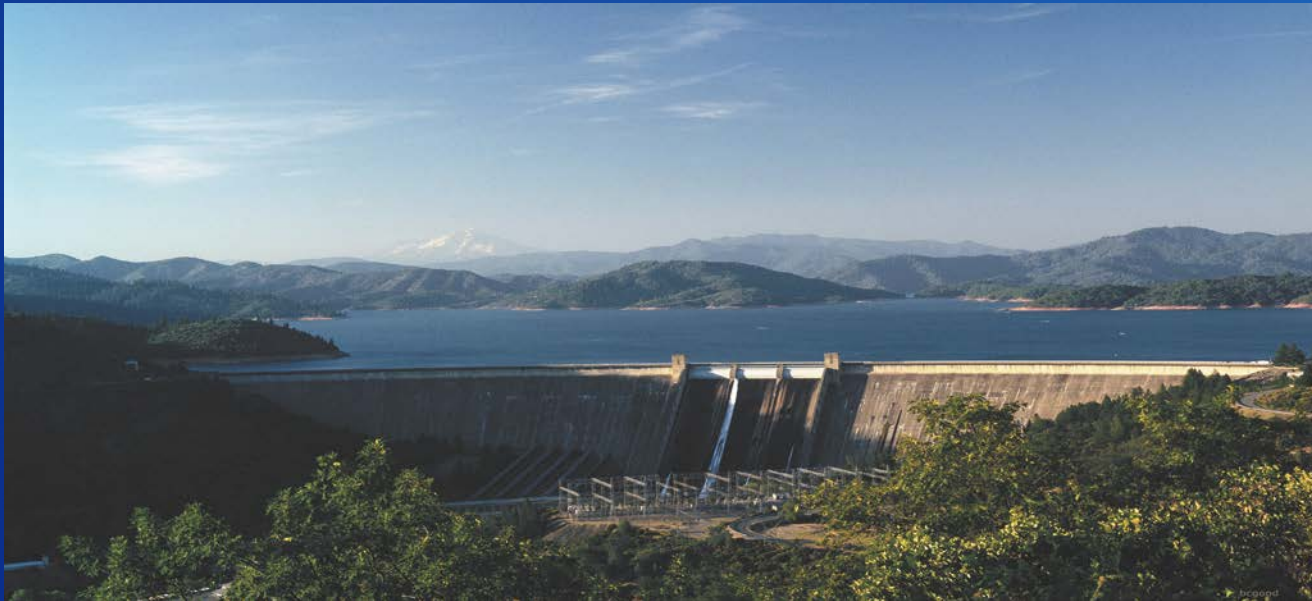


RECLAMATION

Managing Water in the West



Shasta Enlargement Study Update Water Education Foundation Tour

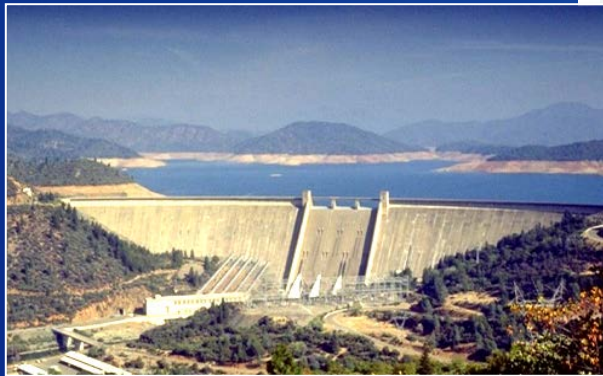


U.S. Department of the Interior
Bureau of Reclamation

October 23, 2014

Reclamation Feasibility Studies

CALFED Bay-Delta Surface Storage Alternatives



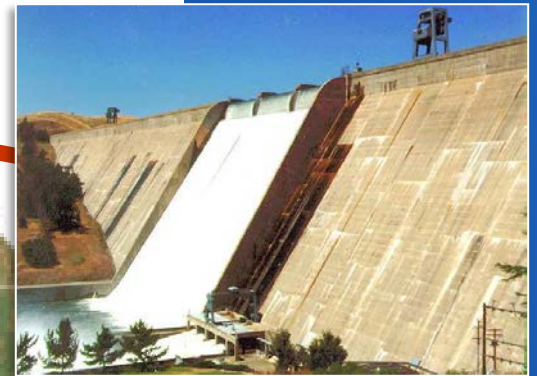
**Shasta
Enlargement**



**Los Vaqueros
Expansion**



**North-of-Delta
Offstream
Storage**



**Upper San
Joaquin River
Basin Storage**

RECLAMATION

Shasta Project Purposes

Water Supply + Hydropower + Fish & Wildlife
Conservation + Flood Control + Water Quality
+ Navigation + Recreation Opportunities



RECLAMATION

Shasta Project Facts & Figures

Dam and Powerhouse

- 523 Feet Dam Height (602 feet above streambed)
- 710 MW Generating Capacity (5 units @ 142 MW)

Reservoir

- 4.5 Million Acre-Feet (MAF)
Storage Capacity
- 1.3 MAF Flood Control Space
- 5.7 MAF Mean Annual Runoff
- 29,500 Acres Surface Area @ Full Pool



RECLAMATION

Study Authority and Background

- **1980: Feasibility Study Authorization Act**
Authorized Secretary of Interior to study enlarging Shasta Dam and Reservoir and Sacramento River conveyance
- **1992: Central Valley Project Improvement Act**
Expanded CVP purposes to protect, restore, enhance fish + wildlife habitats; balance operations + benefits
- **2000: CALFED Bay-Delta Program ROD**
Specified improving water supply reliability + enlarging cold water pool to maintain lower water temps for fish survival
- **2004: CALFED Bay-Delta Authorization Act**
Reaffirmed study authority using CALFED ROD as a framework for decisions

RECLAMATION

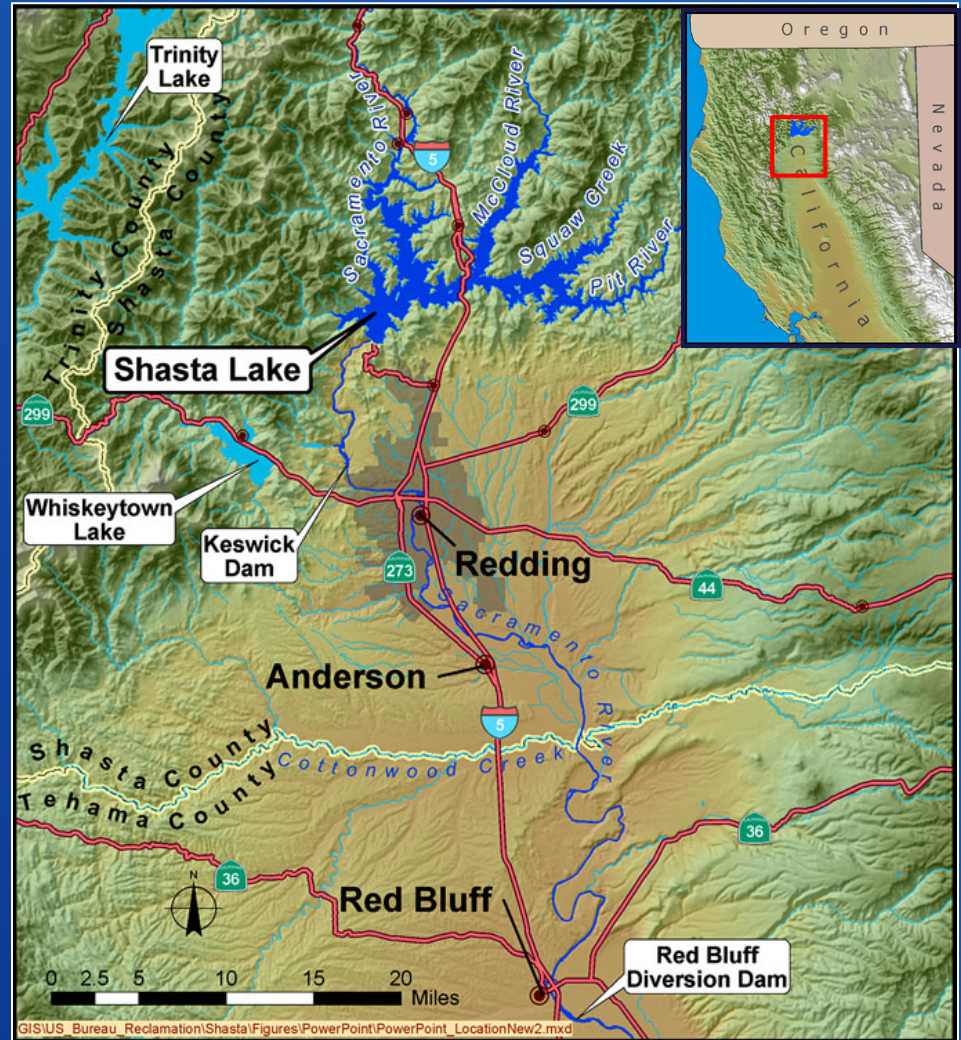
Study Areas

➤ Primary Area

- Shasta Dam & Reservoir area
- Sacramento River downstream to Red Bluff Diversion Dam

➤ Extended Area

- Sacramento River basin downstream of Red Bluff Diversion Dam
- Delta
- CVP/SWP Service Areas



Primary Study Area

RECLAMATION

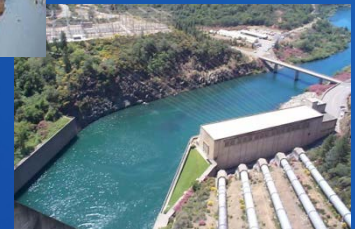
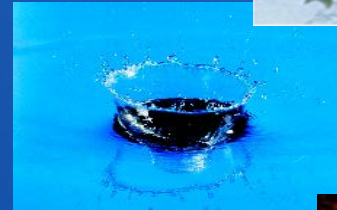
Planning Objectives

➤ Primary

- Anadromous Fish Survival
- Water Supply Reliability

➤ Secondary

- Ecosystem Restoration
- Flood Damage Reduction
- Hydropower
- Recreation
- Water Quality



RECLAMATION

Alternative Plans

- **No-Action Alternative**
- **Water supply reliability + anadromous fish survival**
 - CP 1: 6.5 ft dam raise + 256 TAF additional storage
 - CP 2: 12.5 ft dam raise + 443 TAF add'l storage
 - CP 3: 18.5 ft dam raise + 634 TAF add'l storage (**CVP Ag**)
- **Anadromous fish focus + water supply reliability**
 - CP 4: 18.5 ft raise + 634 TAF add'l storage; dedicates ~60% of new storage to cold water pool (378 TAF)
 - CP 4A: 18.5 ft raise + 634 TAF add'l storage; dedicates ~30% of new storage to cold water pool of 191 TAF)
- **Combination Plan (WSR, AFS, Additional Features)**
 - CP 5: 18.5 foot raise + 634 TAF add'l storage + stream eco restoration + rec trails

RECLAMATION

Common Elements of Alternatives

➤ Raise Dam & Increase Reservoir Storage

- Modify dam crest, wing dams, spillway and outlets
- Modify temperature Control Device
- Modify Hydropower Facilities

➤ Reservoir Area Relocations

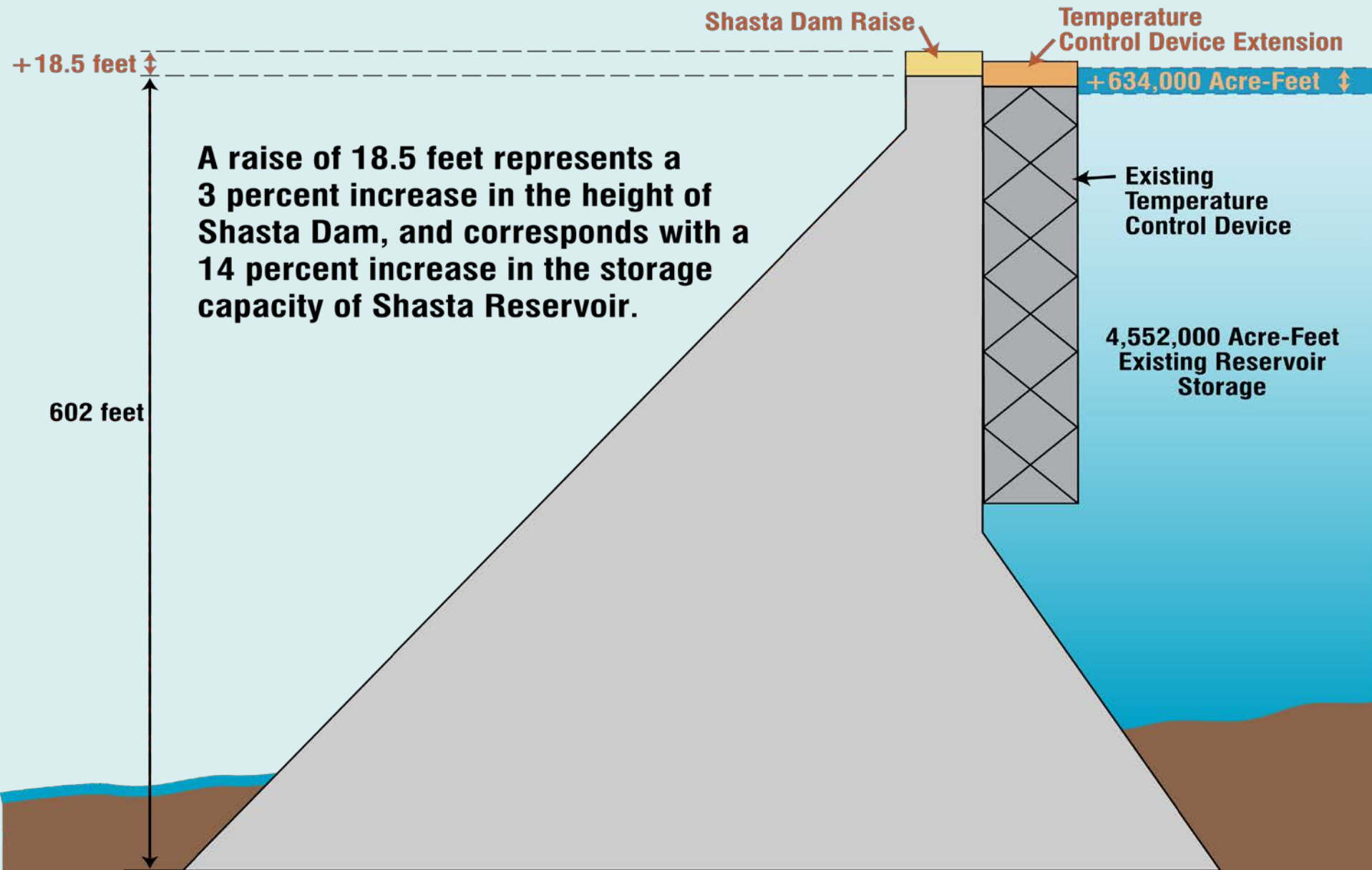
- Recreation Facilities
- Vehicle & Railway Bridges
- Road Segments
- Dikes
- Structures
- Utilities

➤ Resource Protection & Mitigation

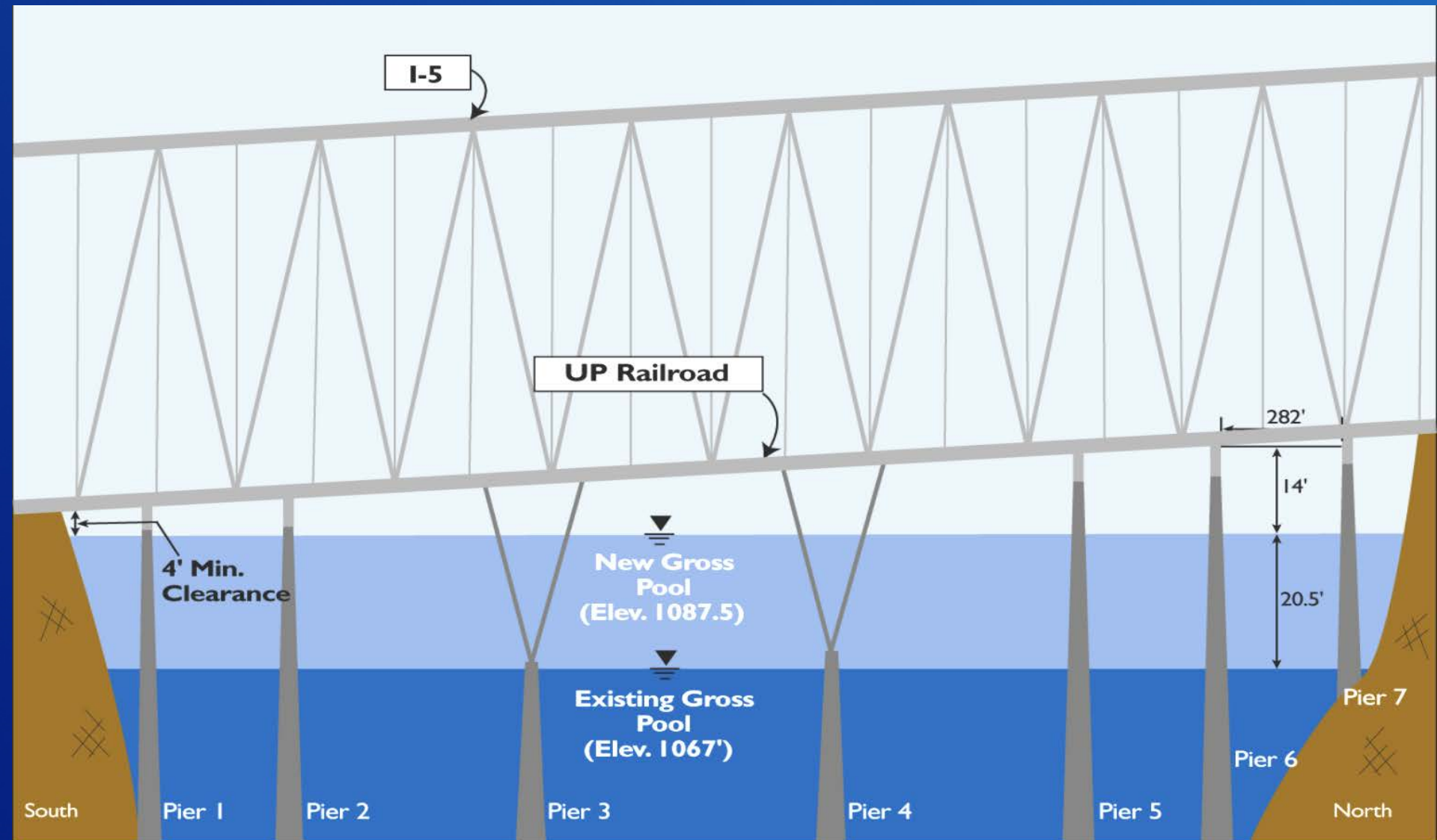


RECLAMATION

Shasta Dam Enlargement Profile



Pit River Bridge Limits Dam Raises to 18.5 feet



Estimated Benefits

Objectives & Benefits	Alternatives					
	CP1	CP2	CP3	CP4	CP4A	CP5
Water Supply Reliability Increase in Dry & Critical Year deliveries (AF)	47,300	77,800	63,100	47,300	77,800	113,500
Anadromous Fish Survival Increase fish population (average annual)	61,300	379,200	207,400	812,600	710,000	377,800
Hydropower Generation Increase in power (avg annual GWh)	54	90	90	133	130	117
Restore and Enhance Ecosystem Resources	Yes	Yes	Yes	Yes	Yes	Yes
Improve Water Quality	Yes	Yes	Yes	Yes	Yes	Yes
Maintain and Increase Recreation Increase in 1000s of user days	85	116	201	307	246	142

RECLAMATION

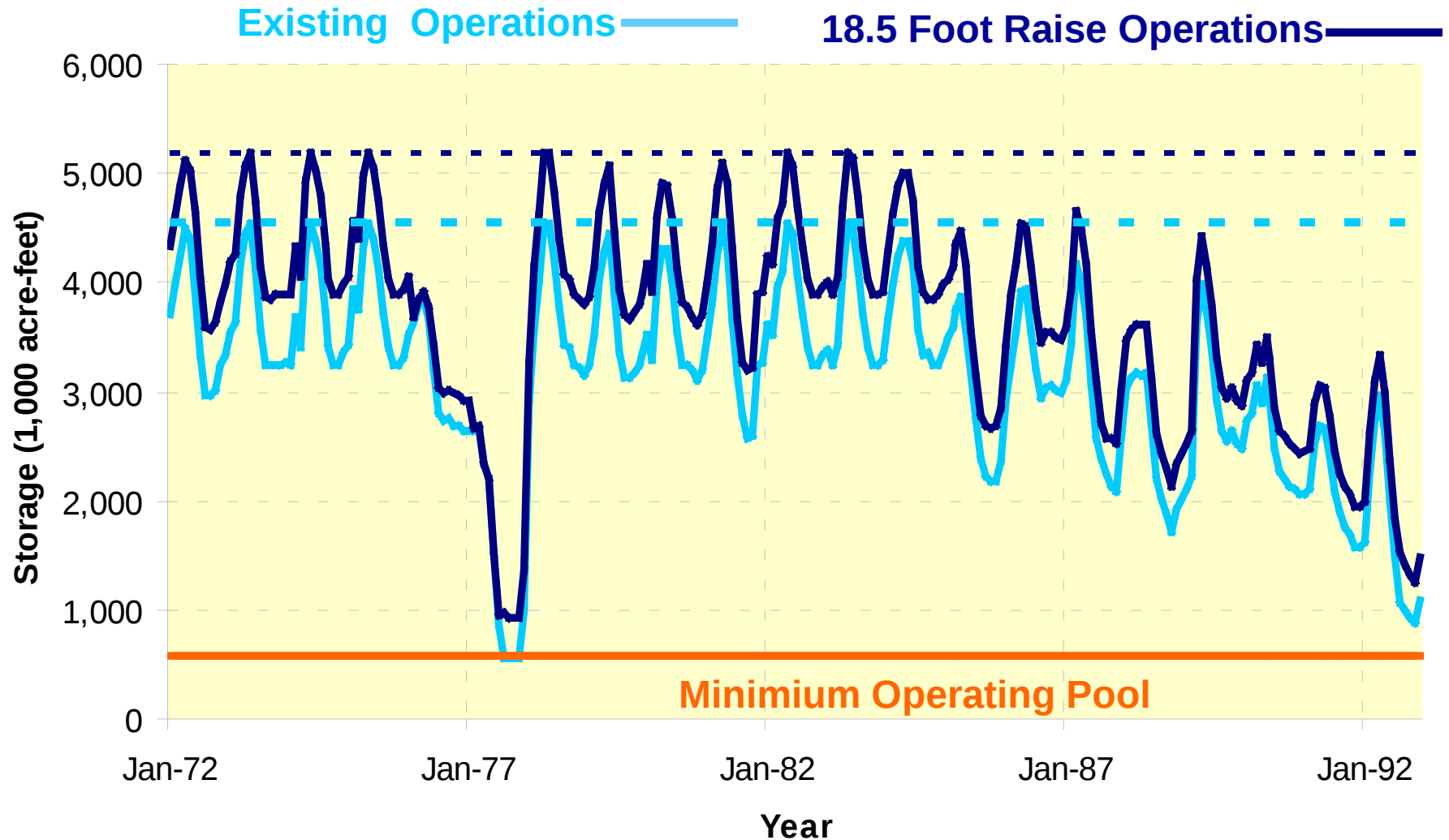
Estimated Benefits and Costs

	Alternatives (in \$Million)					
	CP1	CP2	CP3	CP4	CP4A	CP5
Total Construction Cost	\$990	\$1,089	\$1,257	\$1,264	\$1,265	\$1,283
Total Annual Cost	\$45.1	\$51.2	\$53.8	\$57.1	\$59.0	\$61.0
Total Annual Benefits	\$29.7	\$61.6	\$42.6	\$86.0	\$88.9	\$74.2
Net Annual NED Benefit	-\$15.4	\$10.5	-\$11.2	\$28.9	\$29.9	\$13.2
B/C Ratio	0.66	1.20	0.79	1.51	1.51	1.22

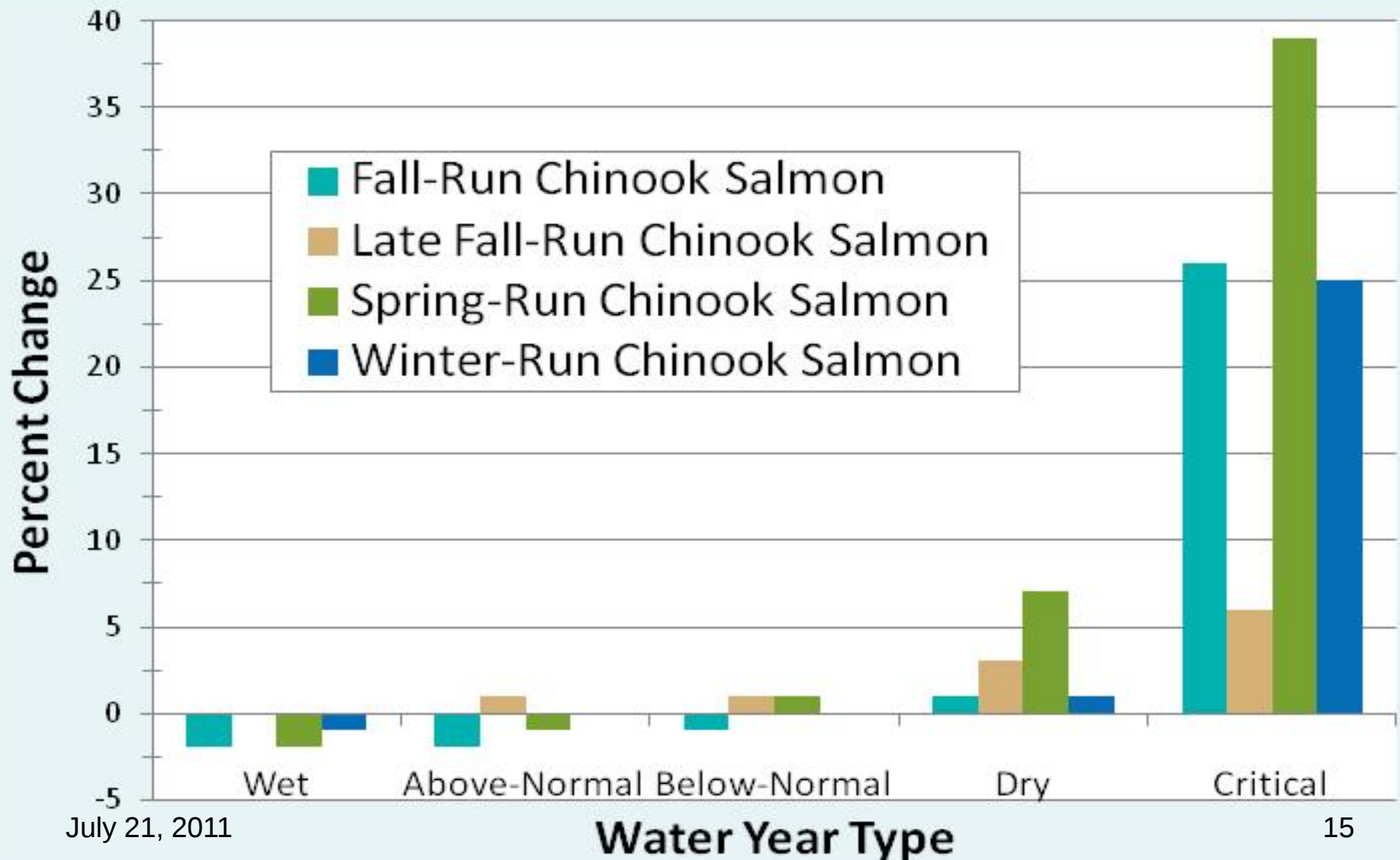
Based on January 2014 price level

RECLAMATION

Simulated Reservoir Water Levels



Estimated Fishery Benefits from Alternative CP4



Current Efforts

- **Completing Planning + Technical Analyses**
 - **Alternative Plan Refinement and Mitigation**
 - **Evaluation of Environmental Effects**
 - **Engineering and Cost Estimating**
 - **Economic and Financial Analyses**
- **Documentation**
 - **Feasibility Report + EIS**
 - **Supporting Technical Reports**
- **Stakeholder Outreach**

RECLAMATION

Focus of Final FR & EIS

- Revise documents based on public comments
- Tier to CALFED Programmatic EIS/EIR
- Consider new operational scenario: CP4A
- Update technical studies
 - Reservoir Tributary Investigations
 - Terrestrial Species Surveys
 - Designs/Cost estimates (Marinas, Pit 7 facilities)
- Refine mitigation & enhancement measures
 - Comprehensive Mitigation Strategy & Plan
- Refine implementation commitments
- Re-evaluate potential effects for Final FR & EIS
- Identify Preferred Alternative (per NEPA) and Recommended Plan (per P&G)

RECLAMATION

Focus of Final FR & EIS

- Revise documents based on public comments
- Tier to CALFED Programmatic EIS/EIR
- Consider new operational scenario: CP4A
- Update technical studies
 - Reservoir Tributary Investigations
 - Terrestrial Species Surveys
 - Designs/Cost estimates (Marinas, Pit 7 facilities)
- Refine mitigation & enhancement measures
 - Comprehensive Mitigation Strategy & Plan
- Refine implementation commitments
- Re-evaluate potential effects for Final FR & EIS
- Identify Preferred Alternative (per NEPA) and Recommended Plan (per P&G)

RECLAMATION

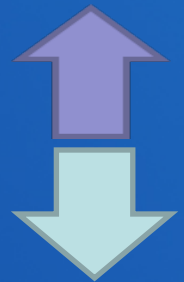
Key Issues

- **CALFED Bay-Delta Program Goals (balanced purposes & benefits; “beneficiaries pay”)**
- **Potential inundation of property, recreation, resources**
- **Operations Uncertainty – Delta planning, Biological Opinions,**
- **McCloud River statute limits State participation**
 - Public Resources Code § 5093.542 (CA Wild & Scenic Rivers Act)
 - McCloud River to be maintained in free-flowing condition and protect wild trout fishery
- **Native American & Cultural Concerns**
- **Congress’ authorization needed to construct or not**

RECLAMATION

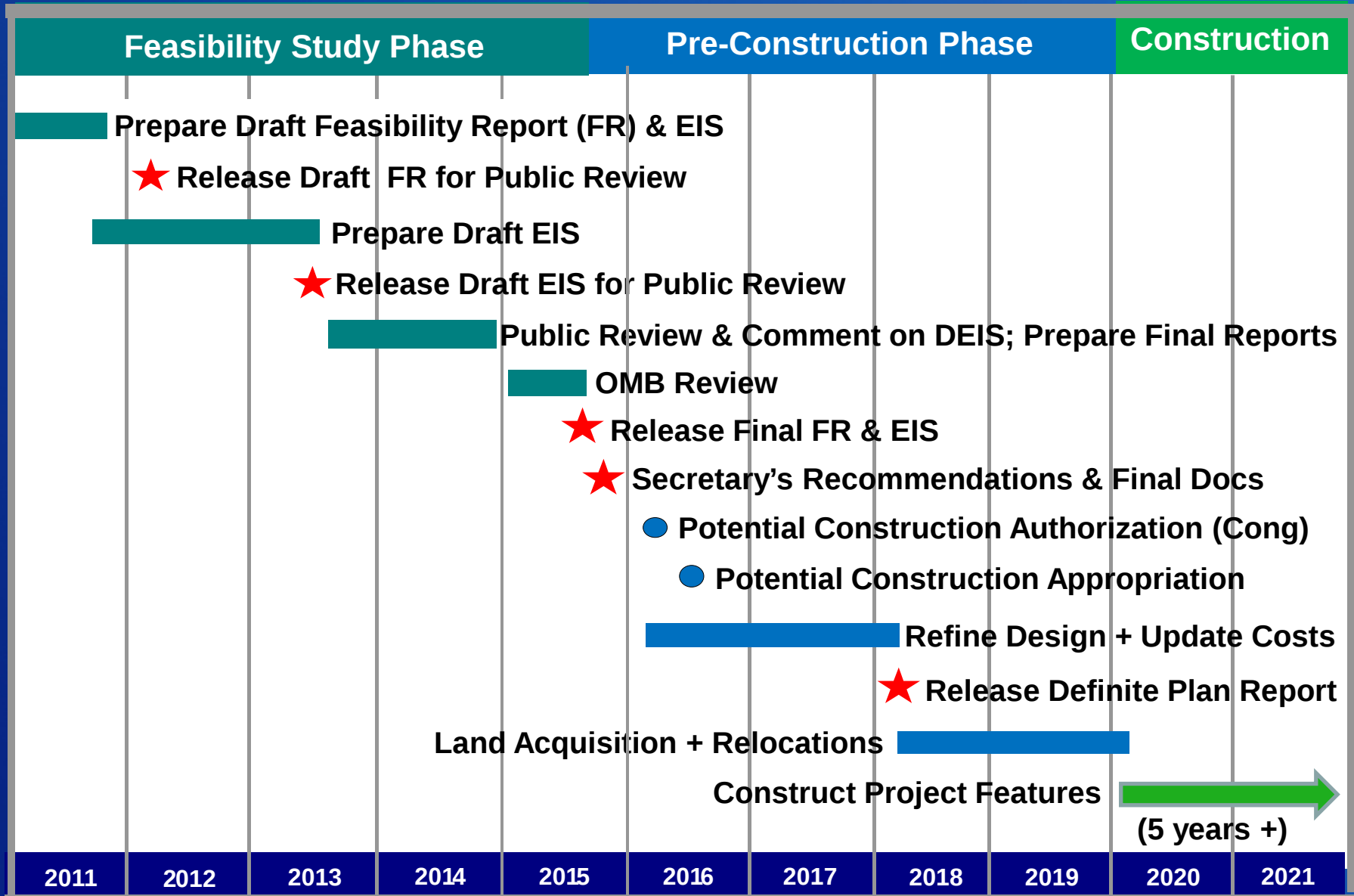
Next Steps in Feasibility Phase

1. Regional Director's Pre-Final FR/EIS
2. Commissioner's Pre-Final FR/EIS
3. Secretary's Pre-Final FR/EIS to OMB
4. OMB Review + Determination (GO/NO GO)
5. Prepare Final Documents
6. Send Final Documents to Federal Register to Announce 30-day Public Review
7. Secretary's Recommendations + Documents to Congress for Decision (GO/NO GO)
8. Congressional Authorization + Appropriations (or No Action)



RECLAMATION

Schedule



For Additional Information

**Katrina Chow
Project Manager
Bureau of Reclamation
2800 Cottage Way
Sacramento CA 95825
916-978-5067**

kchow@usbr.gov

<http://www.usbr.gov/mp/slwri/index.html>

RECLAMATION