Food Waste Update

Sustainability/Energy Committee February 24, 2015

Presentation Outline

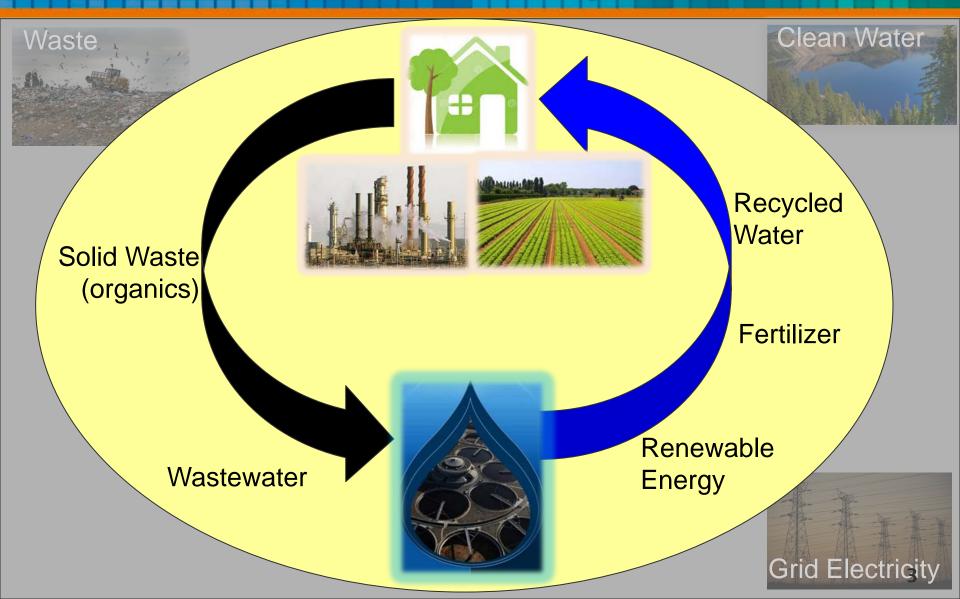


- Vision
- Background
- Financial Analysis
- City of Oakland
- Preprocessing
- Project Risks
- Next Steps



Vision: Creating a Resilient, Sustainable Community





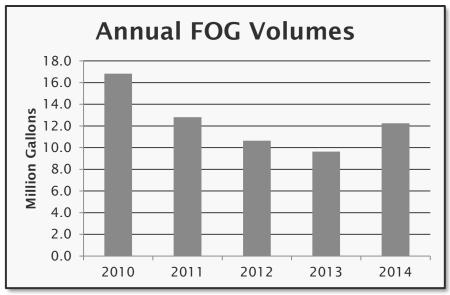
Background



- Over ten years ago, the District began the Resource Recovery Program to utilize excess WWTP capacity
- Since the beginning we've been interested in food waste as a local, sustainable source of organics
 - Piloting began in 2002



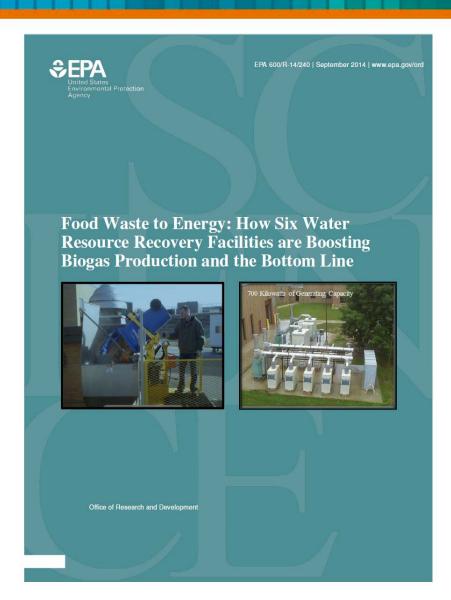




Background



- As a result of our Resource Recovery Program, the MWWTP currently generates 130% of plant power demand
- District continues to be regarded as a pioneer and leader in converting food waste to energy



Background



District has contracted to receive food waste under two models:

Central Contra Costa Solid Waste Authority

- Contract directly with Authority
- Focus on education and source control to manage quality
- Hauler (Allied) grinds material offsite and delivers to District

Recology

- Contract with hauler
- Focus on contaminant removal after collection
- Material preprocessed on District site

Financial Analysis



- In early 2015, staff took a fresh look at the economics of food waste
- Central question: How do key variables and assumptions impact the economic viability of the District's food waste project?
- Evaluated expected costs and revenues based on conservative assumptions

Financial Analysis



- Key variables included:
 - Quality of incoming material
 - How much contamination?
 - · Rate of conversion to methane
 - Value of renewable energy
 - Value and dewaterability of digestate
- Performed sensitivity analyses
- Conclusion: Based on reasonably conservative anticipated revenues, the food waste program, including operating costs and moderate capital investments, provides overall economic benefit to <u>District ratepayers</u>

City of Oakland



- In September 2014, Oakland City Council awarded its Mixed Materials and Organics (MMO) franchise to Waste Management (WM) and directed commercial organics to the District
- Program is set up for District to be a subcontractor to WM

City of Oakland MMO Agreement



- Signed by City and WM on Friday, February 20
- Many provisions of District subcontract with WM stem from this Agreement
- Key District issue
 - Option for WM to deliver preprocessed material when collected food waste exceeds 50 tons on any day

City of Oakland WM Subcontract



- District had significant concerns with draft subcontract provided by WM in November
- District provided a markup in December and is still awaiting WM response
- Staff expects that negotiation meetings with WM will occur with regular frequency now that MMO is signed

City of Oakland Key Outstanding Issues



Termination

Residuals Management

- Timing
 - Startup Period
 - Back-up Provisions

City of Oakland Termination



- Oakland subcontract will require a level of commitment that is uncommon for a public agency
- If District is unable to perform, WM can terminate the contract and seek damages
 - Scope of available damages will be an issue in subcontract negotiations

City of Oakland Residuals Management



- Currently, District co-digests food waste with municipal sludge, and resulting biosolids are reused
 - 50% to land application as soil amendment
 - 50% as Alternative Daily Cover (ADC) at a landfill
- Alameda County Waste Management Authority (ACWMA or StopWaste) ordinance requires that no food scraps are disposed of in landfill
 - ADC is considered "disposal in landfill"

City of Oakland Residuals Management (cont.)



- Through letter exchange with ACWMA, the District committed that food scraps generated in Alameda County will not be sent to landfill
 - Using current infrastructure, this means no biosolids to ADC once we start taking Oakland food scraps
 - Long-term Plan: dedicated digestion and dewatering of food wastes

City of Oakland Timing



- District will be contractually responsible for commercial food scraps beginning July 1, 2015
 - For a 1-year start-up period, District will divert material to compost operation(s)
 - Expect 50-80 tons per day
 - Key issue is local transfer station capacity
- District to begin processing food scraps on site by July 1, 2016
 - Use of authorized back-up facility during down time

Preprocessing - History



- In 2011, District signed an agreement with Recology for food waste preprocessing services, following an open selection process
 - Agreement contemplated delivery of source separated organics from San Francisco that did not materialize
 - Facility was not constructed
- District provided notice of termination in December 2014

Preprocessing - RFP



- Given the upcoming deadline to preprocess Oakland's food waste at the WWTP, District has released a new RFP
 - Minimum scope is lease and preprocessing services
 - Companies are invited to propose additional sources of organics for the facility
 - Additional "value added" services may include
 - Dedicated digestion and dewatering to produce a higher value end product
 - Renewable energy recovery (electricity or vehicle fuel)

Project Risks



- The nature of this project, with the District leading industry innovation on conversion of food waste to energy, gives rise to an unusual set of challenges for the District
 - Technology suitability
 - Operational impacts
 - Offsite odor concerns
 - Aggressive schedule to meet Oakland timeline

Project Risks Technology Suitability



- District has limited control over quality of incoming material
- Limited industry experience very few operational facilities converting commercial organics to a digestion feedstock
- Preprocessing technology continues to evolve
- Approach to Mitigation: Evaluation of proposed technology and selection of preprocessor based on experience with similar waste streams

Project Risks Operational Impacts



- District will be obligated to manage incoming material day-in and day-out
 - No track record for this scale of operation
 - Minimal "outs"
- Technology risk leads to potential operational impacts
 - Grit impacts on equipment
 - Digester cleaning
- We don't know what we don't know
- · Approach to Mitigation: dedicated train

Project Risks Offsite Odor Concerns



- Odors at the WWTP are already an area of significant focus
- Neighbors are concerned that additional food waste will exacerbate the problem
- Approach to Mitigation: Preprocessing contract requirements, including building with odor control and clear processing times and housekeeping requirements

Project Risks Aggressive Schedule



- Per MMO Agreement, District must demonstrate by January 31, 2016 that we are on track to receive deliveries on July 1, 2016
- Just over one year to design, permit, construct, and commission a facility
- Approach to Mitigation: Close coordination with preprocessor throughout project development

Next Steps



- · Negotiate with Waste Management
- Update financial analysis in concert with negotiation and review of preprocessing proposals
- · Confirm plans for alternate transfer and processing facilities during startup and down time
- Mitigate risks to the extent possible and keep Board informed of residual risks
- Bring contracts to the Board for consideration:
 - WM subcontract for Oakland
 - Preprocessing agreement
- Continue to identify additional food waste opportunities



2014 Mokelumne Salmon Return Update February 24, 2015 Sustainability/Energy Committee Meeting



Overview



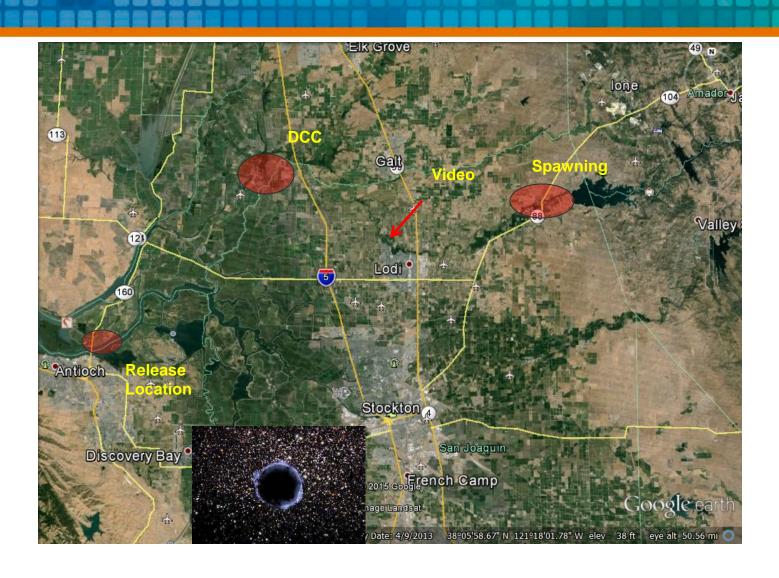
- · 2014 Conditions and Actions
- Return Details
- Forecast for 2016
- Beyond 2016



"Your meal will be out shortly. The salmon was a little wilder than we anticipated."

Mokelumne Overview



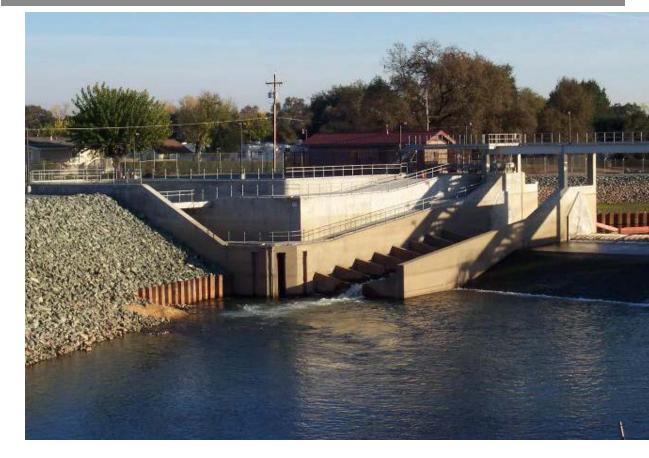


Fish Passage and Video Monitoring at Woodbridge Irrigation District Dam



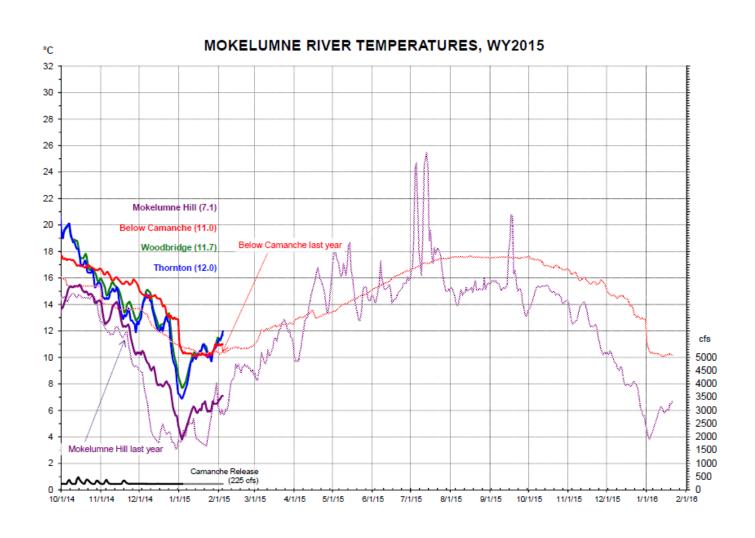


EBMUD has worked cooperatively with the downstream Woodbridge Irrigation District to improve fish passage in the lower Mokelumne River, helping to increase survival.



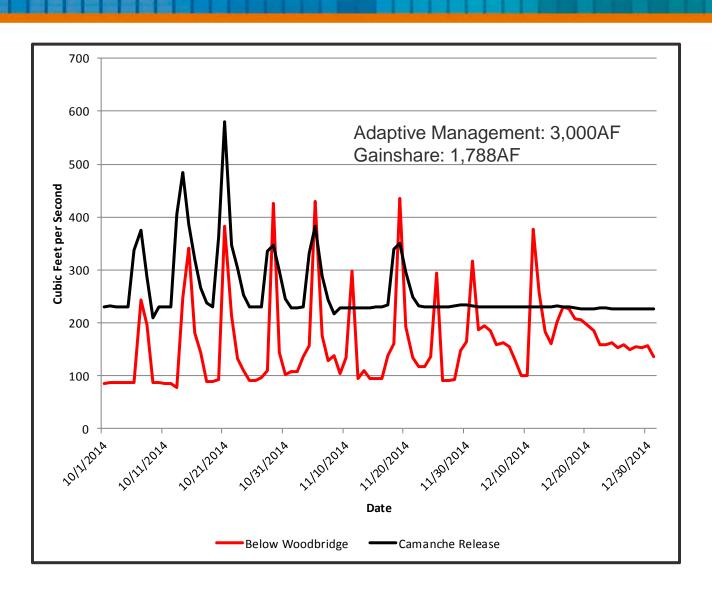
Managing for Cold Water





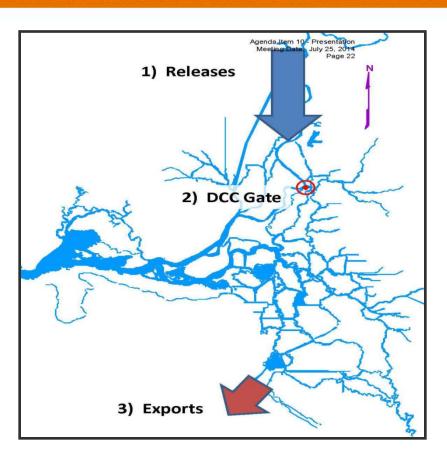
Camanche and WID Dam releases (daily avg.) October 1 - December 31, 2014

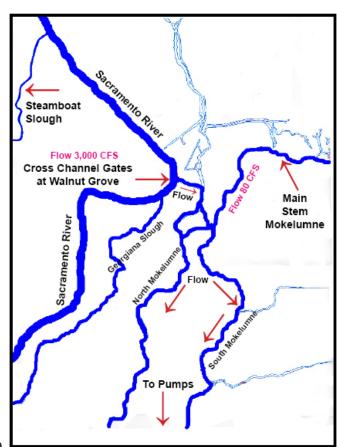




Delta Operations and Anadromous Fish



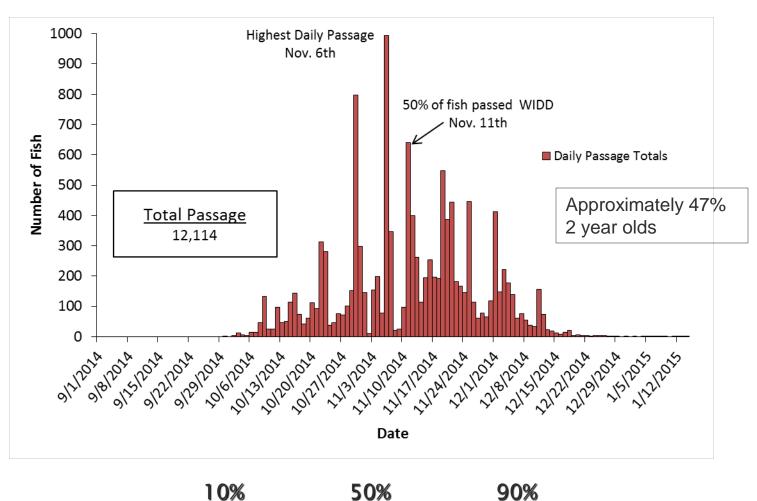




- Water Quality in the Central Delta
- Fish Protection
- 5-year study plan

Daily Chinook Salmon Passage at WIDD



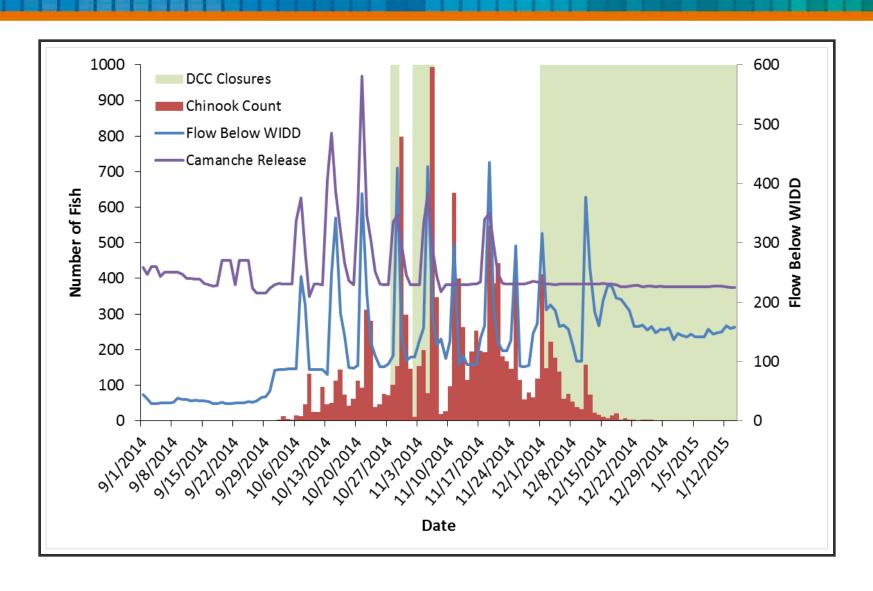


10% Oct. 22 50% Nov. 11

Dec. 02

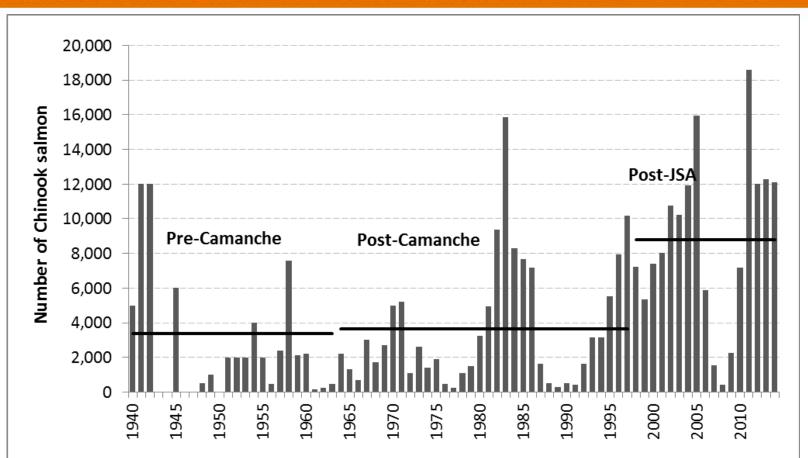
Chinook Salmon Passage and Flow Below WIDD





Adult Salmon Returns 1940 - 2014





Horizontal lines indicate pre-Camanche, post-Camanche, and post-JSA periods, respectively.

- 1. "Pre-Camanche" escapement (3,374) is the average estimate at Woodbridge Dam for the period from 1940 through 1963 (excluding years when no data were recorded: 1943, 1944, 1946, 1947, and 1950).
- 2. "Post-Camanche" escapement (3,636) is the average estimate at Woodbridge Dam for the period 1964 through 1997.
- 3. "Post-JSA" escapement (8,774) is the average estimate at Woodbridge Dam since implementation of the JSA in 1998.

Hatchery Production BY2008 – BY2014



	İ		
Brood Year	Fish	Production	Survival
	into		
	MRFH		
2008	239	260K	90%
2009	1,553	1.8M	88%
2010	5,275	6.6M	84%
2011	15,922	6.5M	83%
2012	6,556	5.2M	91%
2013	5,170	5.5M	90%
2014	8,816	5.9M	







Over 20 years of habitat improvement on the lower Mokelumne River



• Since 1990, roughly \$1.4 million dollars have been contributed for spawning habitat rehabilitation

projects on the LMR

USFWS – AFRP funding

EBMUD funding

CADFW funding

LMR Partnership funding

《一种》

Years	Short tons added	Percent of total added
1990–1995	1,608	2%
1996–2000	8,742	13%
2001–2005	15,104	23%
2006–2014	39,978	61%
	65,432	



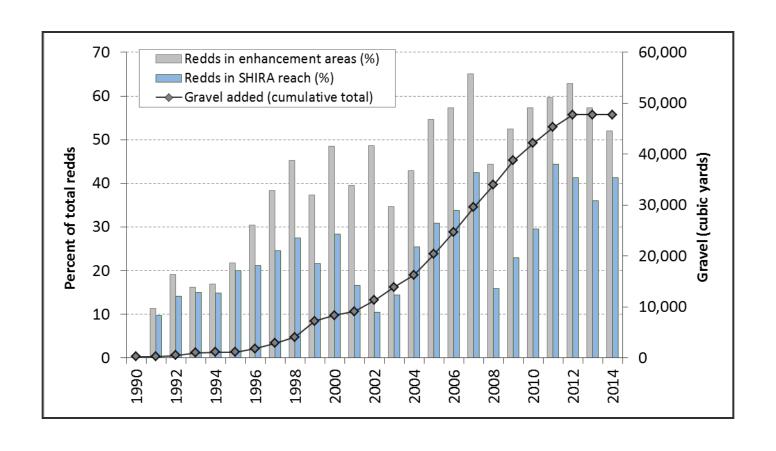




Salmon redds found in spawning habitat rehabilitation (SHR) sites since 1990



- 472 of 908 redds (52%) found in SHR sites through 1/20/15 this season.
- 375 of 908 (36%) redds found in 1-km enhancement reach (2003-2012, SHIRA)



2014 Comparative CV Returns



River	Long Term Average	Long Term	2014	2014 as % of	
System		Escapement	Escapement	Long Term	
	Natural Flow (AF)		(preliminary)	Average	
Sacramento	8,530,000	120,781	102,337	85%	
Feather	4,520,000	53,984	84,660	156%	
Yuba	2,340,000	14,015	11,615	83%	
American	2,700,000	47,592	34,415	72%	
Stanislaus	1,150,000	4,791	5,337 (3,060)	111%	
Tuolumne	1,910,000	9,159	668 (438)	7%	
Merced	990,000	3,625	1,733	48%	
Mokelumne	740,000	4,598	12,114	264%	

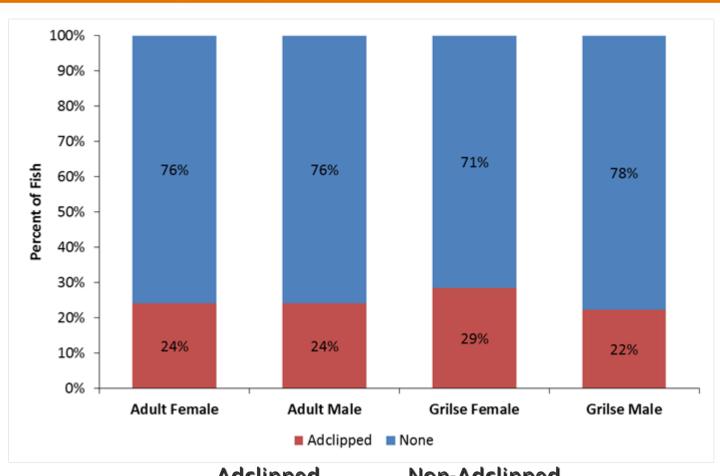
2015 Chinook Outlook



	Juvenile Migration Year			Adult Return Outlook				
	2011	2012 2013	2014	coho Chinook 2015 2015				
Large- scale ocean and atmospheric indicators								
PDO (May - Sept)		•	•	• •				
ONI (Jan - Jun)				• •				
Local and regional physical indicators								
Sea surface temperature anomalies	•	• •	•	• •				
Coastal upwelling			•	• •				
Deep water temperature and salinity	•		•	• •				
Local biological indicators								
Copepod biodiversity	•		•	• •				
Northern copepod anomalies				• •				
Biological spring transition				• •				
Winter Ichthyoplankton				• •				
Juvenile Catch - June				• •				
Key good conditions for s intermediate conditio poor conditions for sa	ns for s	almon	no data	rns expected				

Proportion CWT observed by life stage and sex





Adclipped

Non-Adclipped

24%

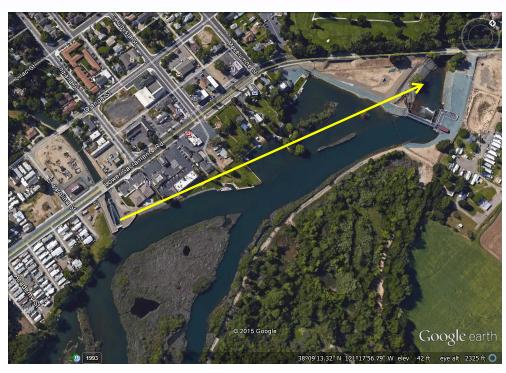
76%

n = 2,887

n = 9,227

Catching Outmigrating Salmon







- Trap and haul beginning May 1in
 Critically Dry Year
- Sampling of ~ 100% salmon
- 7 days per week
- Juvenile numbers could range in the 500k to 1 million



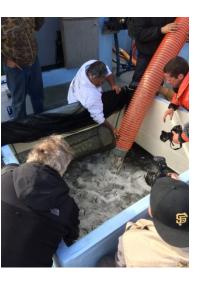
Barging Study



- 3 year study
- MRFH Fish
- 100% Tagged
- 100K fish per year
- Proof of Concept











Electrofishing/Predator Removal













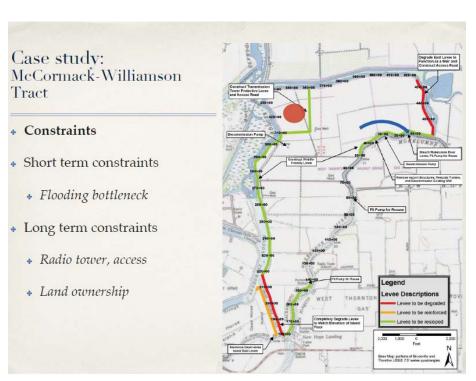


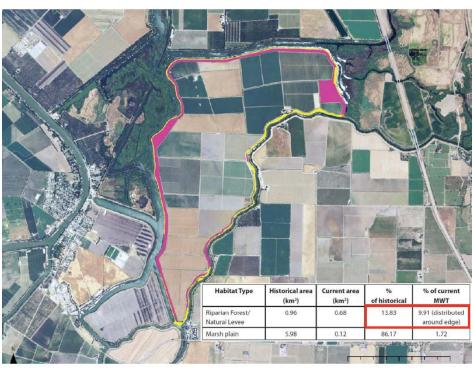




TNC MWT Project







Julie Beagle, Alison Whipple, Robin Grossinger | San Francisco Estuary Institute-Aquatic Science Center Bay-Delta Science Conference, Sacramento, October 16, 2012

Upper Mokelumne Fish Passage



Upper Mokelumne River Group

Foothill Conservancy

Fisheries Agencies

Tribes

Stakeholders

EBMUD



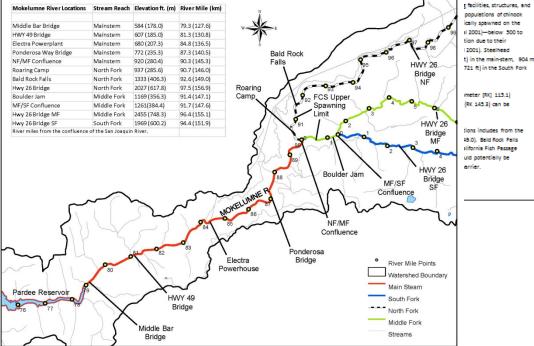
Upper Mokelumne River Anadromous Fish Restoration

Draft

Pilot Fish Reintroduction Project

Introduction

The Upper Mokelumne River Anadromous Fish Restoration Workgroup has prepared a draft pilot project Mokelumne River between Middle Bar Bridge and the confluences of the North, Middle, and South the project are described below and include: a description and evaluation of the current physical environment and operation of both the upper and lower Mokelumne. River reaches and associated reservoirs and facilities; potential sources of fish and appropriate species, numbers and methods to implement the project; and consideration of permitting/permissions, required to achieve the goal



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tions includes from the 49.0). Bald Rock Falls slifornia Fish Passage uld potentially be

Long-Term Fishery Management Strategy



Habitat Management

- Adaptive management of flows
- Continue spawning gravel augmentation
- Improved survival during delta migration
- Downstream floodplain rearing habitat

Hatchery Management

- Self sustaining Mokelumne broodstock
- Reduce straying
- Diversify hatchery release practices and run timing
- Incorporate natural broodstock

Harvest Management

- Selective commercial and sport harvest of hatchery-raised fish
- More accurate run size forecasts to regulate harvest

Partnership & Collaboration



Woodbridge Irrigation District

CDFW

USFWS AFRP

NMFS

USBR

Many Landowners Along Mokelumne

UC Davis

UC Santa Cruz

Golden Gate Salmon Association

California Sportfish Protection Alliance

Foothill Conservancy



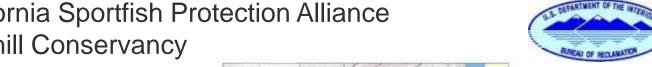






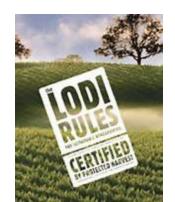


















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