SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY AGENCY

BOARD OF DIRECTORS:

Chair:
Director Dale Crossley
Reclamation District No. 2068

Vice Chair:
Supervisor Mitch Mashburn
Solano County District 5

DIRECTORS:

Vice-Mayor Scott Pederson
City of Dixon

Mayor Ron Kott
City of Rio Vista

Director Jack Caldwell
California Water Services

Director Spencer Bei
Dixon Resource
Conservation District

Director Ryan Mahoney
Maine Prairie Water District

Supervisor John Vasquez
Solano County District 4

Director John Roteveel
Solano County Farm Bureau

Director Russ Lester
Solano County Agricultural
Advisory Committee

Director Kurt Balasek
Solano Resource
Conservation District

SECRETARY/TREASURER:

Roland Sanford
Solano County Water Agency

BOARD OF DIRECTORS MEETING

DATE: **Thursday, September 9, 2021**

TIME: **5:00 P.M.**

PLACE: **Virtual Zoom Meeting**

https://us02web.zoom.us/j/85831717539?pwd=WWt0L28rMmRUdWdRMEpZYVRRblRhUT09
Meeting ID: 858 3171 7539/Passcode: 018886
One tap mobile:+16699009128,,85831717539#,,,,*018886# US
Dial by your location: +1 669 900 9128 US

Backup Conference line: 800-510-5879/Passcode 385498

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. APPROVAL OF AGENDA

4. PUBLIC COMMENT

Limited to 5 minutes for any one item not scheduled on the Agenda.

5. CONSENT ITEMS

(A) Minutes: Approval of the Minutes of the Board of Directors meeting of July 8, 2021.

6. BOARD MEMBER REPORTS *(estimated time: 5 minutes)*

RECOMMENDATIONS: For information only.

7. SECRETARY/TREASURER REPORT *(estimated time: 5 minutes)*

RECOMMENDATIONS: For information only.

810 Vaca Valley Parkway, Suite 203 Vacaville, California 95688
Phone (707) 451-6090 • FAX (707) 451-6099
http://www.scwa2.com/resources-management/ground-water/solano-gsa-bod

8. **SOLANO GROUNDWATER SUSTAINABILITY PLAN UPDATE**
(estimated time: 40 minutes)

RECOMMENDATIONS: Hear presentation and provide direction to staff.

10. **TIME AND PLACE OF NEXT MEETING**

Thursday, October 14, 2021 at 5:00 p.m. at the SCWA offices.

The Full Board of Directors packet with background materials for each agenda item can be viewed on the Agency's website at
www.scwa2.com/resources-management/ground-water/solano-gsa-bod

Any materials related to items on this agenda distributed to the Board of Directors of Solano Subbasin Groundwater Sustainability Agency less than 72 hours before the public meeting are available for public inspection at the Agency's offices located at the following address: 810 Vaca Valley Parkway, Suite 203, Vacaville, CA 95688. Upon request, these materials may be made available in an alternative format to persons with disabilities.

SOLANO SUBBASIN GROUNDWATER SUSTAINABILITY AGENCY
BOARD OF DIRECTORS MEETING MINUTES

MEETING DATE: July 8, 2021

The Solano Subbasin Groundwater Sustainability Agency Board of Directors met this evening at the Solano County Water Agency Offices. Present were:

Mayor Steve Bird, City of Dixon
Supervisor Mitch Mashburn, Solano County District 5
Director Jack Caldwell, California Water Services Dixon
Director Eric Schene, Dixon Resource Conservation District
Director Dale Crossley, Reclamation District 2068
Director Kurt Balasek, Solano Resource Conservation District

CALL TO ORDER

The meeting was called to order at 5:06 p.m. by Chairman Crossley.

APPROVAL OF AGENDA

On a motion by Director Caldwell and a second by Supervisor Mashburn the Board unanimously approved-by roll call vote-the Agenda.

PUBLIC COMMENT

There were no public comments.

CONSENT ITEMS

On a motion by Supervisor Mashburn and a second by Director Schene the Board approved-by roll call vote-Consent Item 5(a) Minutes.

BOARD MEMBER REPORTS

There were no Board member reports.

SECRETARY/TREASURER REPORT

Staff discussed an educational video for the Solano Groundwater Sustainability Plan (GSP) produced by the Solano Resource Conservation District. The Freshwater Trust and the Local Government Commission secured a Proposition 68 grant to help with education and outreach in

the Solano Subbasin. As part of that grant, this education video was developed, with the bulk of the effort coming from the Solano Resource Conservation District and their education staff.

The link to the video is:

https://www.youtube.com/watch?v=4zKBH9n41QU

SOLANO GSA BUDGET FOR FISCAL YEAR 2021-2022

Staff provided the Board background information on the Agency's financial situation. The Agency does not pay any employee salaries, rent for office space, or costs for office equipment, the budget is quite simple.

The proposed Fiscal Year 2021-2022 budget includes funding to complete the GSP, develop fees for GSP implementation (Prop 218 process/rate study); membership to ACWA and insurance through the ACWA-JPIA for the Agency.

The bulk of expenses are for work performed by Luhdorff & Scalmanini towards development of the GSP. Total expenses for FY 2021-2022 are estimated to be $863,164.51.

The bulk of revenues are from the 2017 Proposition 1 Sustainable Groundwater Planning Grant and the 2018 Proposition 68 Sustainable Groundwater Planning Grant. Payments are made in arrears for work done on the GSP (there is a 10% holdback until the end of the grant cycle in 2022). Additional revenues are from 2017 Agency membership dues and contributions from Solano County Water Agency towards groundwater investigations.

The 2018 Proposition 68 grant awarded $705,000 to the Agency, however only $400,000 was allocated. There is the possibility that the additional $305,000 will be allocated this fiscal year, but there are no guarantees that will happen or when. We are hoping to hear back from DWR in the next few months.

On a motion by Director Balasek and a second by Mayor Bird the Board approved-by roll call vote-the Solano GSA Fiscal Year 2021-2022 Budget.

SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY PLAN UPDATE

Staff introduced the team from Luhdorff & Scalmanini Consulting Engineers (LSCE) to the Board of Directors. Vicki Kretsinger Grabbert from LSCE gave the Board some background information on GSP development to date and Nick Watterson of LSCE gave a presentation on Groundwater Modeling results.

Mr. Watterson discussed the Groundwater Model, describing the various model runs completed, which included: Projected with Future Land Use; Projected with Future Land Use and 2030 Climate Change; Projected with Future Land Use and 2070 Climate Change. Another model run

is currently underway, it will include Projected with Future Land Use and Projects. The dates used for calibrating the model include water years 1991-2018. Future scenarios include water years 2022-2072 (predicted from historical data).

Mr. Watterson described that all of these models have many variables and they are not perfect. The model results do show some variance in groundwater levels as compared to actual observed levels, but the numbers are not far off.

For the climate change scenarios, LSCE utilized Department of Water Resources Climate Change Guidelines for 2030 and 2070 central tendency. There were adjustments made for evapotranspiration, precipitation, and stream inflows.

For all model runs, there were some slight variations with different parameters, for example, with urban build-out in cities within the subbasin, the model predicts less groundwater pumping in the future.

For all model runs, the draft results show a positive storage of groundwater in the subbasin. It is not a large amount on an annual basis, but it is positive, and over time it equates to 10's of thousands of acres of storage. Model results were shown at the subbasin and GSA level.

Overall conditions in the subbasin are quite stable. There is an area of some concern in the north-western portion of the subbasin. This is an area where we will look to run the model with potential projects to see what effect they may have on the results. Example projects might include diverting stormflows from westside streams for on field recharge and rainfall managed recharge to reduce runoff. These types of projects would be limited to agricultural fields not planted in permanent crops and willing landowners.

These types of projects would likely result in considerably more increased deep percolation, which equates to more recharge. This would also likely have a small increase in local groundwater storage in the north-western focus area.

Next steps include projected scenarios with projects, use of the model to evaluate sustainable management criteria, such as stream depletion, finalize the water budget, and prepare model documentation.

Open session ended at 5:58 pm.

Closed session began at 5:59 pm.

CLOSED SESSION

CONFERENCE WITH LEGAL COUNSEL-ANTICIPATED LITIGATION
(Subdivision (d) of Gov. Code §54956.9)
Significant exposure to litigation: 1 potential case-SGMA Implementation Fees

Closed session ended at 6:20 pm.

Open session continued at 6:21 pm.

Chair Crossley stated that there was nothing to report out of the closed session.

TIME AND PLACE OF NEXT MEETING

The time and place of the next meeting is Thursday, September 9, 2021 at 5:00 p.m., via Zoom.

ADJOURNMENT

This meeting of the Solano Subbasin Groundwater Sustainability Agency Board of Directors was adjourned at 6:22 p.m.

_____

Roland Sanford
Secretary to the Solano Subbasin
Groundwater Sustainability Agency

SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY AGENCY

MEMORANDUM

TO: **Board of Directors**

FROM: **Roland Sanford, Secretary to the Board of Directors**

DATE: **September 9, 2020**

SUBJECT: **September General Manager/Secretary Report**

Groundwater Sustainability Plan Update

Luhdorff & Scalmanini (LSCE), our consultants developing the Groundwater Sustainability Plan (GSP), will give the Board an update on progress and next steps for the GSP. Some of the topics they will be covering include: Groundwater modeling results with future land use, climate change, and projects, and updates on the remaining sections of the GSP.

Groundwater Sustainability Plan Funding

As discussed at the July 8th Board of Directors (BOD) meeting, the awarded grant funds from Proposition 68 had not been fully allocated for the Solano GSA. The Department of Water Resources (DWR) has informed staff that those funds ($305,000) are now available. DWR will forward an amendment to the agreement so those funds can be utilized to help finish the GSP.

Groundwater Sustainability Plan Adoption Notification

The Sustainable Groundwater Management Act (SGMA) requires that notice be given to cities and counties within a subbasin that intends to adopt a GSP (Water Code §10728.4). This notice must be sent out at least 90 days ahead of any public hearings to adopt the GSP. The notice for the Solano Subbasin GSP was sent out on August 31, 2021 on behalf of the Solano Collaborative to the Cities of Dixon, Rio Vista, and Vacaville, and the Counties of Solano, Sacramento, and Yolo. A sample notice is attached to this memo.

Meetings and Inter-Basin Coordination

Coordination with our neighboring groundwater subbasins and other agencies continues.

810 Vaca Valley Parkway, Suite 203 Vacaville, California 95688
Phone (707) 451-6090 • FAX (707) 451-6099
http://www.scwa2.com/resources-management/ground-water/solano-gsa-bod

August 9th-Staff met with the Solano Collaborative to discuss individual GSA costs for GSP implementation for GSP Implementation and quantitative sustainable management criteria. Staff are meeting with the other GSA staff twice a month as we move forward on completing the GSP.

August 10th-Staff met with consulting team to continue discussions on GSP development.

August 19th-Staff met with the Solano Collaborative to discuss: final GSP Approval Process/Timeline; Draft Section 5-Water Budget; Draft Section 8-Projects and Management Actions, including PMA Questions; Draft Section 6-Sustainable Management Criteria, including Quantitative Criteria and Minimum Thresholds & Measurable Objectives; Draft Section 9-Plan Implementation, including individual GSA Implementation Costs; Proposition 68 Funding; and Stakeholder Engagement Update.

August 24th-Staff met with consulting team to continue discussions on GSP development.

August 25th-GSP Virtual Town Hall-detailed below.

August 30th-Inter-Basin Coordination with Yolo Subbasin-Staff met with Yolo staff to discuss preliminary model results for both subbasins and to continue coordination and sharing of data.

GSP Virtual Town Hall-August 25

Staff and the consulting team met with stakeholders on August 25th to discuss the GSP in a Virtual Town Hall (VTH) setting. The VTH was facilitated by Ag Innovations and was well attended, with 108 participants, including several Directors from the Solano GSA Board. There was a second channel for interpretation services of the VTH into Spanish.

The purpose of the meeting was to:

- Review GSP process and where we're at right now
- Update the public on groundwater conditions in the Solano Subbasin
- Educate the public on what's been done to develop the GSP and the Sustainable Management Criteria (SMC)
- Present SMCs and Projects and Management Actions (PMAs)
- Hear from the community-their questions and concerns about groundwater conditions, SMCs, and PMAs
- Share with the public how their input has shaped the GSP thus far
- Call to action for the public: comment on GSP sections

VTH Agenda

- Host's Welcome-Solano GSA Staff
- Interpreter's Welcome-Linguistica Interpretation and Translation
- Facilitator's Welcome-Ag Innovation
- Overview of Solano GSP Development & Where We are Now-Solano GSA Staff
- Overview of Key Terms and Concepts-LSCE
- On the ground Now: Update on Groundwater Conditions in the Solano Subbasin-LSCE
- Sustainable Management Criteria/Projects & Management Actions-LSCE

- BasinScout-The Freshwater Trust
- Multiple Polls and Q&A Sessions
- Call to Action & Next Steps-Ag Innovations

Another VTH is scheduled for November, after the complete draft GSP is available for stakeholder review.

GSP Schedule

As requested, the schedule for the GSP is attached. The GSP schedule will be discussed during the GSP update presentation.

Solano Groundwater Sustainability Plan Website

Continuous updates are being made to the Solano Groundwater Sustainability Plan website. The address for the website is: http://www.solanogsp.com

SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY AGENCY

August 30, 2021

Via Email and US Mail

City of Dixon
Jim Lindley, City Manager
600 East A St.
Dixon, CA 95620

Re: Notice of Intent to Adopt a Groundwater Sustainability Plan

Dear Mr. Lindley,

On behalf of the Groundwater Sustainability Agencies (GSAs) comprising the Solano Subbasin GSA Collaborative (Collaborative), as listed below, pursuant to California Water Code Section 10728.4, the Collaborative hereby give notice to the legislative body of any city or county within the geographic area covered by the pending Solano Subbasin Groundwater Sustainability Plan (GSP) that it intends to adopt the GSP for the Solano Subbasin no earlier than 90-days upon your receipt of this notice. A map of the GSP area is included herein.

Considerations to adopt the Draft GSP shall occur as part of public hearings to be held jointly or individually by the undersigned GSAs. Once adopted, the GSP will govern sustainable groundwater management actions within each GSA's jurisdictional boundaries located within the Solano Subbasin.

Recipients of this notice may request to consult on the GSP. These requests must be received within 30 calendar days upon receipt of this notice. Requests to consult with one or more GSAs intending to adopt the GSP can be directed to Chris Lee, clee@scwa2.com or by phone at 707-455-1105. To review the list of GSA public hearings scheduled for adoption proceedings of the GSP, to download a copy of the Public Draft GSP, and to receive other information, visit www.solanogsp.com.

Should you have any questions about this notice, please contact me at rsanford@scwa2.com [email address] or by phone at 707-455-1103.

Solano Subbasin Collaborative GSAs:

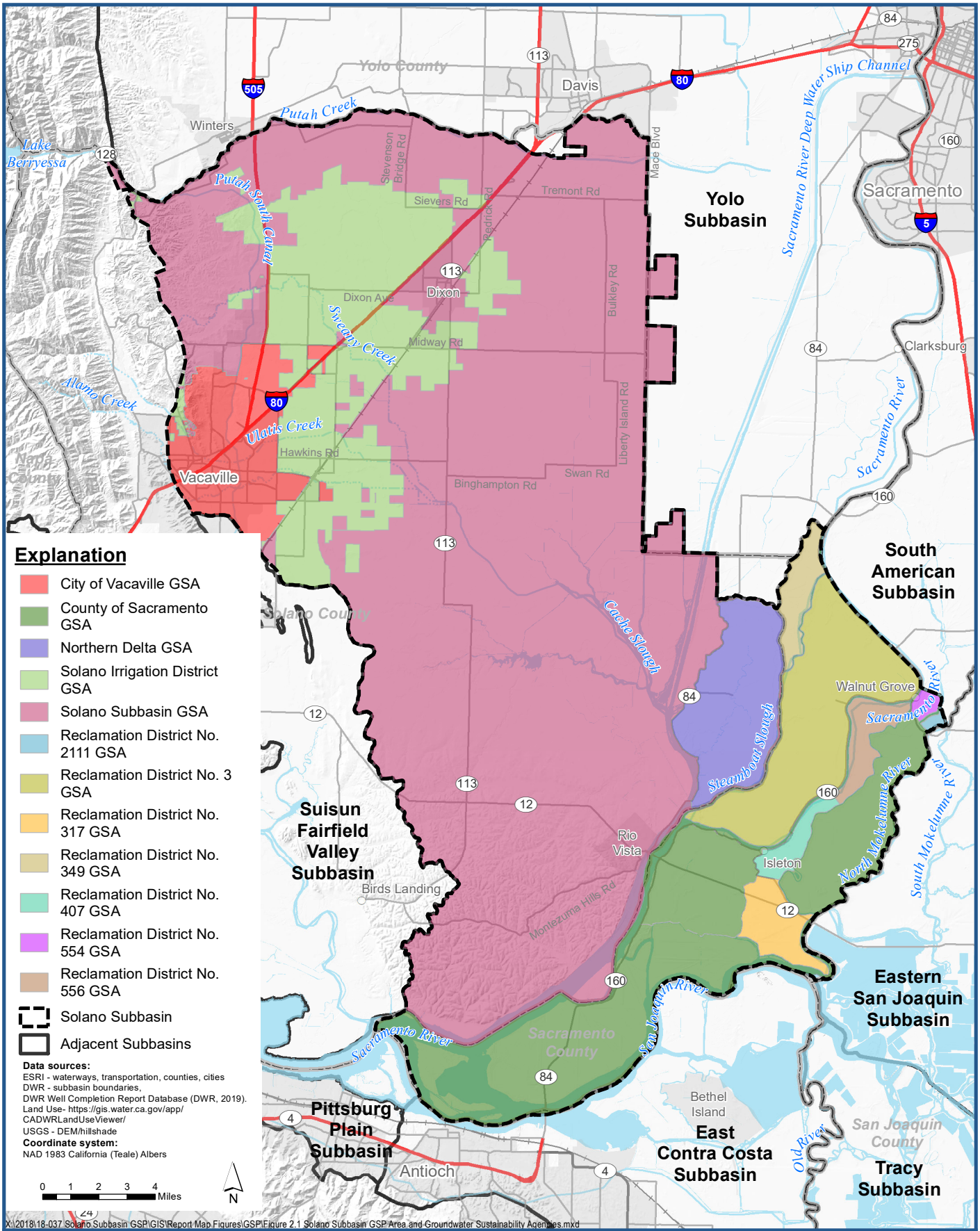
City of Vacaville GSA
Northern Delta GSA
Sacramento County GSA

810 Vaca Valley Parkway, Suite 203 Vacaville, California 95688
Phone (707) 451-6090 • FAX (707) 451-6099

Solano GSA
Solano Irrigation District GSA

Sincerely,

Roland Sanford,
General Manager, Solano County Water Agency
Secretary to Solano GSA

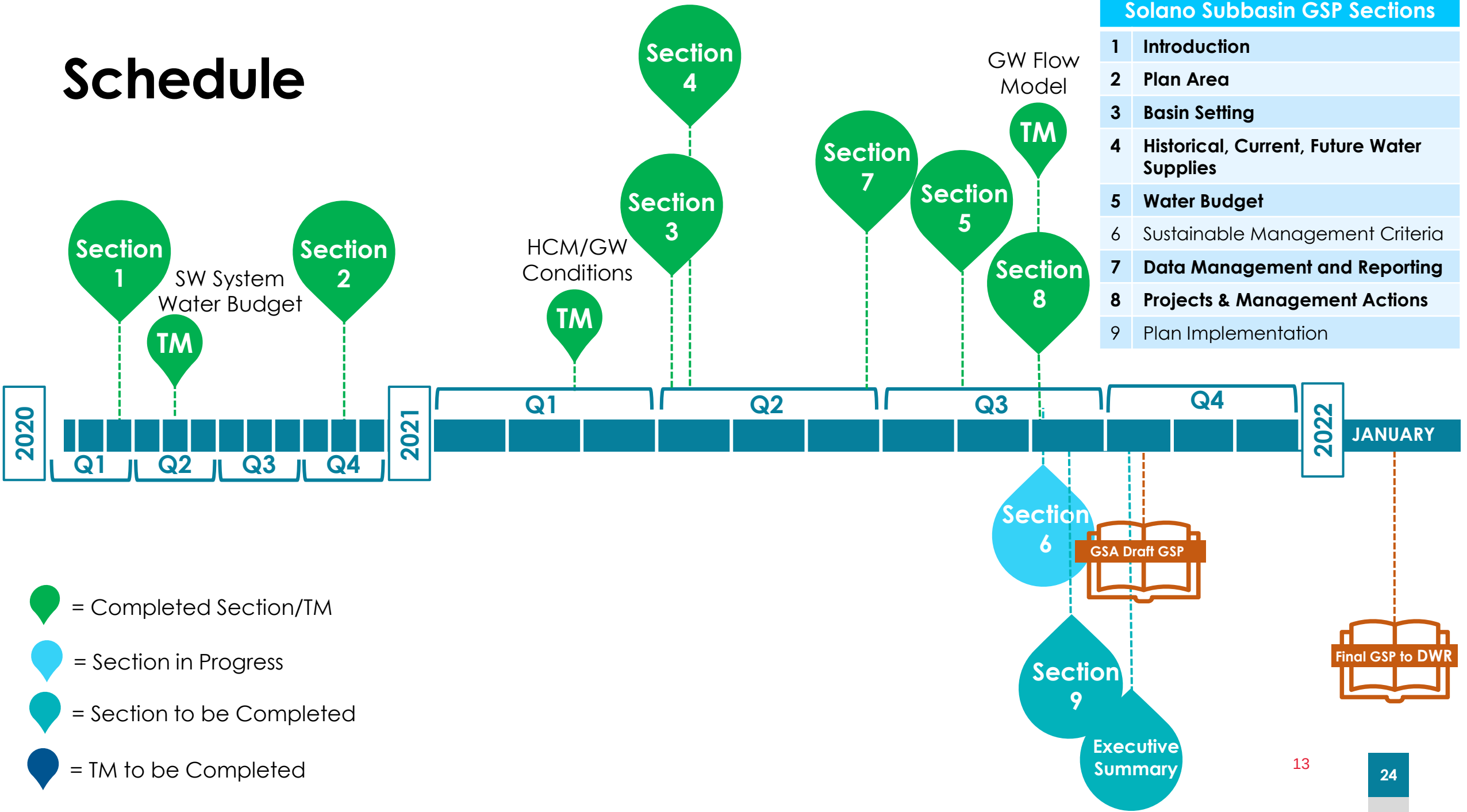


Solano Subbasin GSP Area and Groundwater Sustainability Agencies

Figure 2-1

Groundwater Sustainability Plan
Solano Subbasin

Schedule



Solano Subbasin GSP Sections	
1	**Introduction**
2	**Plan Area**
3	**Basin Setting**
4	**Historical, Current, Future Water Supplies**
5	**Water Budget**
6	Sustainable Management Criteria
7	**Data Management and Reporting**
8	**Projects & Management Actions**
9	Plan Implementation

ACTION OF
SOLANO SUBBASIN GROUNDWATER SUSTAINABILITY AGENCY

DATE: **September 9, 2021**

SUBJECT: **Solano Groundwater Sustainability Plan Update**

RECOMMENDATION:

Hear presentation and provide direction to staff.

FINANCIAL IMPACT:

None.

BACKGROUND:

Luhdorff & Scalmanini Consulting Engineers (LSCE) will provide an update on progress of the Solano Groundwater Sustainability Plan (GSP) to the Board. Topics to be covered during the presentation (attached):

- Groundwater modeling results with future land use, climate change, and projects
- Update on the remaining sections of the GSP
- Next Steps and Schedule

After the presentation, staff will ask for input from the Board on continued direction of the development of the GSP.

Recommended: _____
Roland Sanford, Secretary

☐ Approved as recommended ☐ Other (see below) ☐ Continued on next page

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Modification to Recommendation and/or other actions:

I, Roland Sanford, Secretary to the Solano Groundwater Sustainability Agency, do hereby certify that the foregoing action was regularly introduced, passed, and adopted by said Board of Directors at a regular meeting thereof held on September 9, 2021 by the following vote.

Ayes:

Noes:

Abstain:

Absent:

_____
Roland Sanford,
Secretary to the
Solano Groundwater Sustainability Agency

SOLANO SUBBASIN:

Groundwater Modeling Results with Future Land Use, Climate Change and Projects

LSCE Team
September 9, 2021: Solano Subbasin GSA Board Meeting

1

Presentation Outline

- Solano IHM Results
  - Review Historical (1991-2018)
  - Projected with Climate Change and Projects(2022-2072)
- Schedule

2

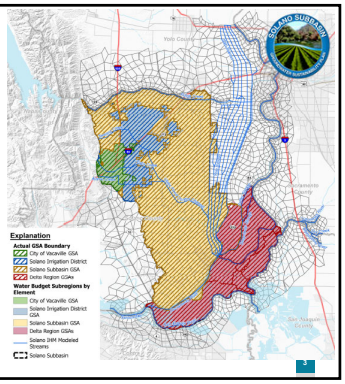
2

Solano IHM:
Model Structure

Approximation of GSA boundaries limited by element configuration

GSA	Actual Acres	Modeled Acres
City of Vacaville GSA	14,712	14,497
Solano Irrigation District	43,339	44,404
Solano Subbasin GSA	212,714	211,267
Delta Region GSAs	83,560	83,769
Entire Subbasin	354,673	354,624

GSA areas defined in model do not change in scenarios
(i.e., they do not change with urban expansion)



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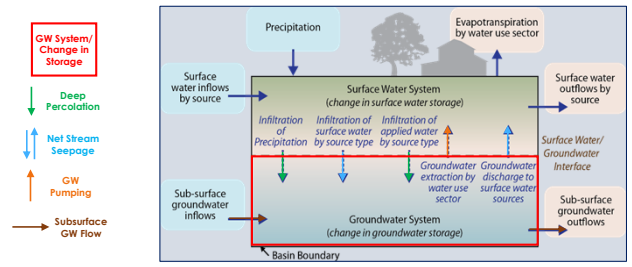
Solano IHM:
Groundwater Budget (Inflow-Outflow=Change in Storage)



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Solano IHM:
Land Use Comparisons

Land Use	Solano Subbasin Area (acres) 1991	2018	5 Years (2027)	10 Years (2032)	50 Years (2072)
Alfalfa	16,556	31,712	29,953	29,457	29,444
Almonds	1,272	15,695	23,725	25,791	26,199
Corn	39,504	18,752	18,393	17,906	17,633
Misc. Orchard	6,917	6,794	9,263	9,554	9,226
Pasture	16,350	28,921	28,177	28,174	28,113
Sunflowers and Misc. Field/Truck	32,009	23,590	19,966	19,062	18,944
Tomatoes	20,270	9,396	8,400	7,435	6,994
Vineyard	739	6,156	8,385	8,414	8,401
Walnuts	4,357	11,429	11,698	12,087	12,460
Wheat and Misc. Grain and Hay	56,802	35,364	28,411	26,567	25,329
Subtotal: Irrigated Land	**194,776**	**187,807**	**186,371**	**184,448**	**182,742**
Idle	41,564	19,977	15,182	14,075	13,956
Subtotal: Agricultural Land	**236,341**	**207,784**	**201,552**	**198,523**	**196,699**
Urban	17,751	32,620	36,191	38,242	40,252
Native, Riparian, Water	100,181	113,894	116,087	117,065	116,879
Total	**354,272**	**354,298**	**353,830**	**353,830**	**353,830**

Increases in perennial crops

Decrease in irrig. ag

Increase in urban

5

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Solano IHM:
Subbasin Water Budget Comparisons

DRAFT RESULTS

Average Annual Water Budget (AF/yr)
Solano Subbasin

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072	Projected Current Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Current Land Use with Climate Change (2070), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072
Total Stream Seepage	13,162	26,335	30,482	36,741	40,607	50,144	53,970
In-Channel Seepage	*-4,179*	*8,741*	*12,888*	*19,148*	*23,014*	*32,551*	*36,377*
Conveyance Losses	*17,341*	*17,594*	*17,594*	*17,593*	*17,593*	*17,593*	*17,593*
Deep Percolation	205,353	214,627	207,220	208,541	201,264	200,074	193,163
Small Watershed Contribution	1,797	1,780	1,780	1,820	1,820	1,841	1,841
Groundwater Pumping	-181,316	-166,182	-168,556	-172,828	-175,234	-182,351	-185,627
Total Subsurface Inflow	-36,129	-75,201	-69,939	-72,865	-67,432	-68,508	-62,546
Flow from (+)/to (-) Yolo Subbasin - North	*22,705*	*18,377*	*22,660*	*19,731*	*24,188*	*22,290*	*27,066*
Flow from (+)/to (-) Yolo Subbasin - East	*-21,297*	*-24,262*	*-22,478*	*-23,265*	*-21,443*	*-21,566*	*-19,618*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-176*	*-1,035*	*-1,061*	*-880*	*-897*	*-603*	*-591*
Flow from (+)/to (-) South American Subbasin	*-11,114*	*-18,906*	*-18,970*	*-19,125*	*-19,193*	*-19,431*	*-19,479*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-23,728*	*-36,391*	*-36,613*	*-36,514*	*-36,752*	*-36,735*	*-36,948*
Flow from (+)/to (-) East Contra Costa Subbasin	*-4,860*	*-14,922*	*-15,385*	*-14,733*	*-15,221*	*-14,393*	*-14,868*
Flow from (+)/to (-) outside subbasins	*2,340*	*1,939*	*1,907*	*1,920*	*1,885*	*1,929*	*1,891*
Average Annual Change in Storage	2,866	1,359	987	1,410	1,026	1,200	801

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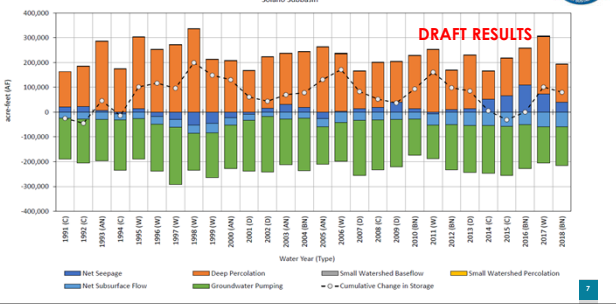
Solano IHM:
Historical (1991-2018)



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Solano IHM:
Historical (1991-2018)

DRAFT RESULTS

GSA Water Budgets

Average Annual Water Budget (AF/yr)

	City of Vacaville GSA	Solano Subbasin GSA	Solano Irrigation District GSA	Delta Region GSAs
Total Stream Seepage	812	12,522	2,694	-4,954
In-Channel Seepage	*-317*	*2,550*	*-3,554*	*-4,954*
Conveyance Losses	*1,128*	*9,971*	*6,248*	*0*
Deep Percolation	15,658	93,040	34,018	62,535
Small Watershed Contribution	257	1,386	69	63
Groundwater Pumping	-9,578	-161,204	-6,939	-2,644
Total Subsurface Inflow	-7,123	56,155	-30,163	-53,746
Flow from (+)/to (-) City of Vacaville GSA	-	*1,216*	*7,016*	-
Flow from (+)/to (-) Solano Subbasin GSA	*-1,216*	-	*-35,036*	*-16,273*
Flow from (+)/to (-) Solano Irrigation District GSA	*-7,016*	*35,036*	-	-
Flow from (+)/to (-) Delta Region GSAs	-	*16,273*	-	-
Flow from (+)/to (-) outside Solano Subbasin	*1,109*	*3,629*	*-2,142*	*-37,473*
Average Annual Change in Storage	26	1,899	-322	1,255

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Solano IHM:
Projected – Baseline Runs (2022-2072)

DRAFT RESULTS

Solano Subbasin GSA Water Budgets

Average Annual Water Budget (AF/yr)

	Historical Period, 1991-2018	Projected Current Land Use, 2022-2072	Projected Future Land Use, 2022-2072
Total Stream Seepage	12,522	11,297	14,002
In-Channel Seepage	*2,550*	*1,127*	*3,833*
Conveyance Losses	*9,971*	*10,169*	*10,169*
Deep Percolation	93,040	92,507	91,199
Small Watershed Contribution	1,386	1,378	1,378
Groundwater Pumping	-161,204	-142,449	-138,094
Total Subsurface Inflow	56,155	37,931	32,000
Flow from (+)/to (-) City of Vacaville GSA	*1,216*	*1,704*	*1,573*
Flow from (+)/to (-) Solano Subbasin GSA	-	-	-
Flow from (+)/to (-) Solano Irrigation District GSA	*35,036*	*34,965*	*24,218*
Flow from (+)/to (-) Delta Region GSAs	*16,273*	*5,523*	*4,741*
Flow from (+)/to (-) outside Solano Subbasin	*3,629*	*-4,262*	*1,467*
Average Annual Change in Storage	1,899	665	484

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Projected – With Projects: Future Land Use and Climate Change (2022-2072)

10

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Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

Projects Evaluated Collectively in Model:

1. Divert stormflows from westside streams for on-field recharge
2. Rainfall Managed Recharge (Rain-MAR) to reduce runoff

Projects targeting northwest part of Subbasin

11

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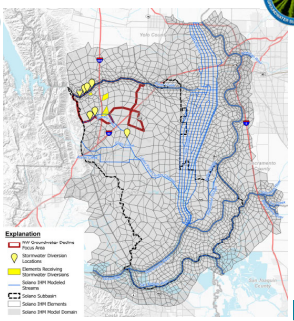
Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

1. **Divert stormflows from westside streams for on-field recharge**

- Targeted in NW Subbasin
- Identification of fields based on land use, SAGBI, and diversion locations, and Prop. 68 project ranking by TFT
- Limited to agricultural fields not planted in permanent crops



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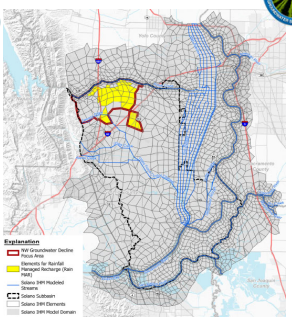
Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

2. Rainfall Managed Recharge (Rain-MAR) to capture runoff from fields

- Targeted in NW Subbasin
- Identification of fields based on land use, SAGBI, and Prop. 68 project ranking by TFT
- Limited to agricultural fields not planted in permanent crops



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Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

Effect of Projects:

- SW diversions off westside streams
- Runoff decreases
- Deep percolation
- Small reduction in return flows throughout the year
- Small reduction in pumping, especially early in the season (residual soil moisture?)

Differences in Water Budget as a Result of Projects

Water Budget Component	Average Annual Difference with Projects (AFY)
SW Diversions	+2,304
Runoff	-2,981
Deep Percolation	**+5,103**
Return Flow	-264
Pumping	-347

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Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

DRAFT RESULTS

Subbasin Water Budget

Average Annual Water Budget (AF/yr)
Solano Subbasin

	Projected Future Land Use, 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072	Projected Future Land Use with Projects and Climate Change (2070), 2022-2072
Total Stream Seepage	30,482	40,607	53,970	51,579
In-Channel Seepage	*12,888*	*23,014*	*36,377*	*33,986*
Conveyance Losses	*17,594*	*17,593*	*17,593*	*17,593*
Deep Percolation	207,220	201,264	193,163	198,495
Small Watershed Contribution	1,780	1,820	1,841	1,841
Groundwater Pumping	-168,556	-175,234	-185,627	-185,154
Total Subsurface Inflow	-69,939	-67,432	-62,546	-65,684
Flow from (+)/to (-) Yolo Subbasin - North	*22,660*	*24,188*	*27,066*	*24,486*
Flow from (+)/to (-) Yolo Subbasin - East	*-22,478*	*-21,443*	*-19,618*	*-20,082*
Flow from (+)/to (-) Suisun-Fairfield Valley Subbasin	*-1,061*	*-897*	*-591*	*-657*
Flow from (+)/to (-) South American Subbasin	*-18,970*	*-19,193*	*-19,479*	*-19,484*
Flow from (+)/to (-) Eastern San Joaquin Subbasin	*-36,613*	*-36,752*	*-36,948*	*-36,955*
Flow from (+)/to (-) East Contra Costa Subbasin	*-15,385*	*-15,221*	*-14,868*	*-14,882*
Flow from (+)/to (-) outside subbasins	*1,907*	*1,885*	*1,891*	*1,891*
Average Annual Change in Storage	987	1,026	801	1,078

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Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

DRAFT RESULTS

Average Annual Water Budget (AF/yr)

NW Focus Area

NW Focus Area Water Budget	Projected Future Land Use, 2022-2072	Projected Future Land Use with Climate Change (2030), 2022-2072	Projected Future Land Use with Climate Change (2070), 2022-2072	Projected Future Land Use with Projects and Climate Change (2070), 2022-2072
Total Stream Seepage	25,238	26,367	27,056	25,936
In-Channel Seepage	*20,848*	*21,977*	*22,666*	*21,546*
Conveyance Losses	*4,390*	*4,390*	*4,390*	*4,390*
Deep Percolation	17,753	17,423	17,020	22,266
Small Watershed Contribution	1,342	1,358	1,367	1,367
Groundwater Pumping	-40,833	-42,569	-45,086	-44,740
Total Subsurface Inflow	-3,077	-2,089	23	-4,203
Average Annual Change in Storage	-266	-261	-331	-173
Total Cumulative Change in Storage	-13,552	-13,288	-16,883	-8,834

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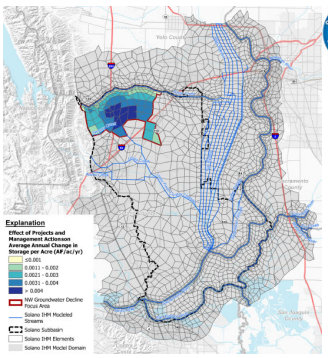
Solano IHM:
NW Focus Area

Effect of Projects on Average Annual Change in Storage



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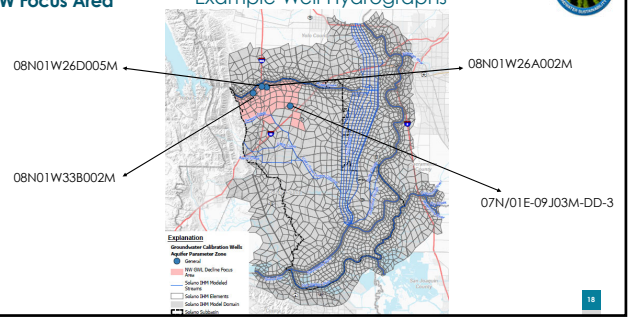
Solano IHM:
NW Focus Area

Effect of Projects on Water Levels: Example Well Hydrographs



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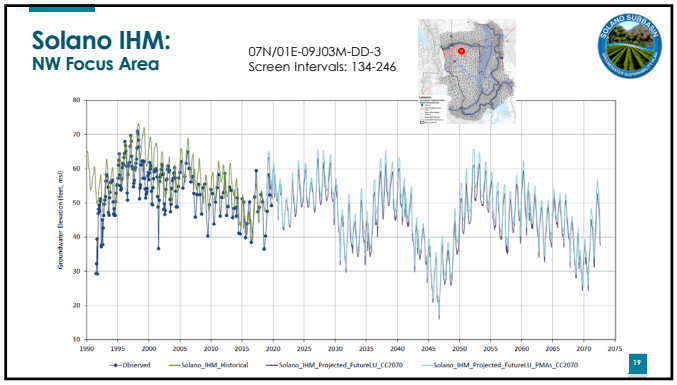
Solano IHM:
NW Focus Area
07N/01E-09J03M-DD-3
Screen Intervals: 134-246
Groundwater Elevation (feet, msl)
Observed
Solano_IHM_Historical
Solano_IHM_Projected_FutureLU_CC2070
Solano_IHM_Projected_FutureLU_PMAs_CC2070
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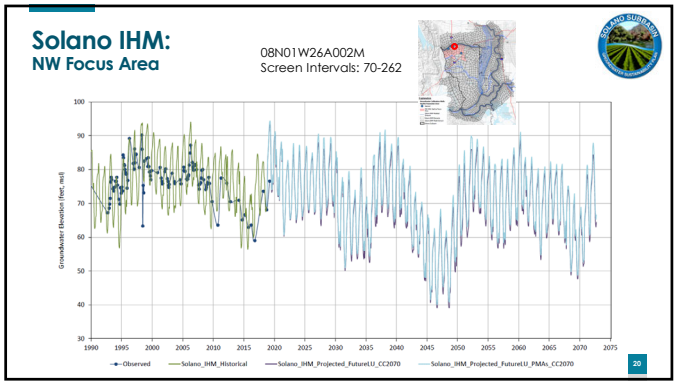
Solano IHM:
NW Focus Area
08N01W26A002M
Screen Intervals: 70-262
Groundwater Elevation (feet, msl)
Observed
Solano_IHM_Historical
Solano_IHM_Projected_FutureLU_CC2070
Solano_IHM_Projected_FutureLU_PMAs_CC2070
20

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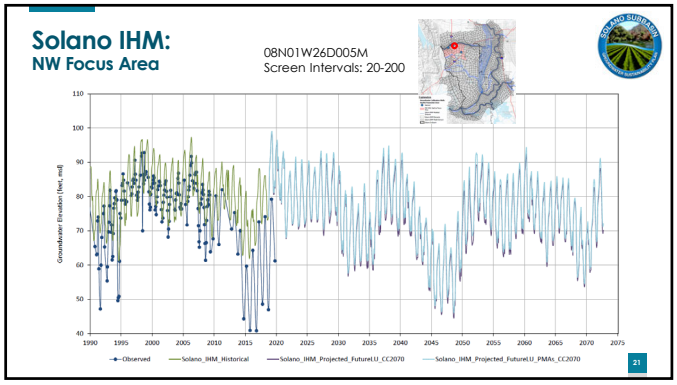
Solano IHM:
NW Focus Area
08N01W26D005M
Screen Intervals: 20-200
Groundwater Elevation (feet, msl)
Observed
Solano_IHM_Historical
Solano_IHM_Projected_FutureLU_CC2070
Solano_IHM_Projected_FutureLU_PMAs_CC2070
21

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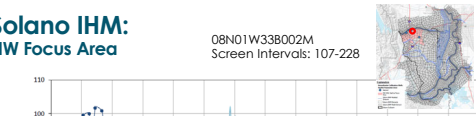
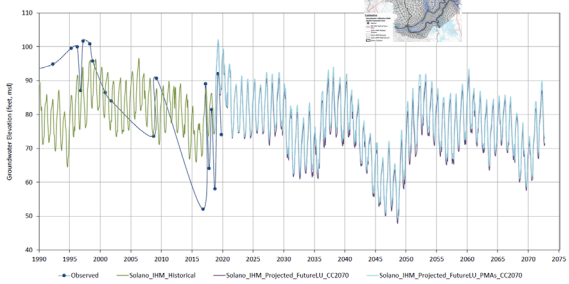
Solano IHM:
NW Focus Area

08N01W33B002M
Screen Intervals: 107-228





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Solano IHM:
Projected Future Land Use with Projects and Climate Change (2070)

Review of Project Benefits:

- Increase in SW diversions (additional diversions off westside streams), but stream seepage decreases – redistribution of recharge
- Considerable increase in deep percolation - more recharge
- Decrease of net subsurface groundwater inflows from Yolo Subbasin
- Small increase in groundwater storage locally - in NW focus area
- Increase in water levels locally - in NW focus area

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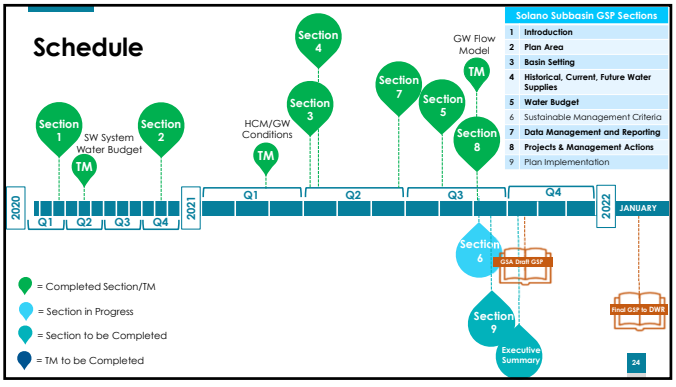
Schedule



Solano Subbasin GSP Sections

1	Introduction
2	Plan Area
3	Basin Setting
4	Historical, Current, Future Water Supplies
5	Water Budget
6	Sustainable Management Criteria
7	Data Management and Reporting
8	Projects & Management Actions
9	Plan Implementation

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SOLANO SUBBASIN
GROUNDWATER SUSTAINABILITY PLAN
THANK YOU

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