





TODAY'S ACTION

Consider receiving a presentation “*Action Necessary to Expand the Castroville Seawater Intrusion Project*” from Monterey County Water Resources Agency Staff.





Prior BOD/BOS Action

- None



Financial Impact

- None



Purpose

The purpose of this presentation is to begin discussion of necessary actions required to expand the Castroville Seawater Intrusion Project (CSIP).

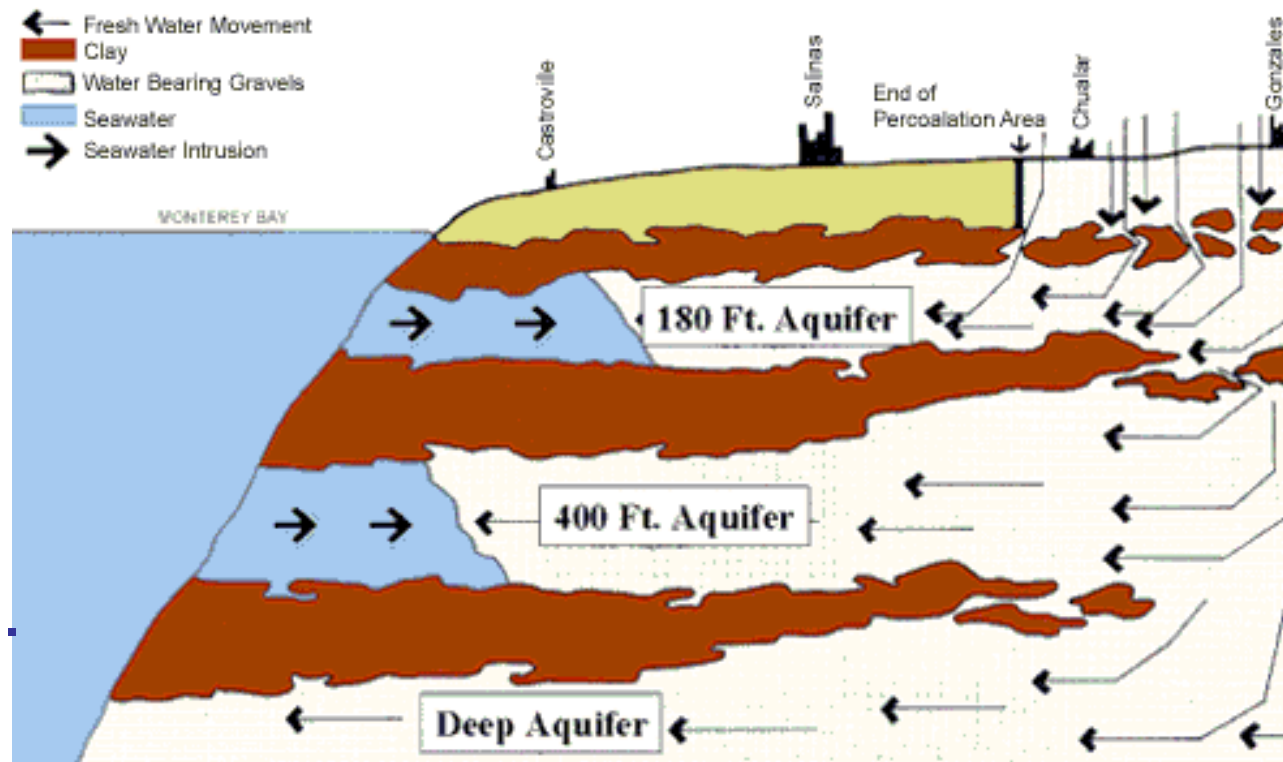


Presentation Contents

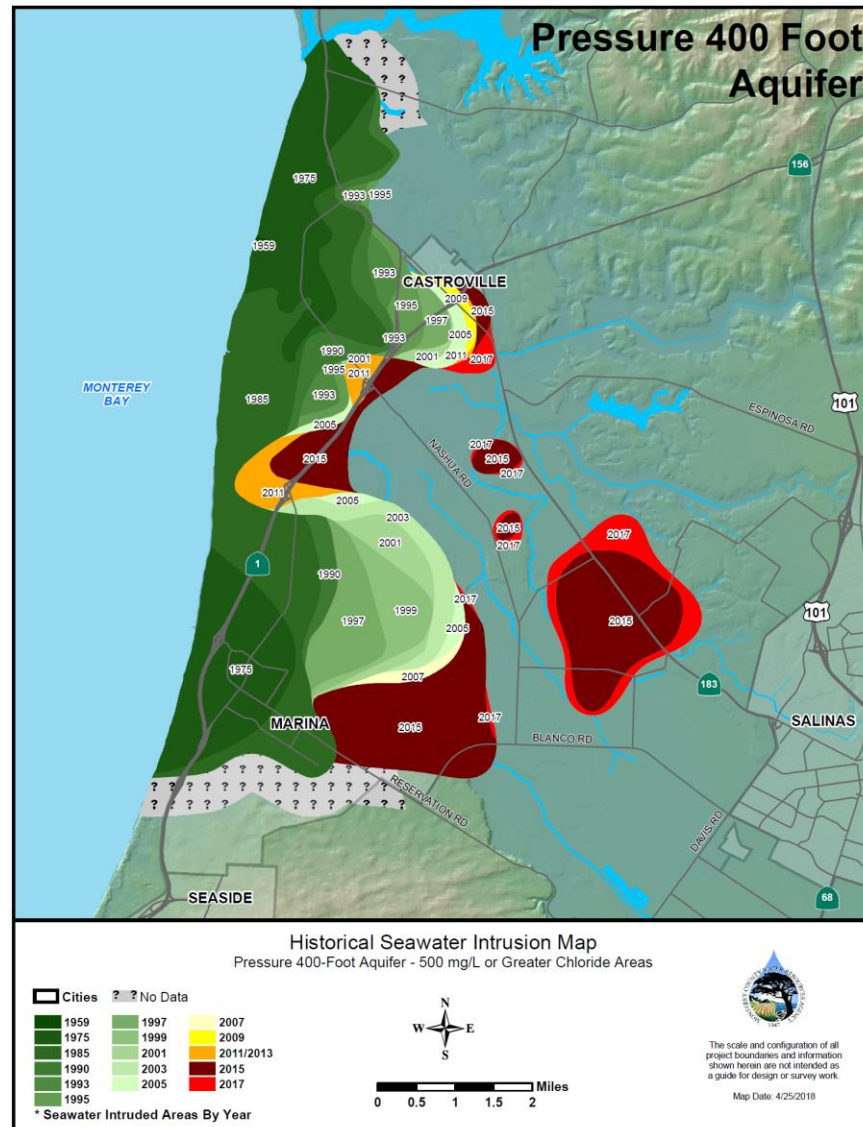
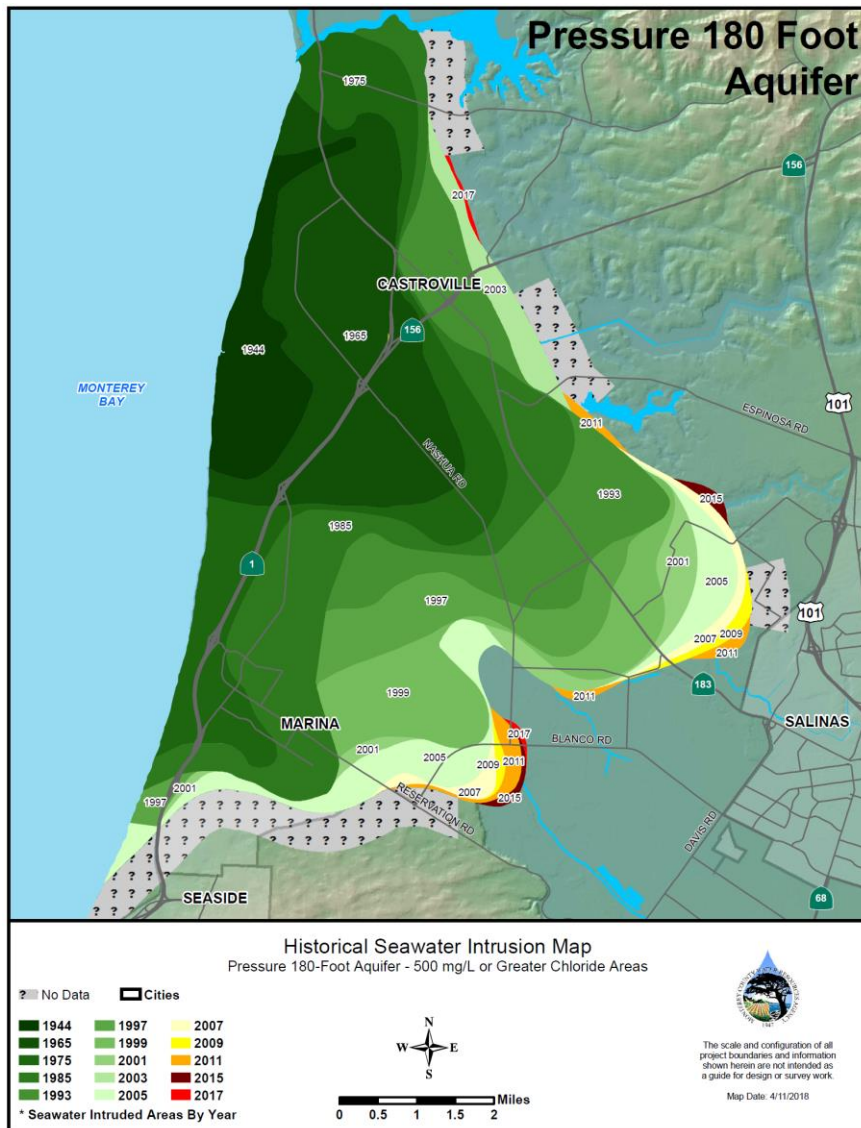
- CSIP Background
- Current Status of CSIP
- Benefits of expansion
- Water available for expansion
- What is needed for expansion
- Impediments to expansion
- Agency's current efforts to enhance, improve, expand CSIP
- Summary/First steps

CSIP Background

- CSIP became operational 1998 to slow the rate of seawater intrusion occurring near the coast of the Salinas River Valley.
- Purpose of CSIP was to reduce the rate of seawater intrusion into the Pressure 400 (P400) Aquifer by 50%.



Discussion (cont.)

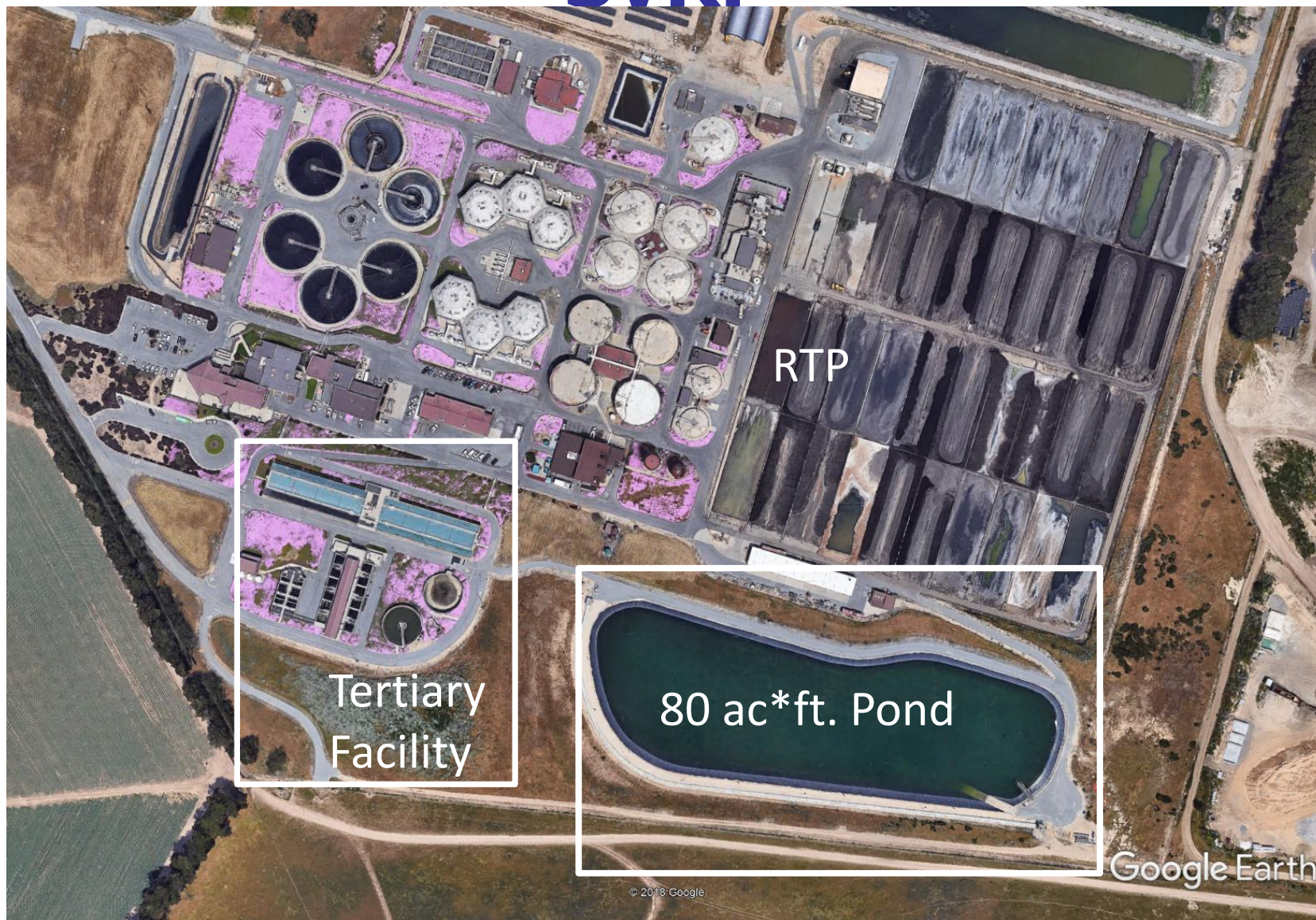




Discussion (cont.)

- The initial project had two major components:
 - The Salinas Valley Reclamation Project (SVRP)
 - CSIP Distribution System (Pipeline)
- SVRP- The SVRP is a tertiary water treatment facility and an 80 ac*³ storage pond located at the Regional Treatment Plant operated by Monterey One Water (M1W).

SVRP



Discussion (cont.)

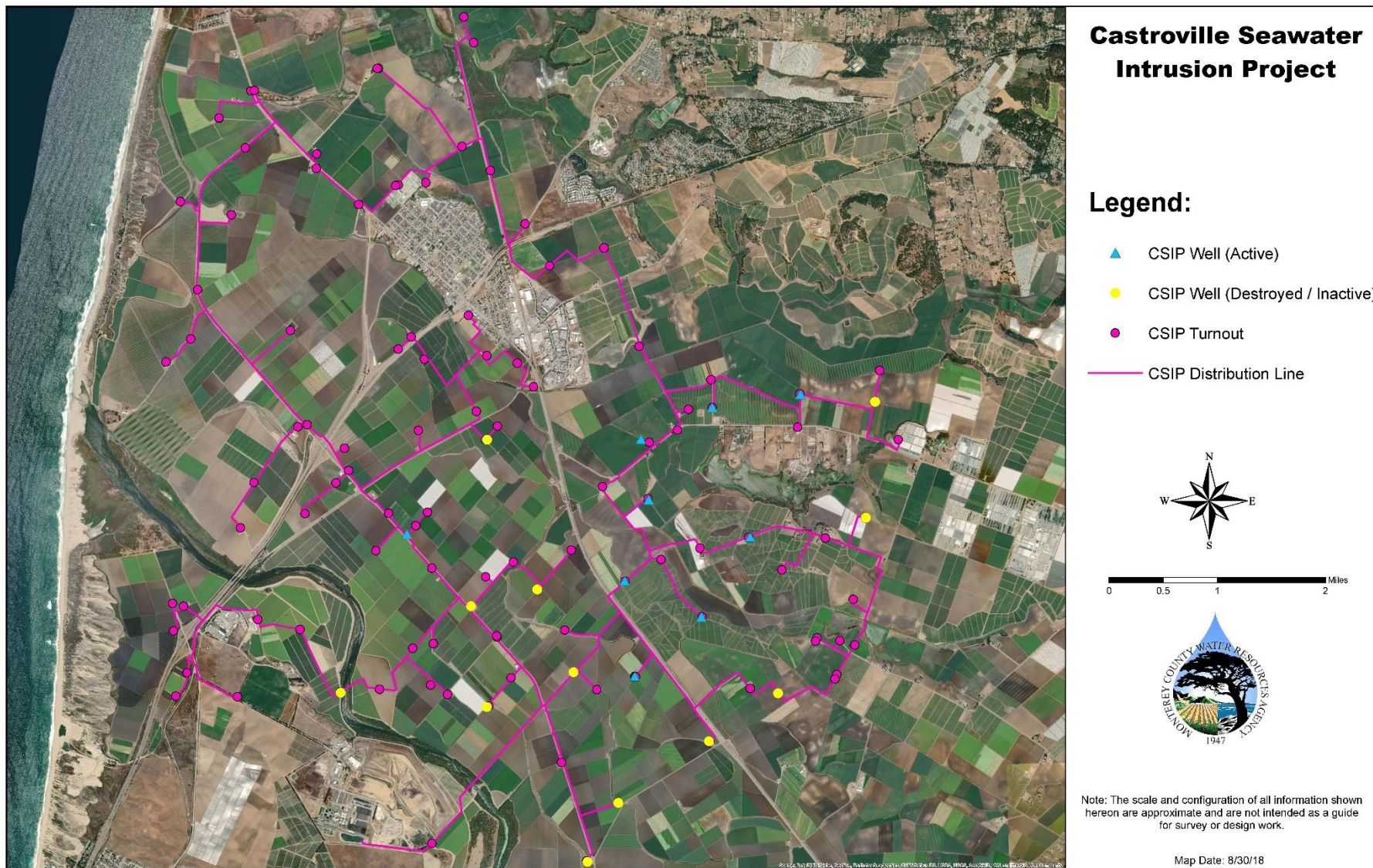
- SVRP (cont.)
 - Construction cost: \$29.7 Mil
 - Treats secondary effluent supplied from RTP
 - RTP supply capacity 89 ac*ft./day (29 MGD)
 - Daily inflow 62 ac*ft. (20.5 MGD) in 1998
 - Tertiary Facility has capacity to treat 104 ac*ft./day (34 MGD)
 - Tertiary treated water is stored in the 80 ac*ft. pond until distributed for irrigation use.
 - The storage pond provides water for irrigation system pressure to the distribution pipeline. The CSIP system is a gravity system.



Discussion (cont.)

- CSIP Distribution System- the pipeline network used to deliver tertiary treated, and supplemental well water to the 12,035 acres of agricultural land within the CSIP area (MCWRA Zone 2B).

Discussion (cont.)





Discussion (cont.)

- Construction cost: \$ 32.5 Mil
- 46 miles of pipeline
- 113 Turnouts (T.O.) supplying water to parcels in Zone 2B
- 21 supplemental wells to provide water for supplemental system pressure and volume up to 277 ac*ft./day (90MGD) to supplement irrigation demand or meet demand when treated water unavailable.
 - CSIP needs access to an adequate well water source to ensure irrigation demands can be met.



Current Status

- Current
 - Daily inflow into the RTP is 53 ac*ft./day (17.5 MGD)
 - 9 supplemental wells operational
 - Daily capacity 80 ac*ft./day (26 MGD)
 - Wells are not able to meet peak demands when SRDF and SVRP not available.

- Salinas River Diversion Facility (SRDF)- Diverts river water, from the Salinas River, up to the CSIP storage pond at the RTP for distribution in the CSIP system. Stored water is released from the Nacimiento and San Antonio Reservoirs, traveling 95 miles down the Salinas River and into an impoundment created by a rubber dam located at the SRDF site.

CSIP Supplemental Well Status (as of July, 2018)

	Well No.	Available	Out	Well No.	Design GPM	Actual GPM	Actual ac*ft/day	Actual Cl (mg/L)	Comments
1	01C1		✓	01C1	2400	350	1.5		
2	02A2	✓		02A2	2300	2200	9.7	102	
3	02C3	✓		02C3	2000	1700	7.5	208	
4	03H1	✓		03H1	4000	3800	16.8	207	
5	03R50	✓		03R50	1700	1100	4.9	81	
6	10H	✓		10H	3500	2900	12.8	106	
7	11B1	✓		11B1	1700	1400	6.2	53	
8	11M3	✓		11M3	1500	1400	6.2	46	
9	15A1	✓		15A1	1600	1400	6.2	56	
10	15C2		✓	15C2	2200	2000	8.8	500	Flow at A1 > 20,000 gpm and T.O.101 verified off
11	22B1		✓	22B1	3000	2400	10.6	399	High Chlorides
12	22L		✓	22L	2000	1000	4.4	274	Worn Pump, Rising Chlorides
13	NEW 2	✓		NEW 2	4800	2300	10.2	64	
14	NEW 1		✓	NEW 1	4800				Destroyed June 2012
15	New 4		✓	New 4	4800				Destroyed July 25, 2017
16	14L3		✓	14L3	2800				Destroyed July 26, 2017
17	NEW 5		✓	NEW 5	4800				Out of service due to regional seawater intrusion.
18	01P50		✓	01P50	2400				Out of service due to poor regional water quality.
19	14A1		✓	14A1	2800				Out of service due to poor regional water quality.
20	10E2		✓	10E2	2700				Out of Service Casing collapse.
21	NEW 3		✓	NEW 3	4800				Out of service due to regional seawater intrusion.
Total:	21	9	12		62,600	18,200	80		

Legend

	Online/operation
	Offline/non-operation
	Destroyed
	Out of Service



Discussion (cont.)



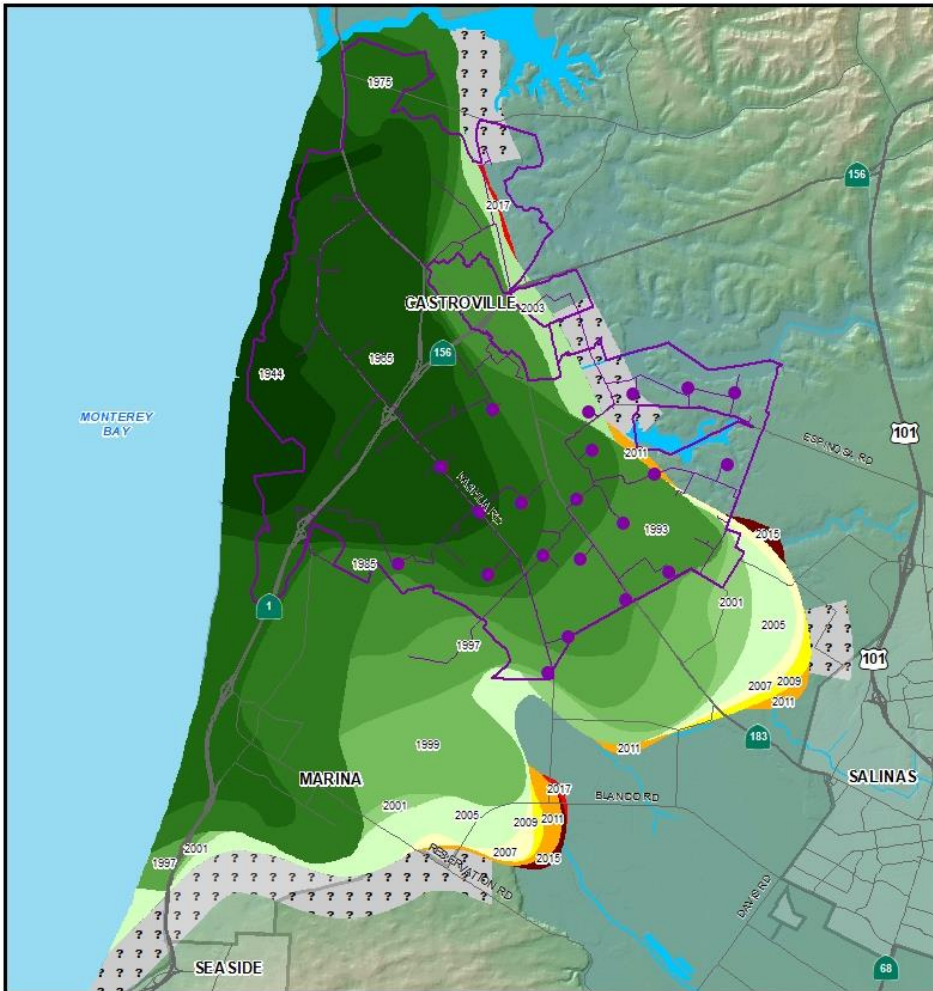
- SRDF online 2010
- Construction cost: \$14 Mil
- SRDF is part of the larger Salinas Valley Water Project (SVWP)
- Operational April 1 through October 31
- Diversion capacity is 72 ac*ft./day (24 MGD)
- Provides for aquifer recharge during operations



Discussion (cont.)

Monterey County Water Recycling Projects (MCWRP) & Salinas River Diversion Facility (SRDF) Water																																												
Source	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	avg. 07-	MAX.																					
Totals																																												
CSIP-Wells	2,204	5,268	6,666	6,565	6,689	7,121	8,037	6,020	5,904	8,108	8268	8598	2700	4161	2713	3185	6487	6638	7064	3325	2859	5568	8598	Lifetime																				
SRDF-	0	0	0	0	0	0	0	0	0	0	0	0	3880	3467	3694	6094	0	0	0	4355	3872	1954	6094	124,147																				
SVRP-Recv	3,685	10,087	9,887	12,300	13,085	13,184	13,410	11,226	11,471	13,305	15221	11692	11260	12429	13827	15485	15144	14250	11615	13116	7198	13395	15485	27,315																				
																								266,272																				
Total acre-	5,889	15,355	16,553	18,865	19,774	20,305	21,447	17,246	17,375	21,413	23,489	20,290	17,840	20,057	20,234	24,764	21,630	20,888	18,679	20,795	13,929	20,916		417,734																				
% Wells	37%	34%	40%	35%	34%	35%	37%	35%	34%	38%	35%	42%	15%	21%	13%	13%	30%	32%	38%	16%	21%	25%		30%																				
% River	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%	17%	18%	25%	0%	0%	0%	21%	28%	12%		6%																				
%	63%	66%	60%	65%	66%	65%	63%	65%	66%	62%	65%	58%	63%	62%	68%	63%	70%	68%	62%	63%	52%	63%		63%																				

- CSIP is Celebrating its 20th year.
- Over 266,000 ac*ft. (88.6Bn gal.) of recycled water delivered for irrigation.
- Despite milestones, seawater Intrusion is still progressing.
- Growing operations will not be sustainable at current levels with continued loss of supplemental wells.



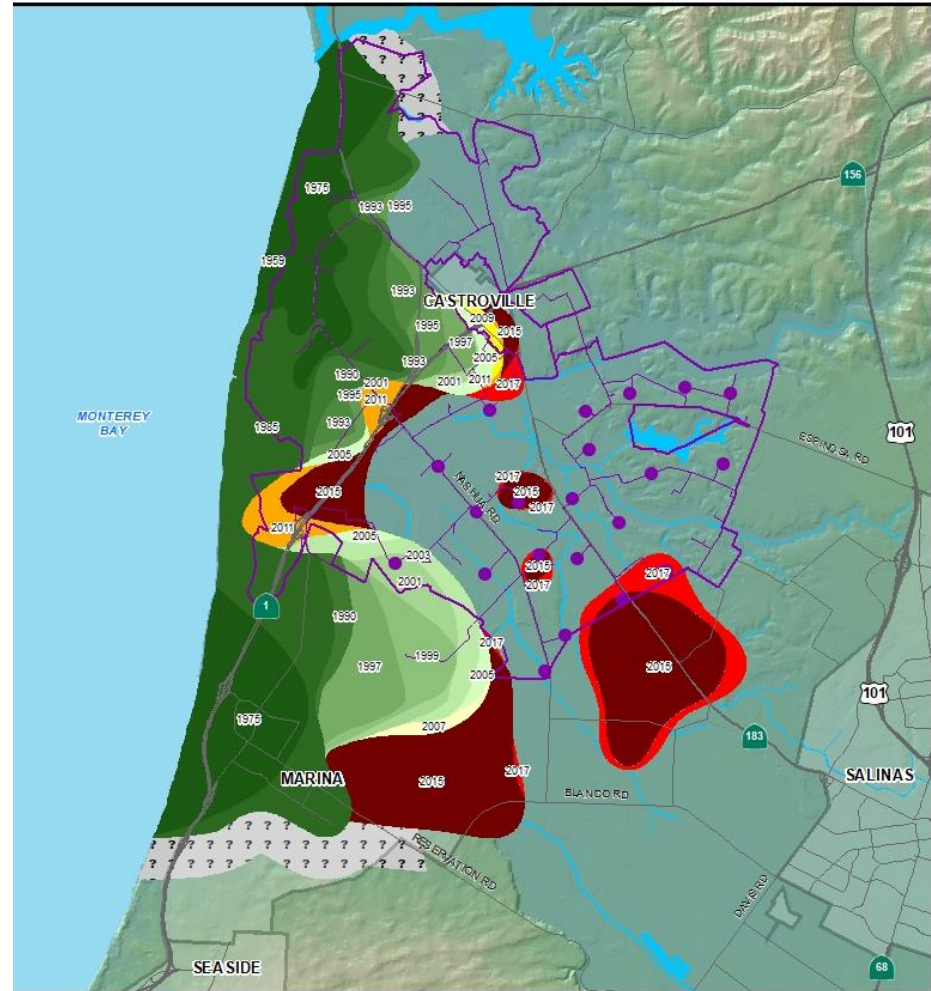
Historical Seawater Intrusion Map

Pressure 180-Foot Aquifer - 500 mg/L or Greater Chloride Areas



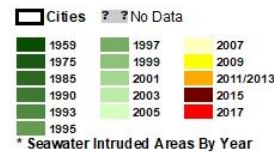
The scale and configuration of all project boundaries and information shown herein are not intended as a guide for design or survey work.

Map Date: 8/29/2018



Historical Seawater Intrusion Map

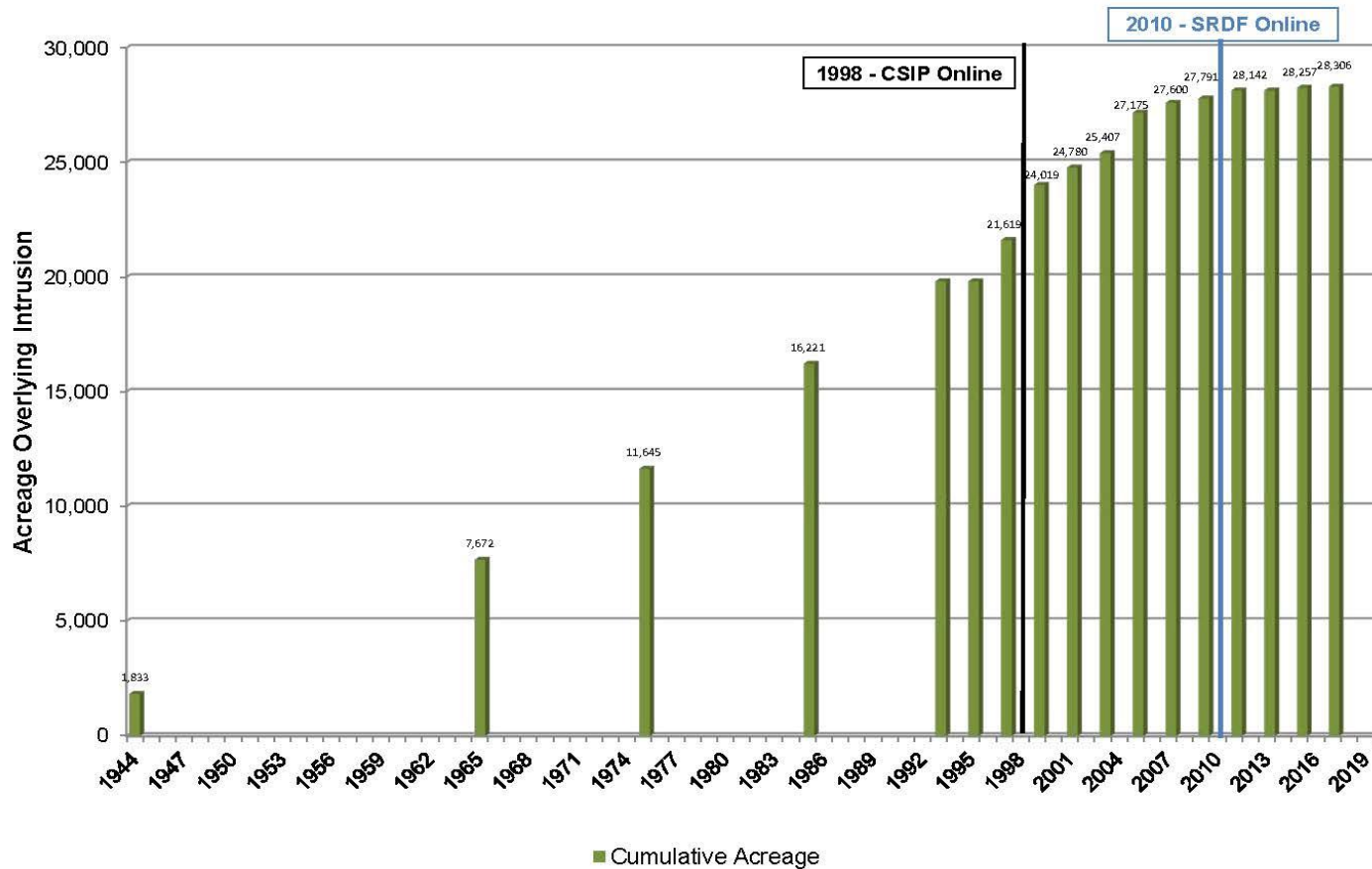
Pressure 400-Foot Aquifer - 500 mg/L or Greater Chloride Areas



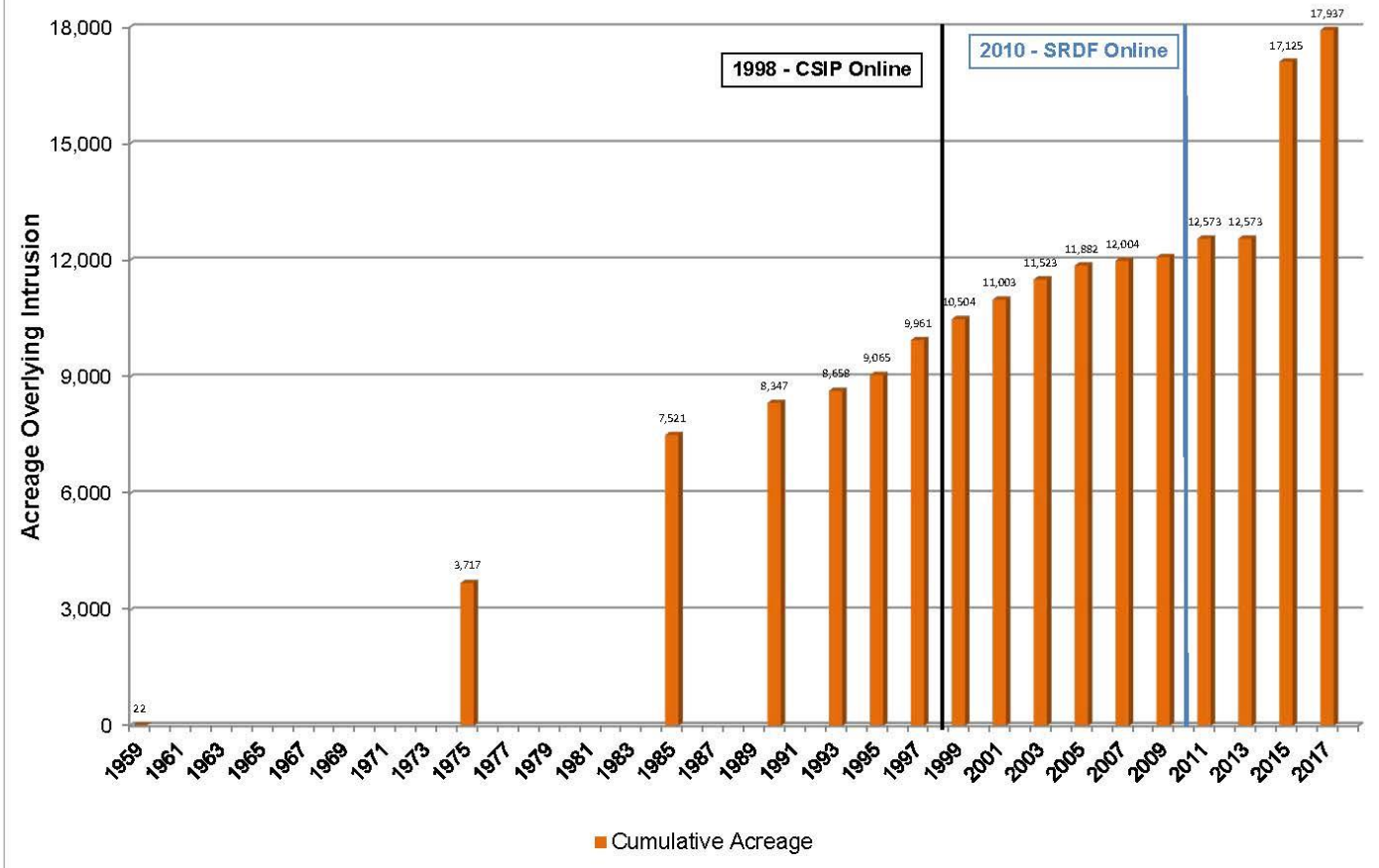
The scale and configuration of all project boundaries and information shown herein are not intended as a guide for design or survey work.

Map Date: 8/29/2018

Acreage Overlying the 500 mg/L Chloride Contour Pressure 180-Foot Aquifer



Acreage Overlying the 500 mg/L Chloride Contour Pressure 400-Foot Aquifer





Benefits of expansion

Definitions

CSIP Expansion: Increasing the size and reach of the CSIP distribution system, beyond the current Zone 2B boundary, to provide recycled and diverted river water to additional lands for irrigation and agricultural use.

CSIP Enhancement: To make improvements, system modifications, and operational changes to increase operational efficiency and sustainability of current CSIP facilities and systems.



Benefits of expansion

- Increased demand for river water when SRDF is operational (up to 72 ac*ft./day, April-Oct.), providing a net annual reduction in well pumping from aquifer.
 - Up to 20 - 40 ac*ft./day bypasses SRDF facility to ocean in excess of regulatory requirements. Losses avoidable with increased demand or storage.
 - Water released from reservoirs travels 95 miles down the Salinas River and takes 4-6 days to reach the SRDF impoundment.
 - SRDF capable of diverting up to 15,000 ac*ft./yr. during operations when water is available.



Discussion (cont.)

- Keeps cultivated lands in production
 - Provides access to good quality supplemental well water as aquifer under Zone 2B becomes more intruded, and CSIP supplemental wells are taken offline.
- Increased demand for recycled water during off-peak irrigation months (Dec- March), providing a net annual reduction in well pumping from aquifer.
 - \pm 85% of CSIP irrigation demand is met April - Oct.
 - \pm 1,417 ac*ft. (Dec-Feb, avg. 2015-17) released from RTP to outfall.



Discussion (cont.)

- Protect drinking water supplies in communities in the area surrounding the CSIP project.
 - P400 aquifer is the primary source of drinking water in the lower Salinas Valley.
 - Seawater intrusion threatens access to potable water for residents in Castroville, Oak Hills, City of Salinas, and the City of Marina.

- CSIP not only project using recycled water

Annual Demands (ac*ft.)					
	Recycled	SRDF/ Wells	New Source	IWW	Total
CSIP	13,395	7,521	0	0	20,916
PWM	1,835	0	2,733	0	4,568
MCWD	1,275	0	0	0	1,275
M1W	650	0	0	0	650

Available Water Sources (ac*ft.)					
	Recycled	SRDF*	New Source**	Salinas IWW ***	Total
Supply	17,672	15,480	3,634	2,990	39,776
Demands	17,155	7,521	2,733	0	27,409
Unused	517	7,959	901	2,990	12,367

* SRDF When available

** New Sources Blanco Drain and Rec Ditch (2019)

*** Salinas Industrial Waste Water (IWW)



What is Needed for Expansion

- Project/Goal/Strategy
 - Engineers Report
 - Project Design
 - Environmental/Regulatory Compliance (CEQA, EIR)
 - Annexation Policy (contiguous vs. non-contiguous, voluntary vs. compulsory)
 - Funding (218 vote, Grants, Loans, Assessments)
 - Review of U.S. Bureau of Reclamation (USBR) loan documents
 - Negotiate modification of current SVRP and CSIP loan contracts to allow CSIP boundary expansion.



Impediments to Expansion

- Stakeholder Consensus
 - Project/Goal/Strategy
 - Project Design
 - Funding (218 vote, Assessments)
 - Annexation Policy (contiguous vs. non-contiguous, voluntary vs. compulsory)
- Environmental/Regulatory Compliance (CEQA, EIR) costs



Expansion vs. Enhancement

- Expanding CSIP requires a large commitment of resources over a 2-5 year period depending on project specifics.
- Enhancements to the current CSIP system have a much shorter horizon. Many enhancements, not all, are less capital intensive.



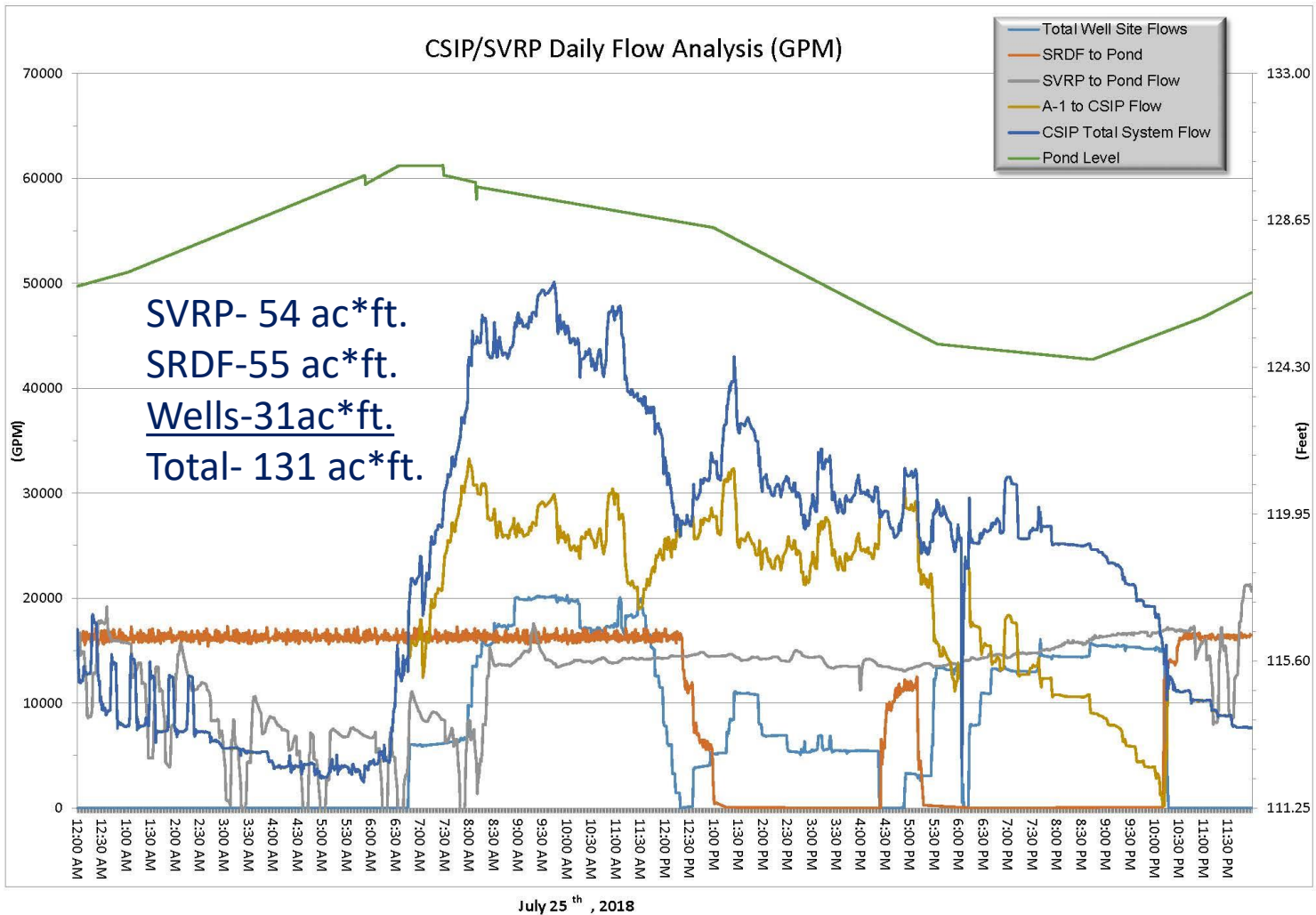
Current Enhancement Efforts

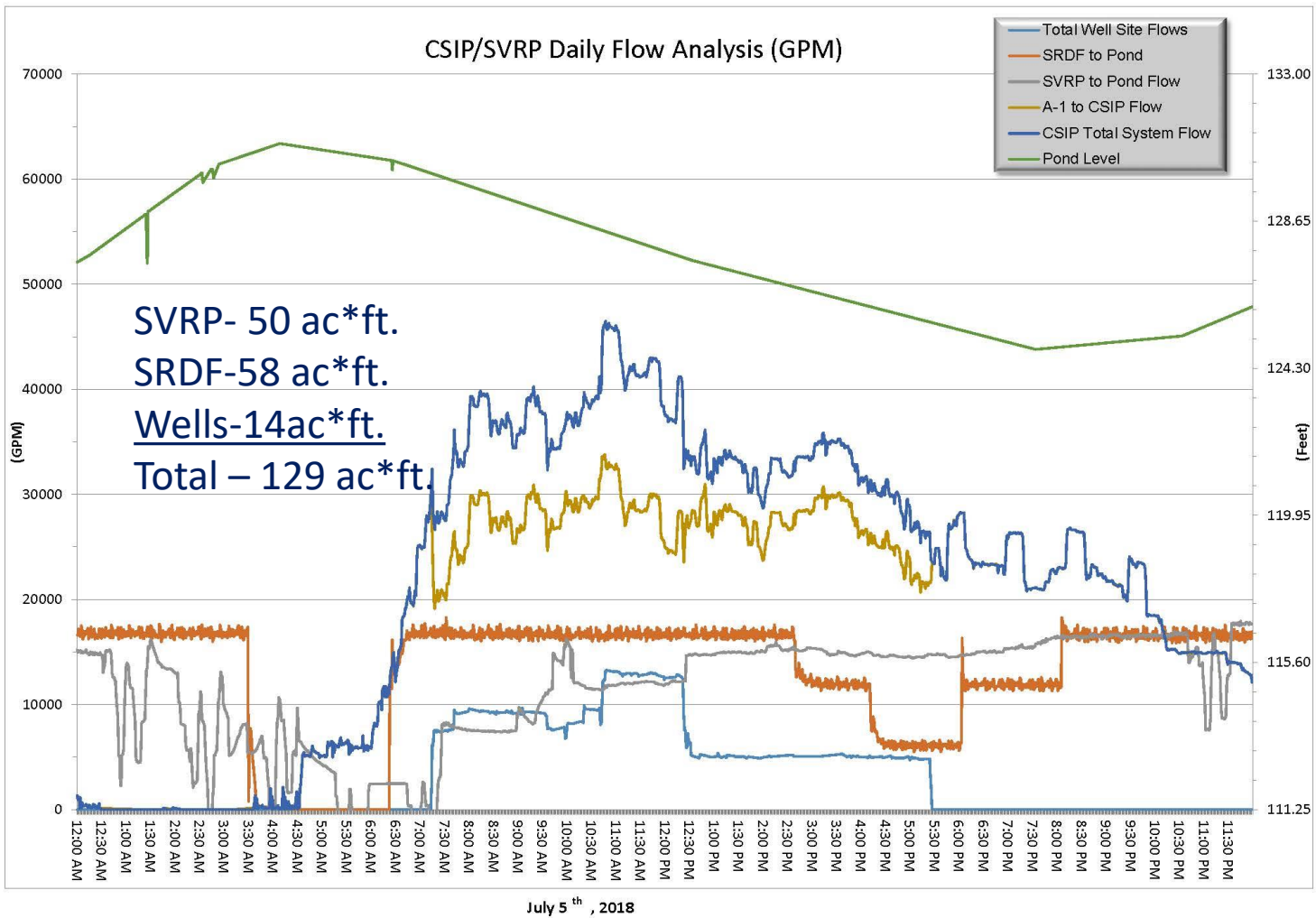
- Agency and M1W completed an upgrade of the Supervisory Controls and Data Acquisition Systems (SCADA) in 2017. SCADA are the computerized controls that monitor and remotely control CSIP operations by an operator at the RTP. The new SCADA system allows for greater automation which will improve system safety and reliability.
- Changes in operational strategy of the CSIP storage pond have recently been implemented. The changes made allow for increased use of recycled and diverted river water decreasing pumping of supplemental wells.



Discussion (cont.)

- One operational change being worked on is implementation of a water scheduling process. The CSIP system was designed to deliver a specific volume of water over a given period of time.
 - Shortened periods of increased demand require use of supplement wells for pressure and volume even with sufficient recycled and diverted water available.
 - Spreading demand over a longer period will reduce well use. The Agency and M1W are working with growers on implementation of a new water scheduling policy.





Discussion (cont.)

- Included in Agency's FY 18/19 budget are design services for CSIP system hydraulic modeling. This modeling will allow testing and modeling of proposed projects to include:
 - Additional system storage
 - Reduce pressure issues (low and high)
 - Possible expansion
 - Piping Alignment
 - Type system (gravity, pressurized)

Summary/First Steps

- There is a need to expand and enhance the CSIP. Both can be accomplished simultaneously.
- Seawater intrusion is still advancing in the P400 aquifer and continues to threaten sustained agricultural operations and the drinking water supply of the surrounding communities.
- The first step to expanding CSIP will begin discussion on setting an achievable goal. What is to be accomplished by expanding CSIP?
 - Reduce Pumping in the aquifer? How much?
 - Ensure sustainability of agriculture in the surrounding area?



TODAY'S ACTION

Receive a presentation “*Action Necessary to Expand the Castroville Seawater Intrusion Project*” from Monterey County Water Resources Agency Staff.



