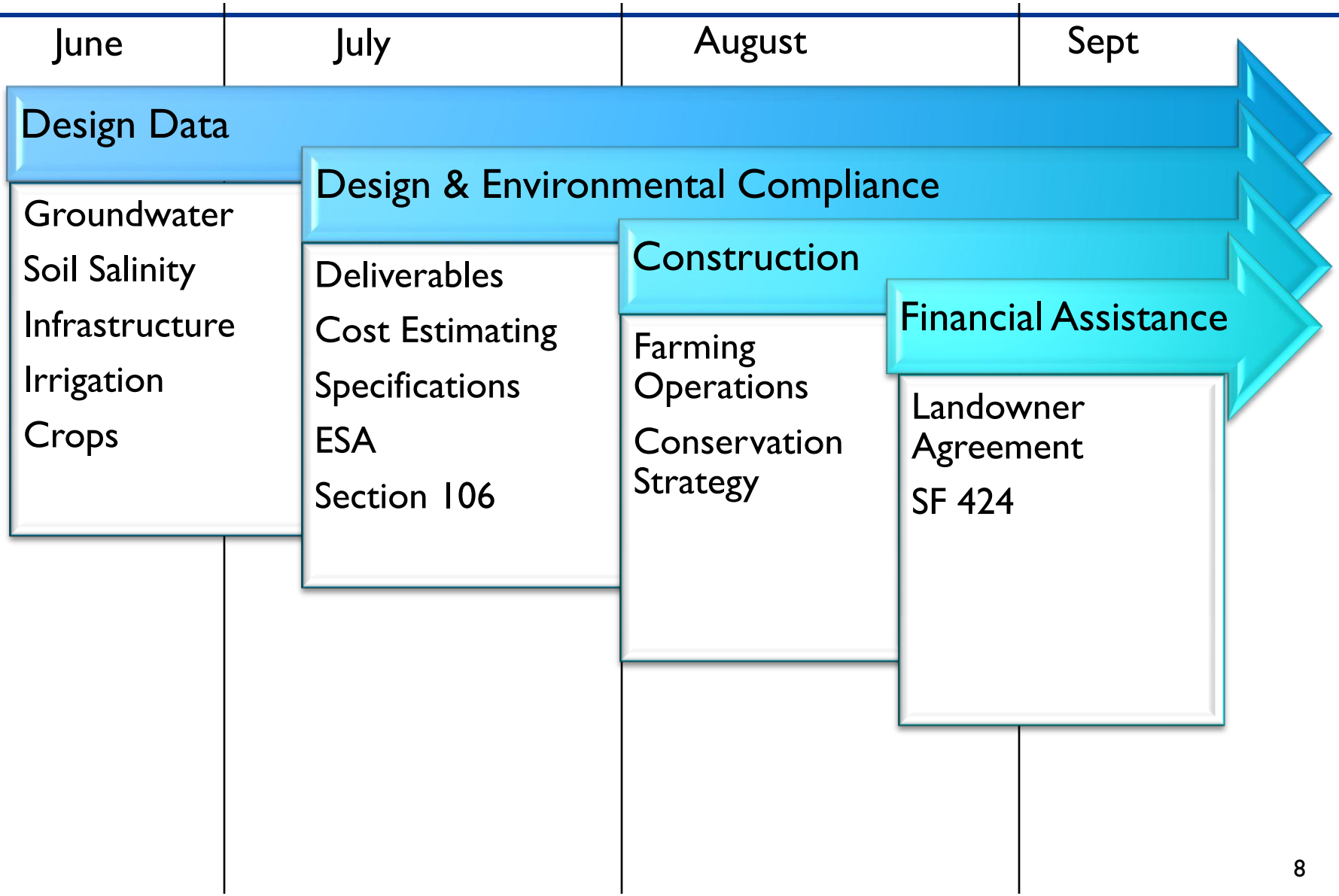
Process & Decision-making

- Monthly Meetings
  - Focused on Seepage Project Handbook and identifying projects to avoid seepage impacts
- Additional topics and meetings identified and considered as we proceed
  - Update Charter in September 2011
- Reclamation and its partner agencies retain decision authority for Program implementation

Discussion Topics



Discussion Topics



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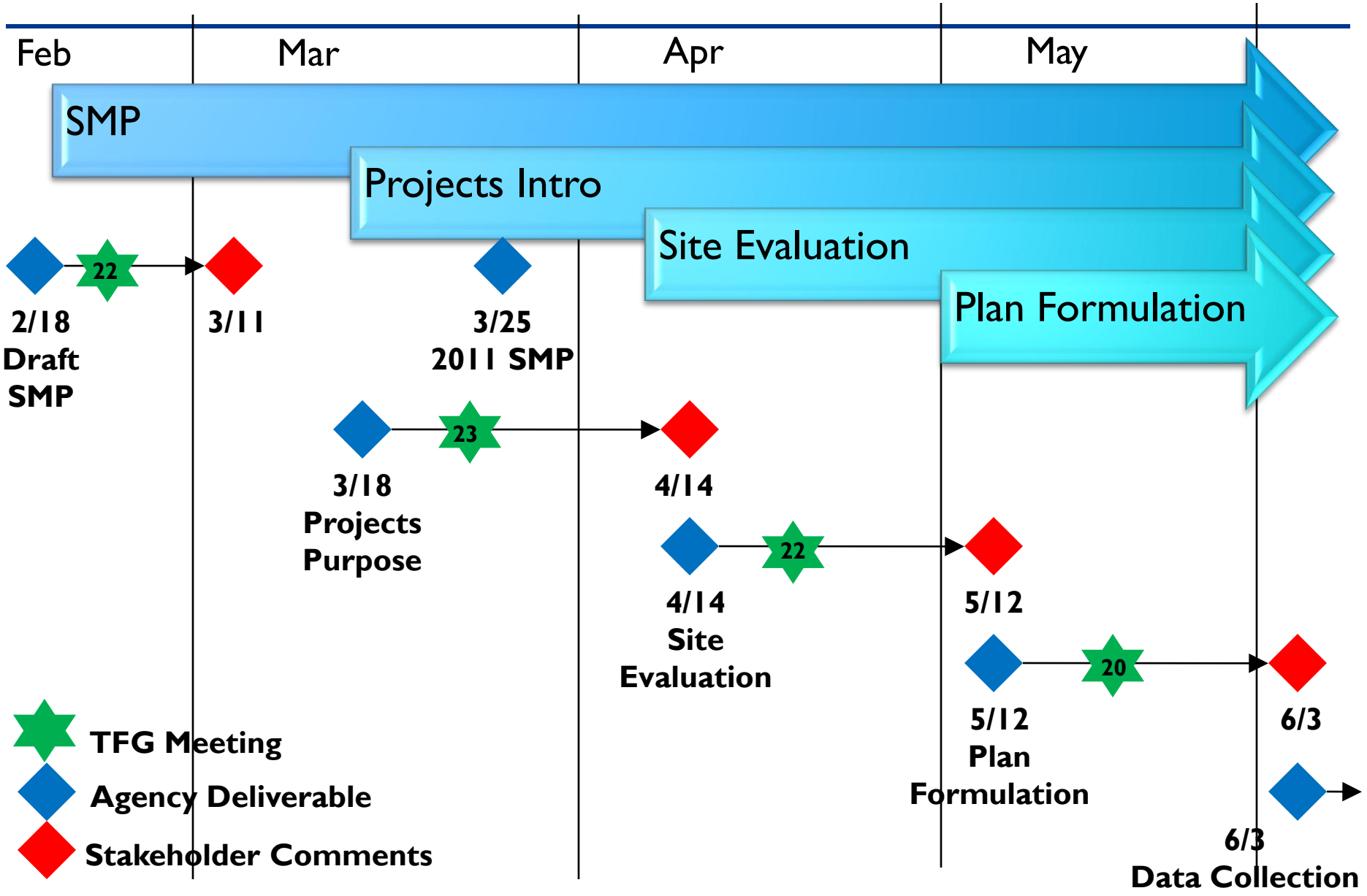
Milestones for Handbook Preparation



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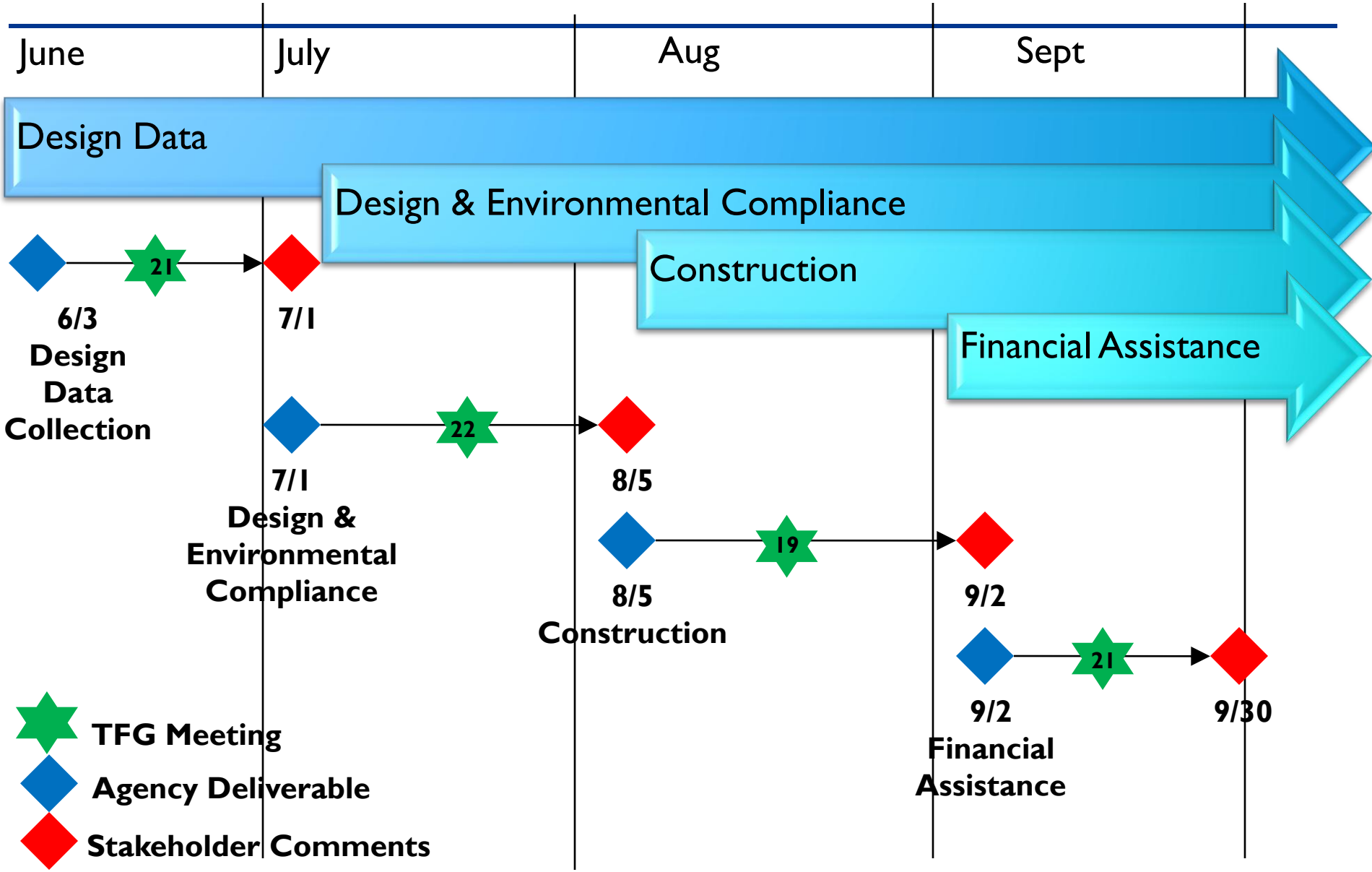
Milestones for Handbook Preparation



Review and Update

ACTION-ITEMS

Recently Closed Action Items

- Added MW-10 74/5 as a priority well
- Completed a site visit in Reach 3; two new wells will be added
- Added data and flow rate to profile graphs
- Stephen Lee activated the voicemail for his cell phone.
- Looked at alternate well siting options near Sack Dam
- Updated CCID well elevations and incorporated them into the SMP and Well Atlas
- Email notification will be sent to water districts and landowners when the final SMP is available

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Open Action Items

Open Action Items	ID'ed	Due	Assigned to:	Status
1. Develop operating plan to incorporate impact of soil temperature on thresholds	12/17/10	TBD	Green	Need revised due date from Sarge
2. Provide the raw data/report from hand auger field work on the capillary fringe.	1/14/11	Late March	Burnett	Contractor back under contract. Anticipate meeting deadline.
3. Work Plan for additional tensiometer work to develop more data on capillary fringe.	1/14/11	February 2011	Lee & Green	Need updated due date from Sarge.
4. Provide Monty and Chris with the excel files that the graphs are based on	2/10/11	3/10/11	Harrison	Pending
5. Add river mile station to river profile to link wells to locations	2/10/11	3/10/11	Harrison	Pending
6. Explore partnering on the cultural resources survey to expand the scope to go out beyond the levee to collect information that would help evaluate projects	2/10/11	3/10/11	Forsythe & White	Discussions underway with DWR.
7. Identify the Reclamation budget category for seepage avoidance projects and how much is budgeted	2/22/11	3/15/11	Mooney, Forsythe	

Dave Mooney

2011 INTERIM FLOWS

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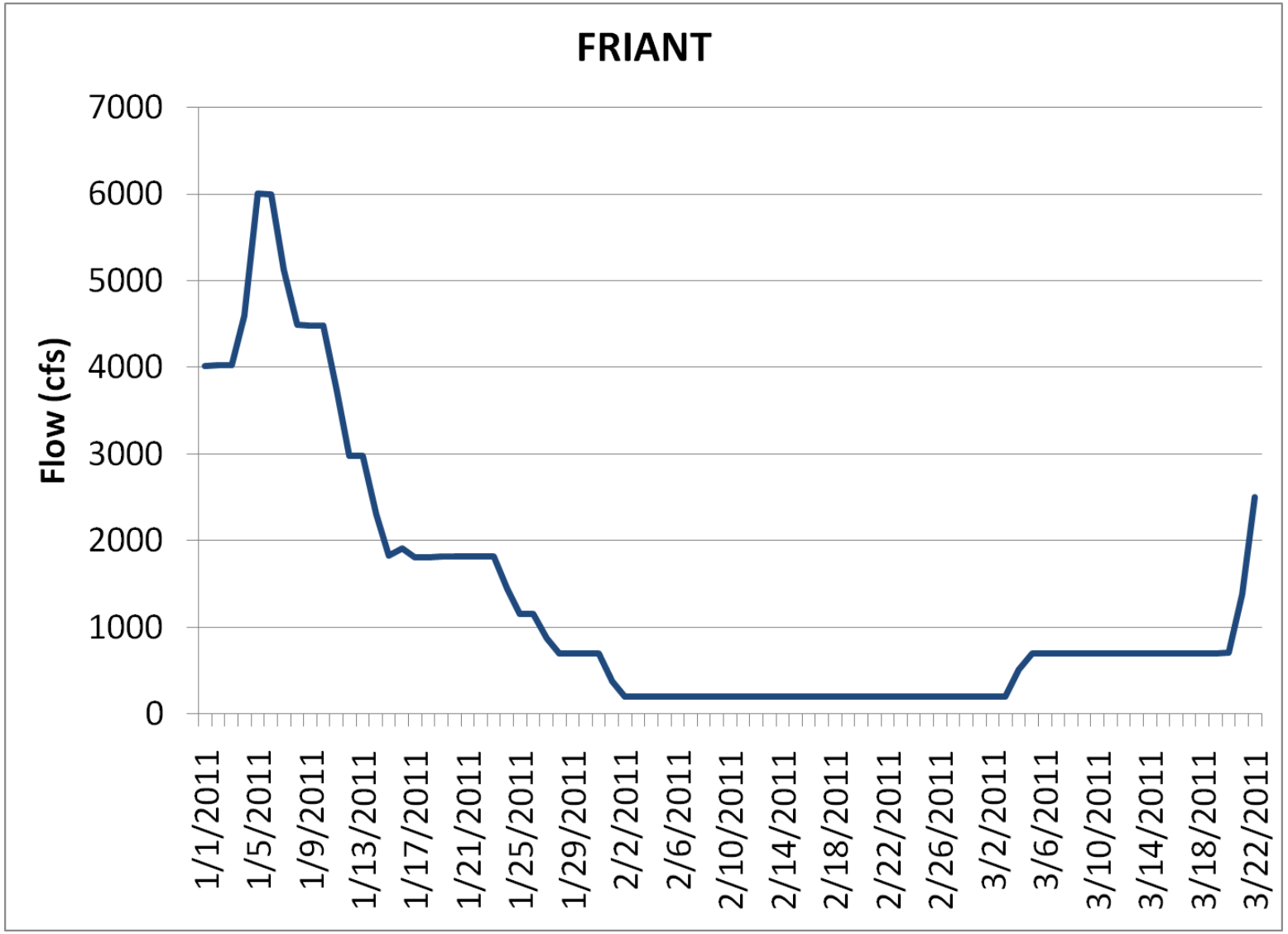
Current Status



Rod Meade

RA RECOMMENDATIONS

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RA Recommendation

Begin Date	End Date	Recommended Friant Dam Release Necessary to Achieve Gravelly Ford Target Flows (cfs)	Exhibit B Riparian Release (cfs)	Gravelly Ford Flow Target (cfs)	Gravelly Ford Flow Allocation (cfs)
Tuesday, February 01, 2011	Monday, February 07, 2011	200	100	105	100
Tuesday, February 08, 2011	Saturday, February 19, 2011	350	100	255	250
Sunday, February 20, 2011	Monday, February 28, 2011	460	100	365	360
Tuesday, March 01, 2011	Monday, March 07, 2011	550	130	425	420
Tuesday, March 08, 2011	Wednesday, March 16, 2011	900	130	775	770
Thursday, March 17, 2011	Saturday, March 19, 2011	1200	130	1075	1070
Sunday, March 20, 2011	Thursday, March 31, 2011	1450	130	1325	1320
Friday, April 01, 2011	Sunday, April 10, 2011	1000	150	855	850
Monday, April 11, 2011	Friday, April 22, 2011	1100	150	955	950
Saturday, April 23, 2011	Saturday, April 30, 2011	1450	150	1305	1300
Sunday, May 01, 2011	Monday, May 30, 2011	1630	190	1445	1440
Tuesday, May 31, 2011	Tuesday, May 31, 2011	350	190	165	160
Wednesday, June 01, 2011	Thursday, June 30, 2011	350	190	165	160
Friday, July 01, 2011	Wednesday, August 31, 2011	350	230	125	120
Thursday, September 01, 2011	Friday, September 30, 2011	350	210	145	140
Saturday, October 01, 2011	Monday, October 31, 2011	350	160	195	190
Tuesday, November 01, 2011	Thursday, November 10, 2011	700	130	575	570
Friday, November 11, 2011	Saturday, December 31, 2011	350	120	235	230
Sunday, January 01, 2012	Wednesday, February 29, 2012	350	100	255	250

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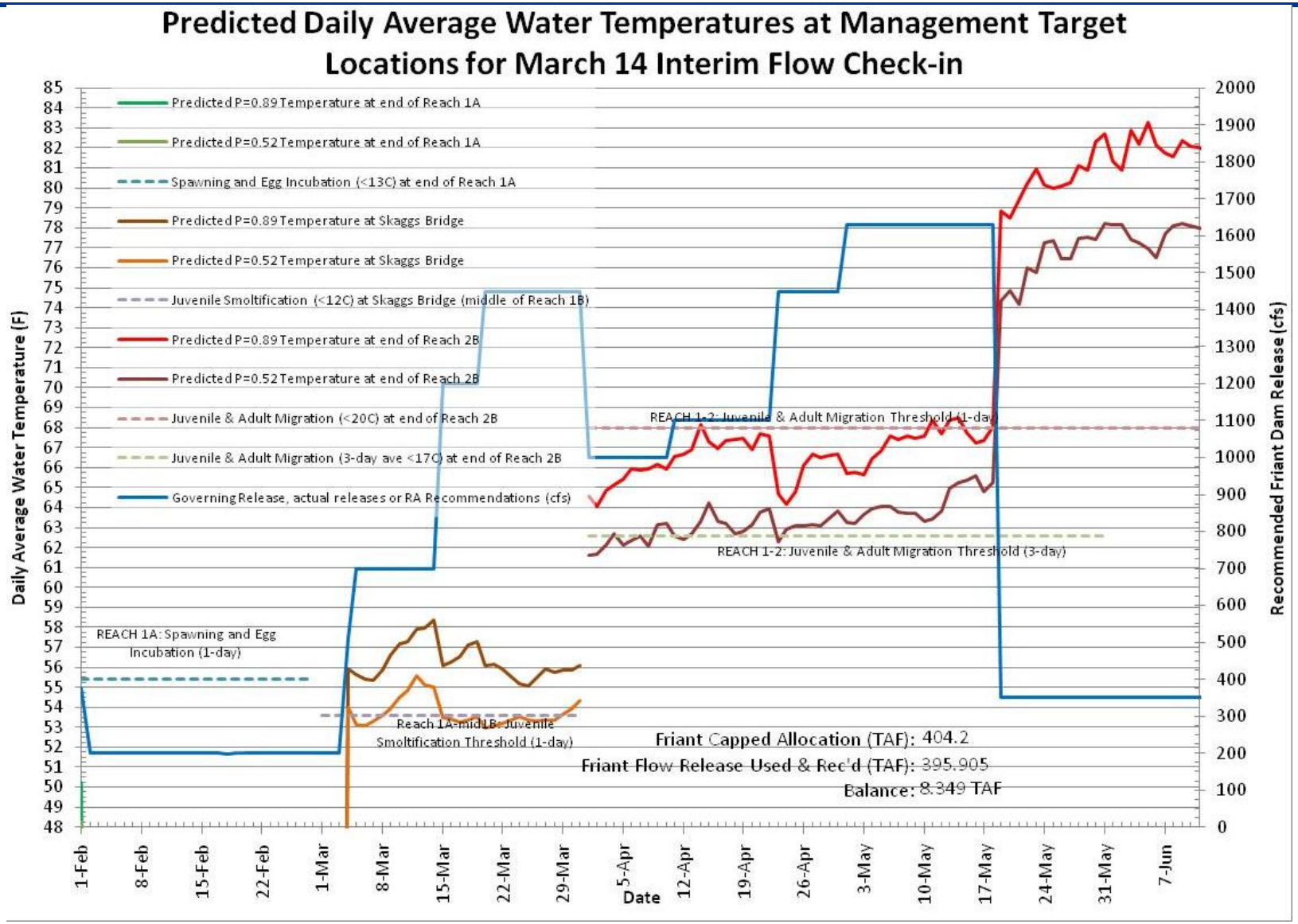
Real-time Management for Temperature



Dave Mooney

FLOOD OPERATIONS

Flood Operations & SJRRP

- SJRRP and Flood Flows Overlap
  - SJRRP – Reclamation
  - Flood – Army Corps
- Trade-offs
  - High Magnitude – Short Duration
  - Lower Magnitude – Long Duration
- SJRRP Provides some Operational Flexibility

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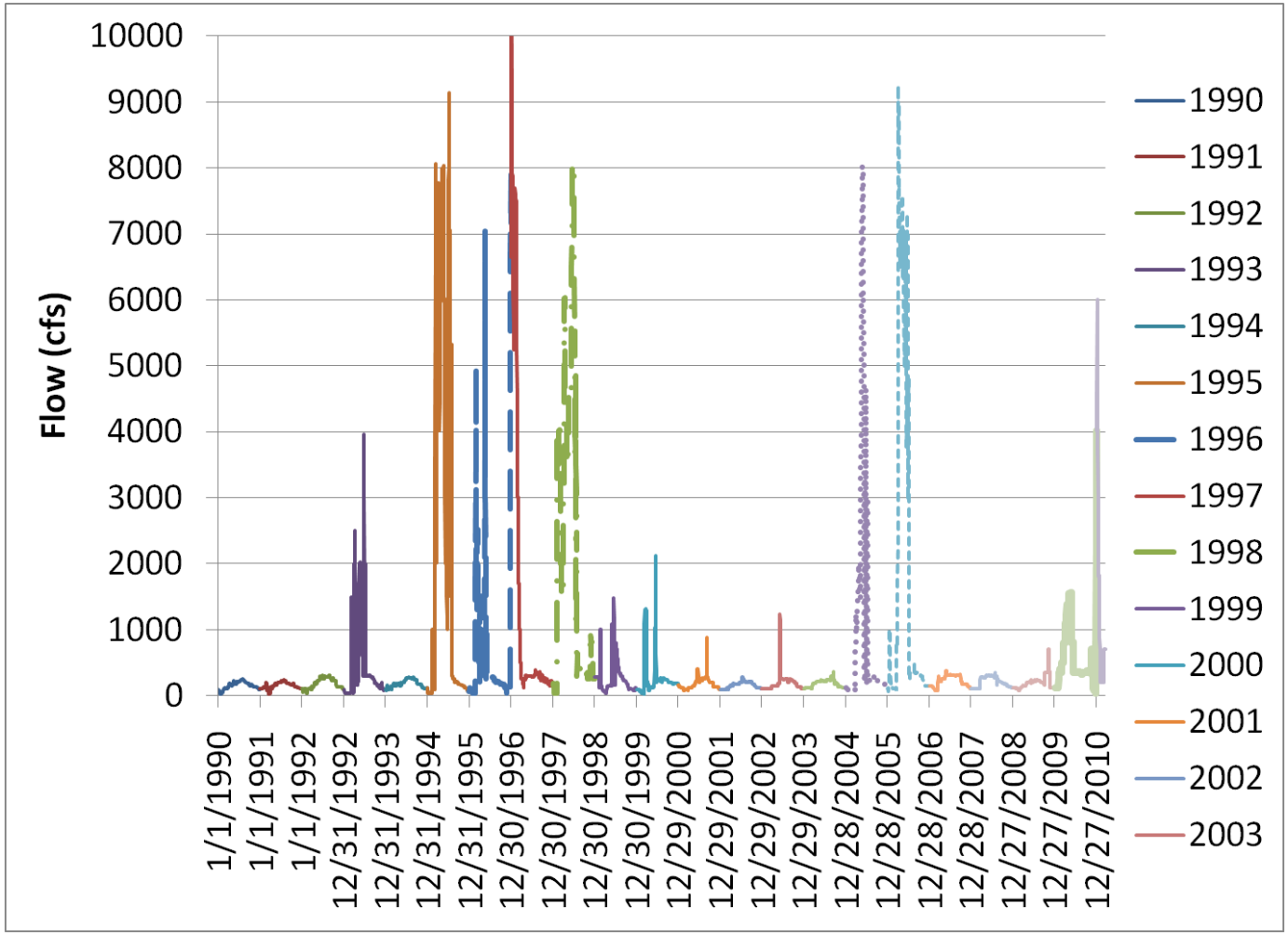
Frequency – Friant Release



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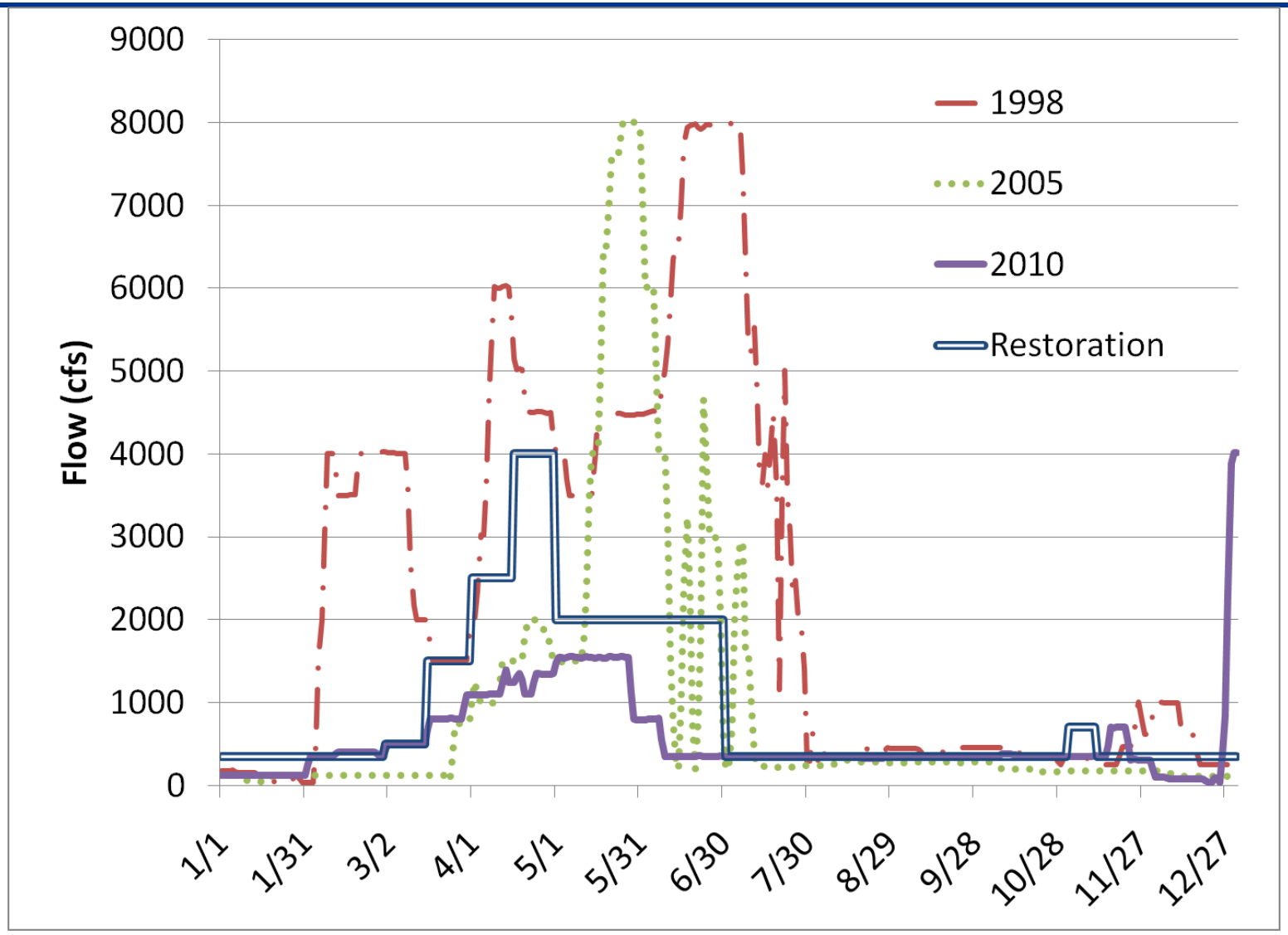
Comparison to Restoration Flows



Review of Comments

DRAFT SEEPAGE MANAGEMENT PLAN

Comments on the Draft SMP

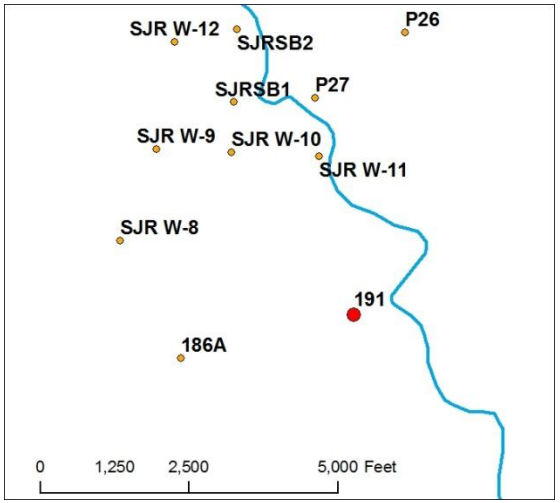
- Site Visit Process
- Response Time & Process
- Priority Wells
- Hand Auguring
- Historic Groundwater Levels
- Landowner Claims

Historical Groundwater Method

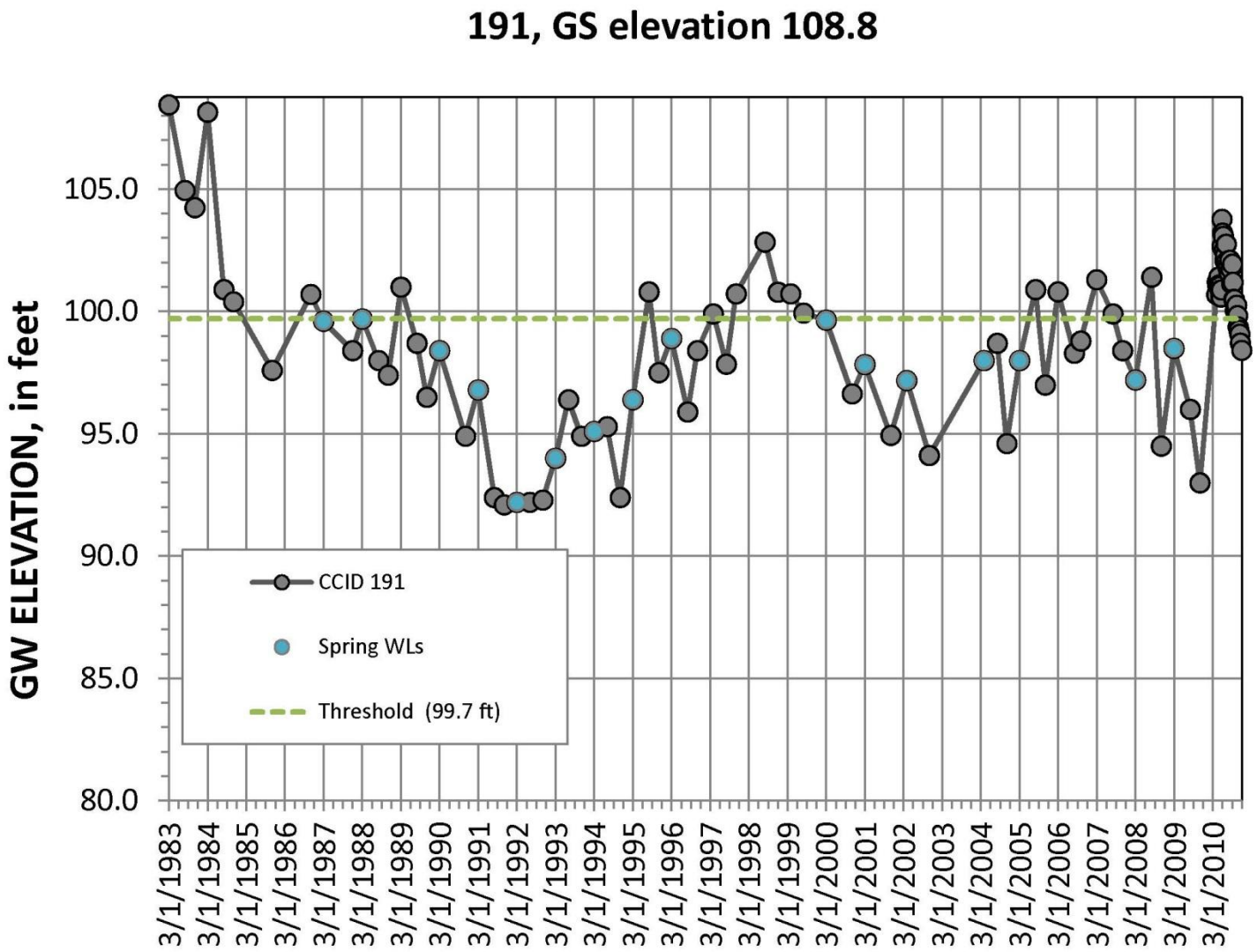
Wells having long-term groundwater levels:

- Using spring measurements from 1983-2009, removed the highest 31% of values, and set threshold at highest remaining value
- 31% represents the number of wet years during that period

This method removes the influence of high water levels during very wet years



Historical Groundwater Method



SMP Revisions

- Living Document
- Continue to be revised as additional information gathered
- Peer review panel

Katrina Harrison

SEEPAGE PROJECT LOCATIONS

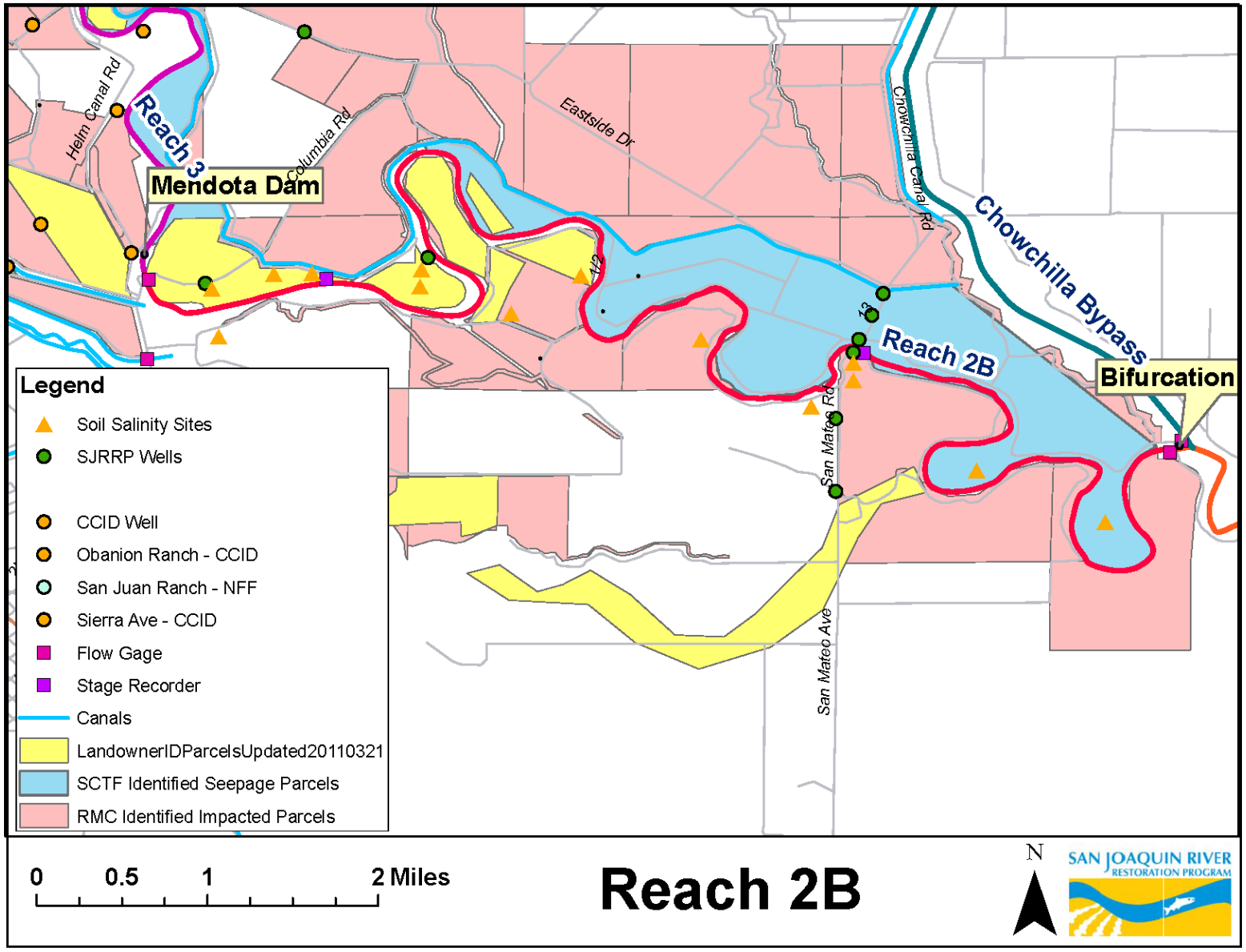
Elements of the Seepage Project Handbook

- Introduction ← Today
- Site Evaluation
- Plan Formulation
- Data Collection
- Design
- Environmental Compliance
- Construction
- Financial Assistance

Development of Risk Locations

- Sources
  - Landowner Identified Parcels
  - USGS Historical Groundwater Maps
  - Elevation Analysis
    - Model
    - Survey
- Seepage Risk Depends on Flow
  - ~1500 cfs Interim Flows
  - ~4500 cfs Restoration Flows

Locations of Identified Risks



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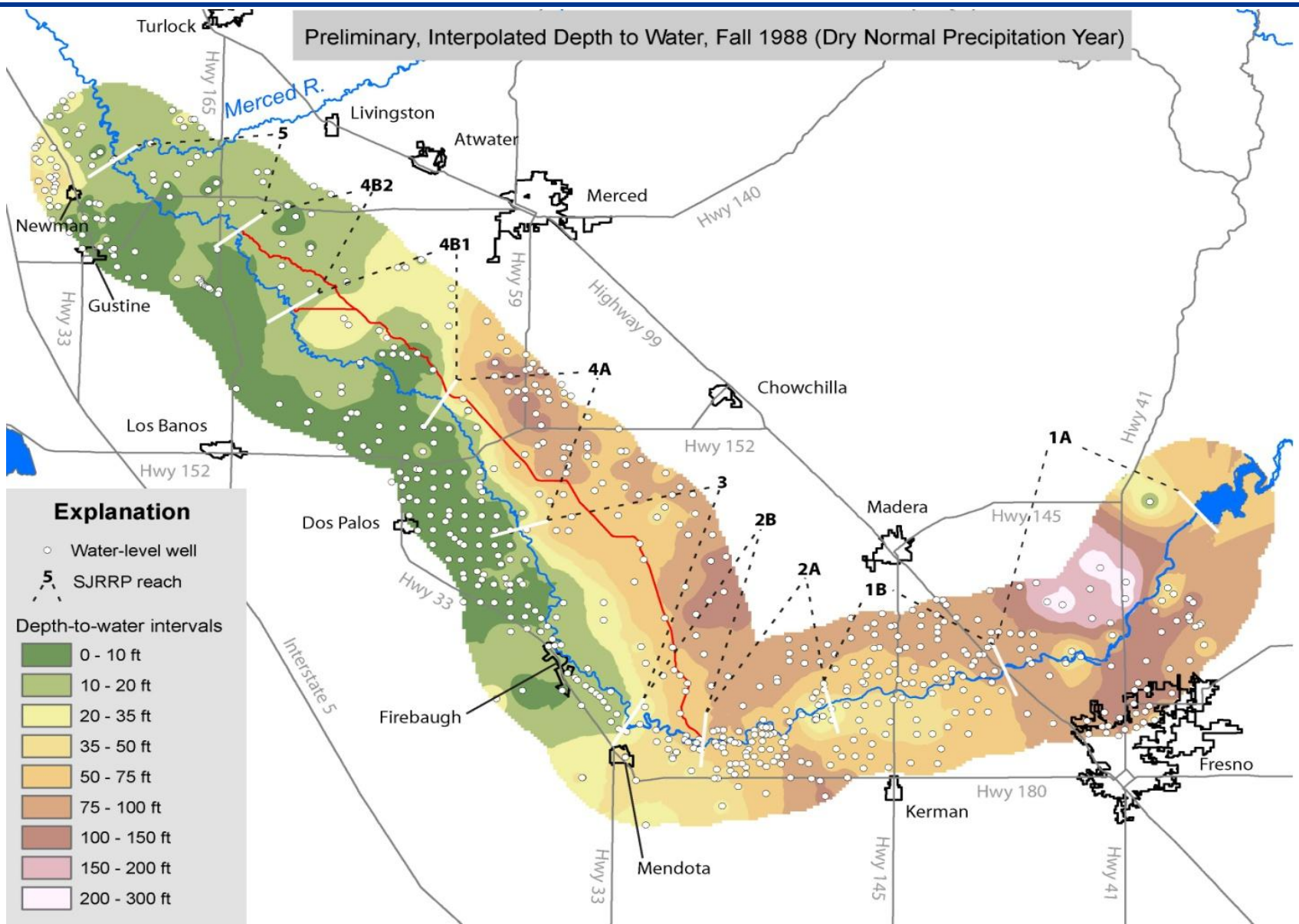
Historical Groundwater



Elevation Analysis – Reach 2A

- 2008 LiDAR Elevations
- Hydraulic model results at 1500 cfs local flow
- Hydraulic model results at 4500 cfs local flow

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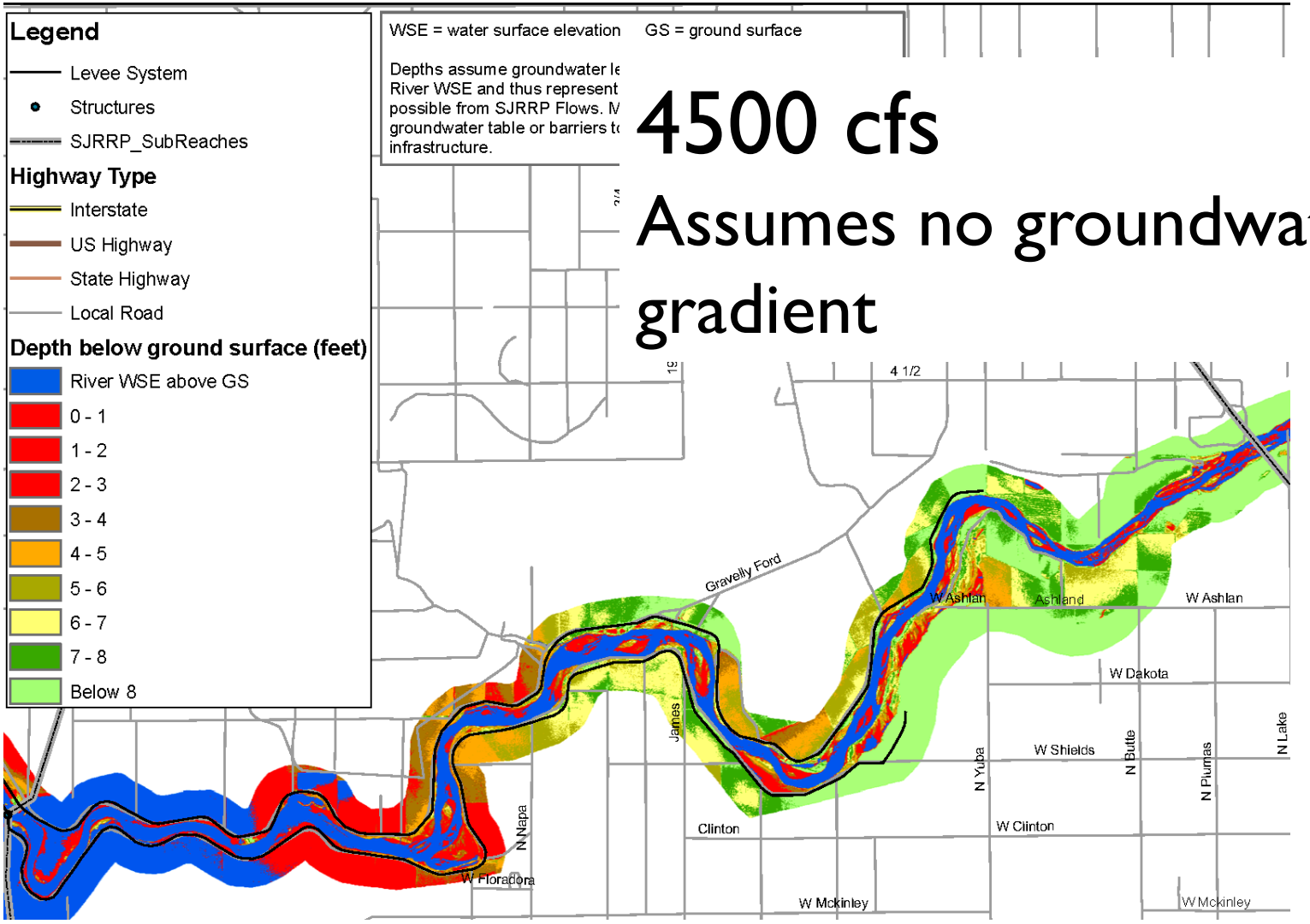
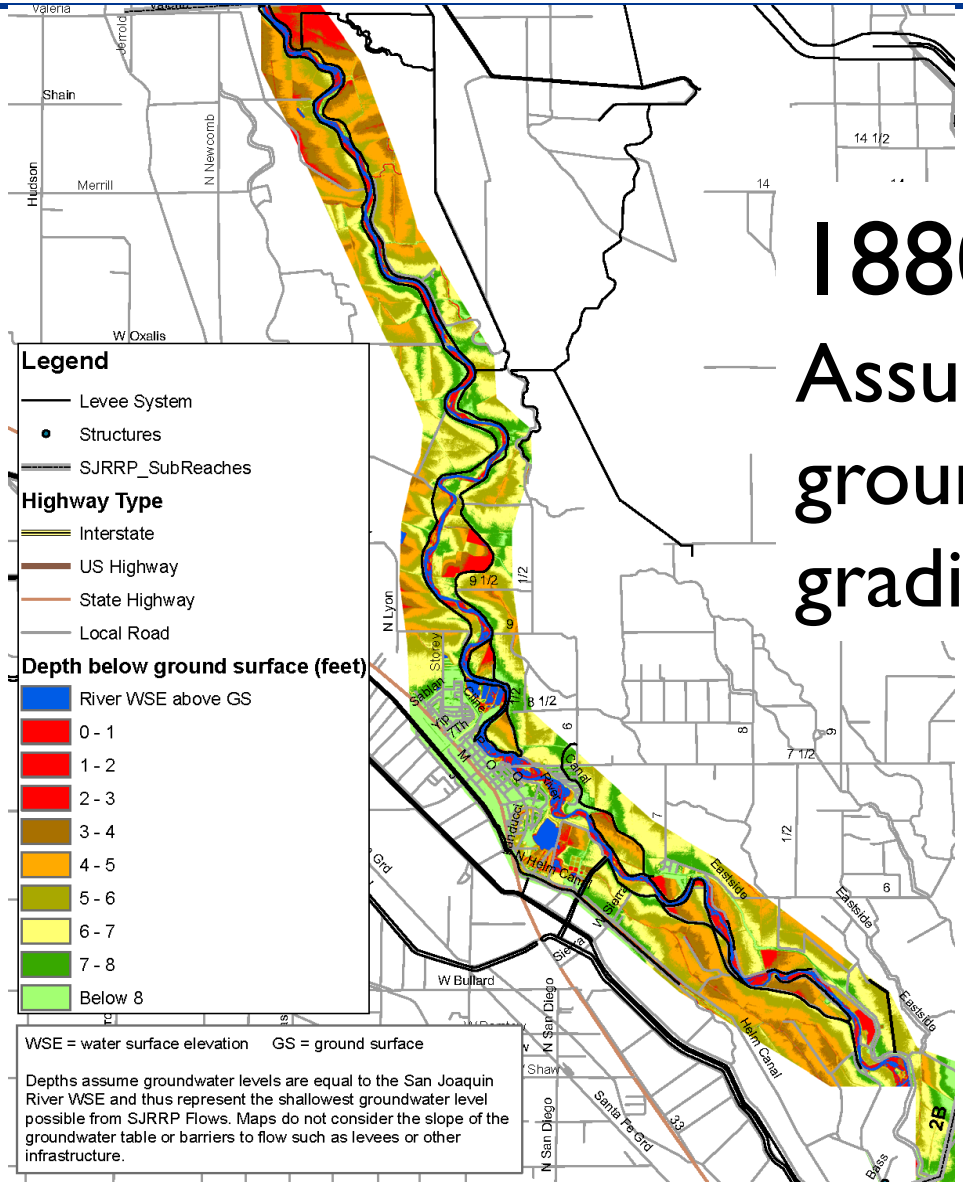
Elevation Analysis – Reach 2A



Elevation Analysis – Reach 3

- Reach 3 Terrain Model - combination of 2009 bathymetry and 2008 LiDAR
- Hydraulic model results at 1500 cfs local flow
- Hydraulic model results at 4500 cfs local flow
- January 2011 surveyed water surface elevation at approximately 1880 cfs local flow

Elevation Analysis – Reach 3



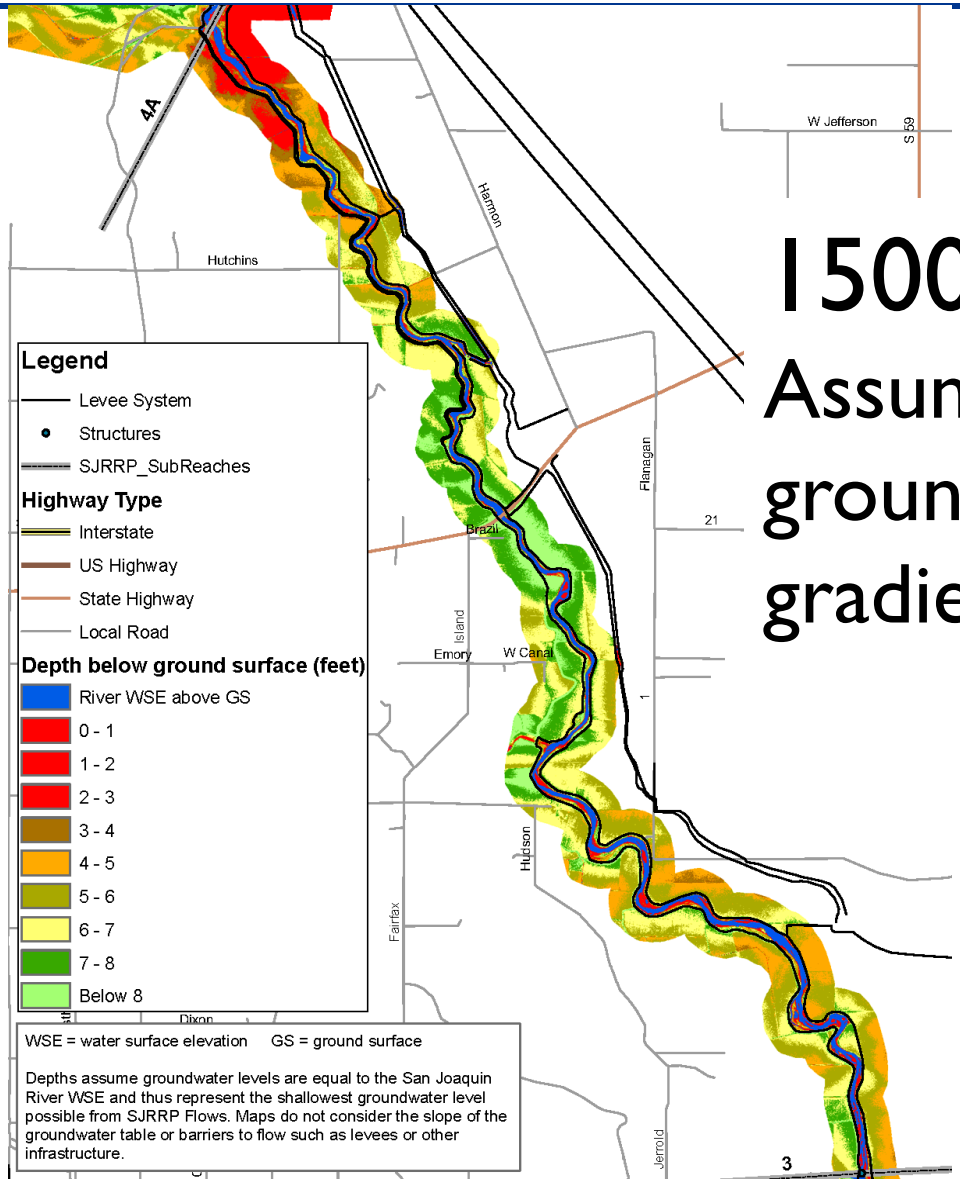
1880 cfs

Assumes no groundwater gradient

Elevation Analysis – Reach 4A

- 2008 LiDAR Elevations
- Hydraulic model results at 1500 cfs local flow
- Hydraulic model results at 4500 cfs local flow

Elevation Analysis – Reach 4A



1500 cfs

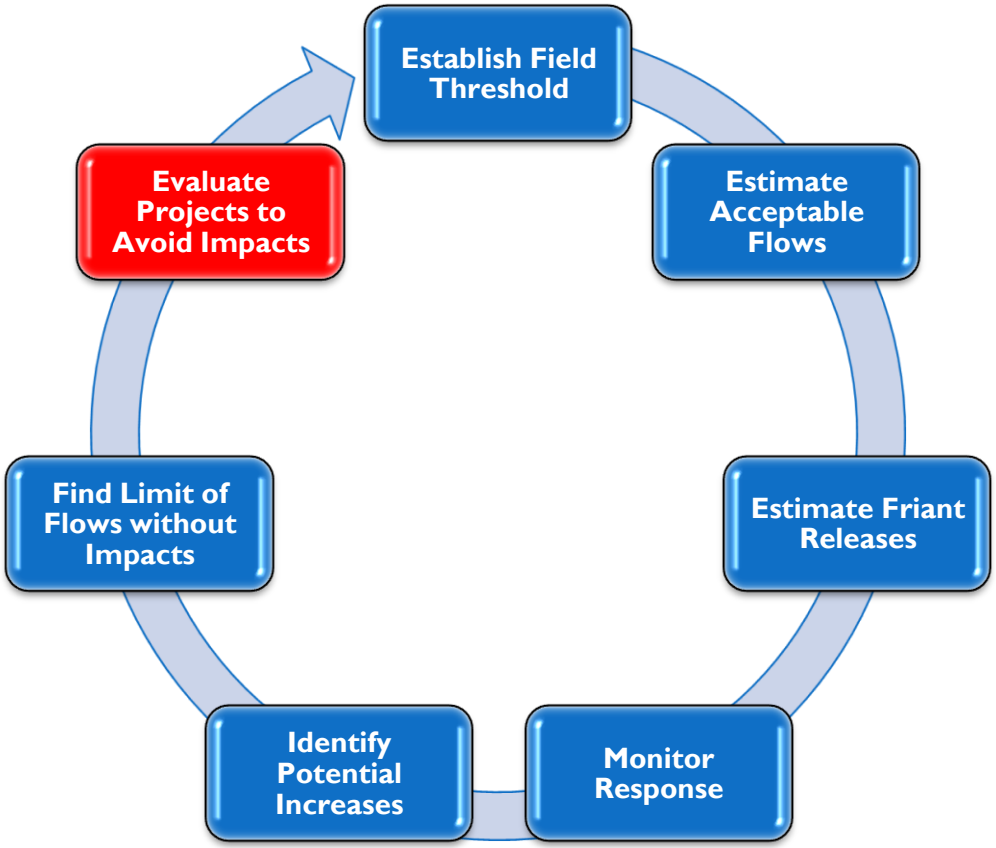
Assumes no groundwater gradient

Dave Mooney

SEEPAGE PROJECT BRAINSTORMING

Seepage Avoidance Approach

- Hold flows below level of impacts
- Implement project to allow increased flows



Considerations

- Design/Feasibility
- Suitability to Site Conditions
- Landowner Acceptability
- Cost
- Environmental Compliance
- Project Agreement
- Federal Contracting Process

Project Types Discussion

- Real Estate Actions
  - Easements
  - Acquisition
- Physical Projects
  - Tile drains
  - Slurry walls
  - Drainage ditches
  - Shallow well pumping
  - Conveyance improvements
- What other types do you see?

Projects Next Steps

- Next Steps for Projects
  - Identify evaluation process for different project types
  - Determine how to select a project type
  - Begin working through challenges

Ali Forsythe

SEEPAGE PROJECT CHALLENGES

Discussion of Challenges

- Ownership
- Operations and Maintenance
- Water Discharge
- Water Rights
- Long-term Monitoring
- Cost-share
- Terms of an Agreement

Discussion of Challenges

- Ownership
  - Who owns the facilities?
  - Landowner or Federal government or other?
- Operations and Maintenance
  - Who operates and maintains the facility?
  - Who is responsible if its not operated and maintained?
- Water Discharge
  - Where does the facility discharge to?
  - Discharges to the river may require a waste discharge permit – who holds the permit and ensures compliance with the conditions?
  - Who "owns" the discharge water?
  - What are the impacts to future fishery and water quality if discharged to the river?

Discussion of Challenges

- Water Rights
  - Who's water is it?
  - How do we not induce further seepage from the river or local distribution canals?
- Long-term Monitoring
  - What long-term monitoring if any, is needed?
  - Who will do this and what access is needed?
- Cost-share
  - What are the existing drainage challenges?
  - Is the project also resolving a challenge that is not a result of the Restoration Program?
- Terms of an Agreement
  - Agreements with individual landowners would be needed to address these challenges and outline roles and responsibilities.
  - Would also need to address hold harmless provisions.

INFORMATION & DATA EXCHANGE

Patti Ransdell

NEXT STEPS AND FOLLOW-THROUGH

Next Steps

- Landowner Comments on Project Locations sent to Reclamation – April 14
- Reclamation to provide Draft Site Evaluation to Landowners – April 14
- Set Next Meeting Dates:
  - April TBD
  - May TBD
  - June 21

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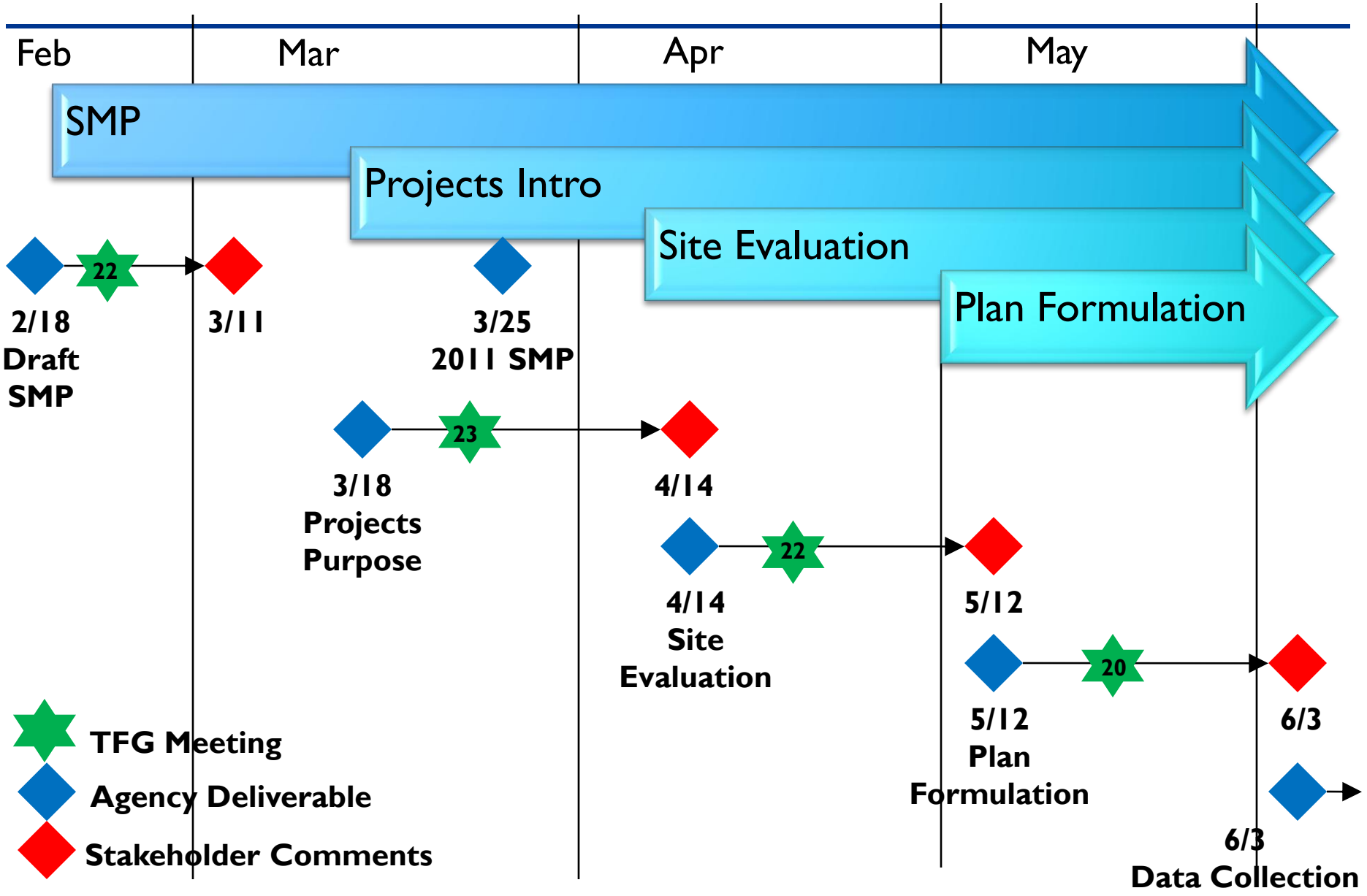
Milestones



Action Items and Review

- Update Action Items
  - Revised Actions
  - New Actions

Topics Parking Lot

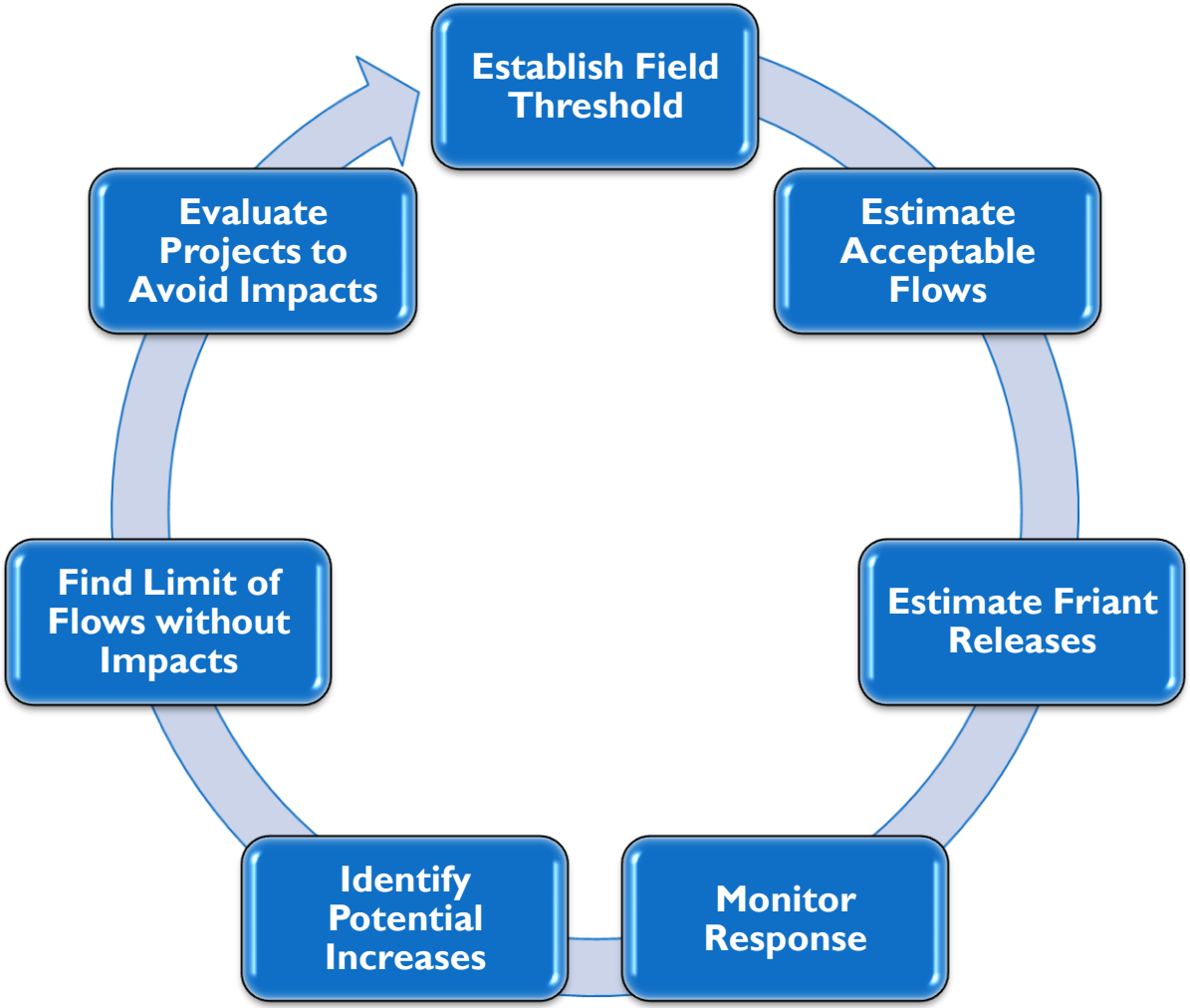
- Projects to reduce or avoid seepage impacts
  - Disposal of tile drain water

Contact

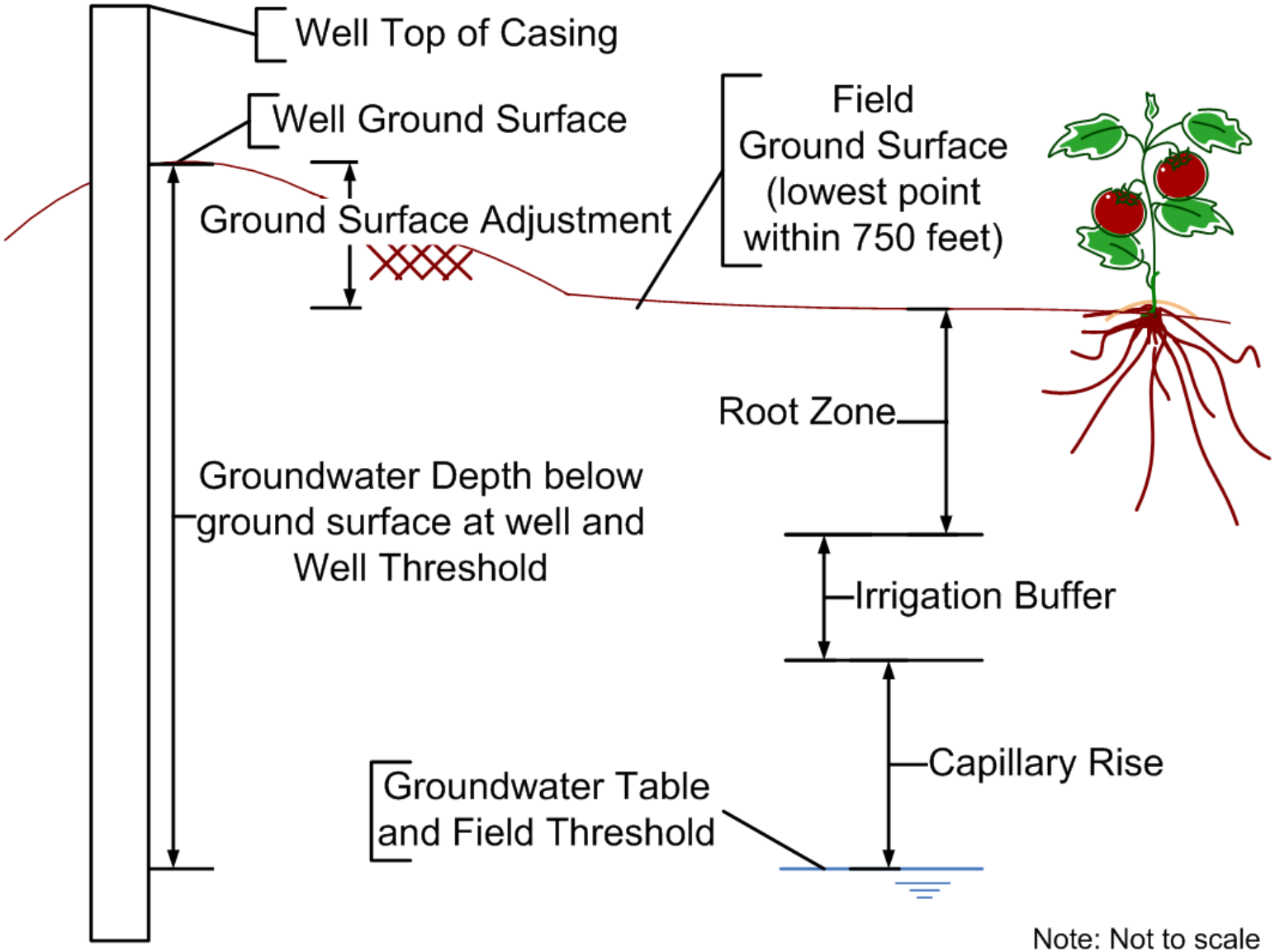
- Technical Feedback Group – David Mooney
  - 916-978-5458
  - dmmooney@usbr.gov
- Seepage Concerns – Seepage Hotline
  - 916-978-4398
  - interimflows@restoresjr.net

BACKUP SLIDES

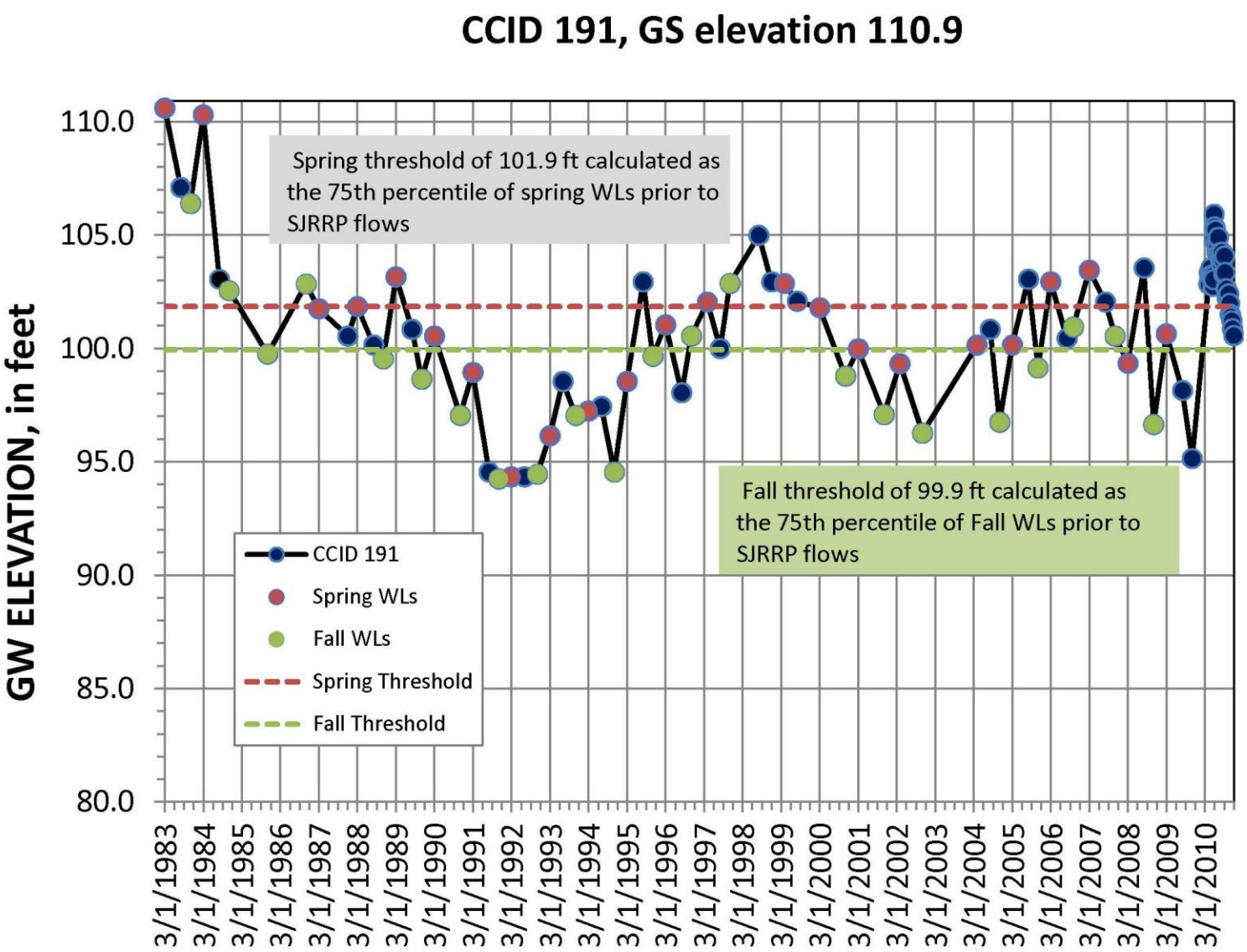
Iterative Approach to Increase Flows while Avoiding Impacts



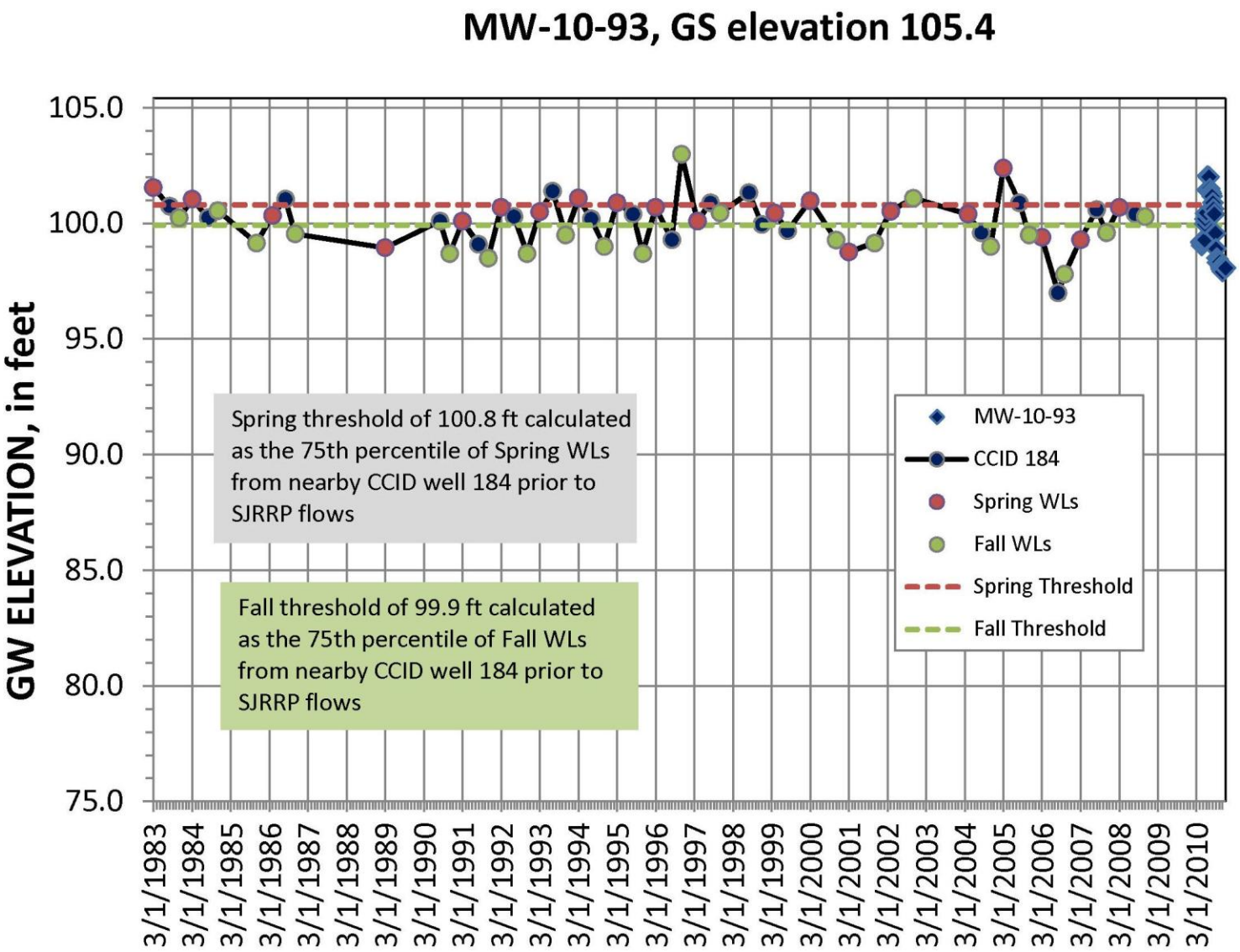
Agricultural Practices Method



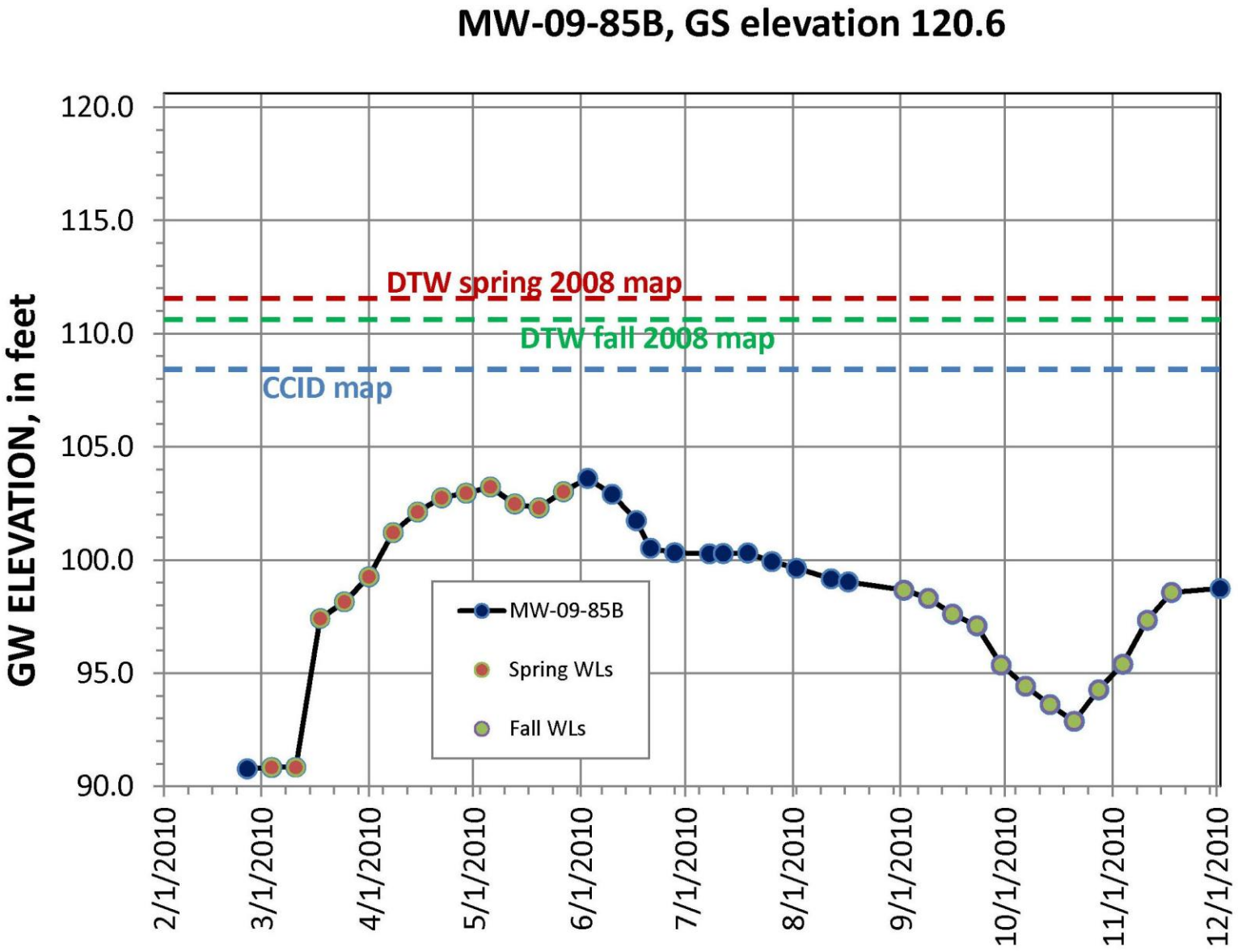
Historical Groundwater Method A



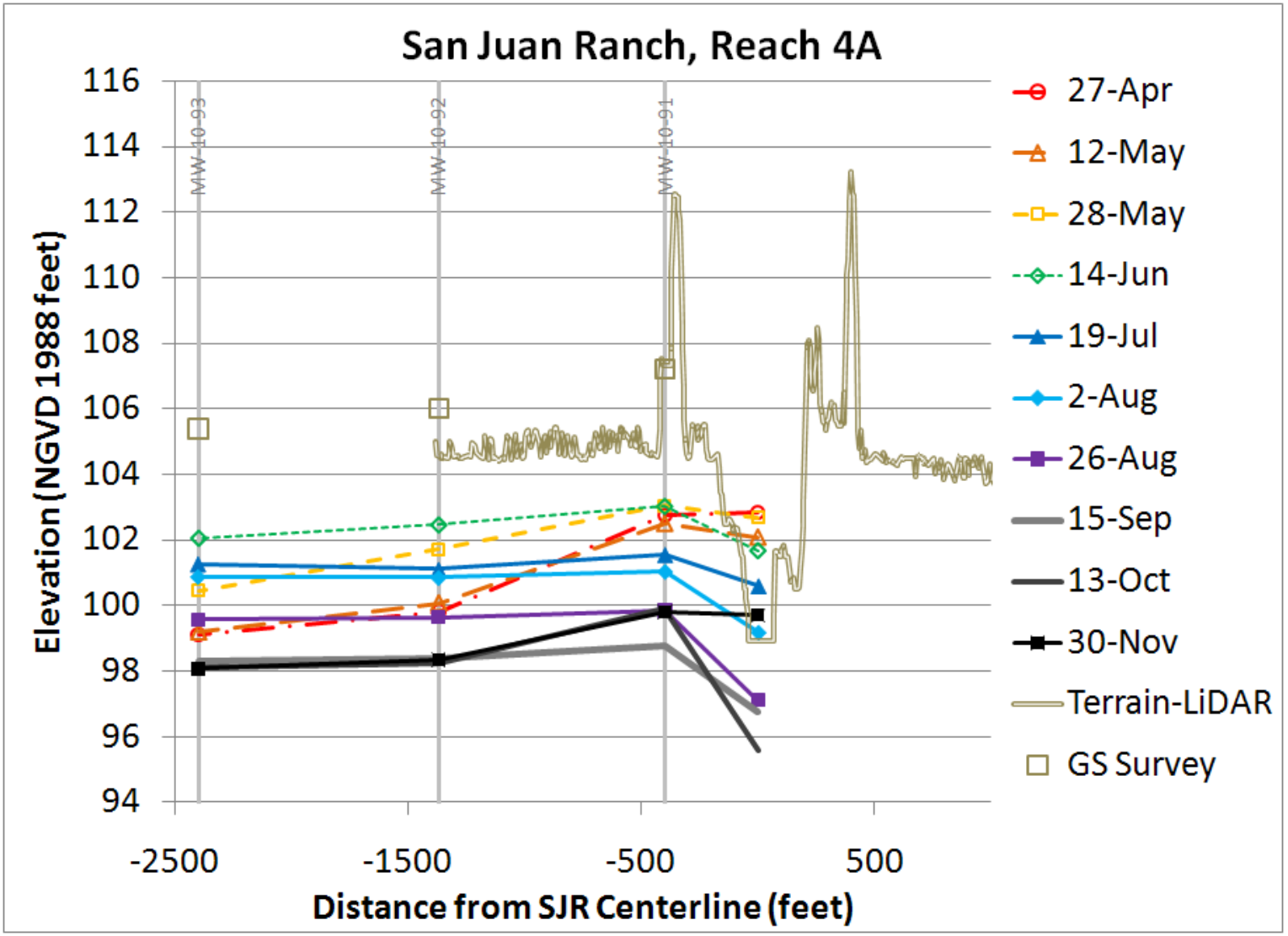
Historical Groundwater Method B



Historical Groundwater Method C



Drainage Direction Method



Process & Roles

- Projects Process Definition
  - Expectations
  - Procedures
  - Timeline
- Major Federal Requirements
  - Project/Site Evaluation
  - Permitting & Compliance
    - Environmental review (NEPA)
    - Endangered species (ESA)
    - Cultural resources (SHPO)
    - Water quality (Clean Water Act)