Monterey County

1441 Schilling Place
Salinas, CA 93901

Meeting Agenda - Final

Wednesday, September 1, 2021

8:30 AM

IMPORTANT COVID-19 NOTICE ON PAGE 2-4
AVISO IMPORTANTE SOBRE COVID-19 EN LA PAGINA 2-4

Water Resources Agency Basin Management Advisory Committee

John Baillie
Deidre Sullivan
Matthew Simis
David Bunn
Bill Lipe
Kevin Piearcy
Amy White
Marisela Cerda
Patrick Breen
Patrick Collins

IMPORTANT NOTICE REGARDING COVID 19 AND PARTICIPATION IN THE BASIN MANAGEMENT ADVISORY COMMITTEE MEETING

Based on guidance from the California Department of Public Health and the California Governor's Office, in order to minimize the spread of the COVID 19 virus, please do the following:

To participate in this Basin Management Advisory Committee meeting, the public is invited to observe and address the Committee telephonically or electronically. Instructions for public participation are below:
1. For ZOOM participation please join by computer audio at:
https://montereycty.zoom.us/j/99621772720

OR to participate by phone call any of these numbers below: +1 669 900 6833 US (San Jose)
+1 346 248 7799 US (Houston)
+1 312 626 6799 US (Chicago)
+1 929 205 6099 US (New York)
+1 253 215 8782 US +1 301 715 8592 US

Enter this Meeting ID number: 996 2177 2720 PASSWORD: 478310 when prompted. Please note there is no Participant Code, you will just hit # again after the recording prompts you. You will be placed in the meeting as an attendee; when you are ready to make a public comment, if joined by computer audio, please Raise your Hand; and by phone, please push *9 on your keypad.

2. If you wish to comment on a specific agenda item while the matter is being heard, you may participate by the following means:
When the Chair calls for public comment on an agenda item, the Zoom Meeting Host, or his or her designee, will first ascertain who wants to comment (among those who are in the meeting electronically or telephonically) and will then call on speakers and unmute their device one at a time. Public speakers may be broadcast in audio form only.

3. If you wish to comment on a particular agenda item, please submit your comments in writing via email to Monterey County Water Resources Agency at WRApubliccomment@co.monterey.ca.us by 5:00 p.m. on the Tuesday prior to the Committee meeting. To assist Agency staff in identifying the agenda item to which the comment relates please indicate the Basin Management Advisory Committee meeting date and agenda number in the subject line. Comments received by the 5:00 p.m. Tuesday deadline will be distributed to the Committee and will be placed in the record.

4. If you wish to make either a general public comment for items not on the day's agenda or to comment on a specific agenda item as it is being heard, please submit your comment, limited to 250 words or less, to the Monterey County Water Resources Agency at WRApubliccomment@co.monterey.ca.us. In an effort to assist Agency staff in identifying the agenda item relating to your public comment please indicate in the subject line, the meeting body

(i.e. Basin Management Advisory Committee) and item number (i.e. Item No. 10). Every effort will be made to read your comment into the record, but some comments may not be read due to time limitations. Comments received after an agenda item will be made part of the record if received prior to the end of the meeting.

5. If speakers or other members of the public have documents they wish to distribute to the Committee for an agenda item, they are encouraged to submit such documents by 5:00 p.m. on Tuesday before the meeting to: WRApubliccomment@co.monterey.ca.us. To assist Agency staff in identifying the agenda item to which the comment relates, the public is requested to indicate the Basin Management Advisory Committee date and agenda number in the subject line.

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7. Individuals with disabilities who desire to request a reasonable accommodation or modification to observe or participate in the meeting may make such request by sending an email to WRApubliccomment@co.monterey.ca.us. The request should be made no later than noon on the Wednesday prior to the Committee meeting in order to provide time for the Agency to address the request.

8. The Chair and/or Secretary may set reasonable rules as needed to conduct the meeting in an orderly manner.

AVISO IMPORTANTE SOBRE COVID 19 Y PARTICIPACIÓN EN LA REUNIÓN DEL COMITE DE ASESOR DE GESTION DE LA CUENCA

Basado en la guía del Departamento de Salud del Estado de Califonia (California Department of Public Health) y de la Oficina del Governador, para minimizar la propagación del virus COVID 19, por favor haga lo siguiente:

Para participar en esta reunión del Comité de Asesor de Gestion de la Cuenca el público están invitados a observar y dirigirse al Comité telefónicamente o por vía electrónica. Las instrucciones para la participación pública están a continuación:
1. El público puede observar la reunión ZOOM a través de computadora haciendo clic en el siguiente enlace: https://montereycty.zoom.us/j/99621772720

O el público puede escuchar a través del teléfono llamando al:
+1 669 900 6833 US (San Jose)
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Se le colocará en la reunión como asistente; cuando esté listo para hacer un comentario público si se une al audio de la computadora, levante la mano; y por teléfono presione * 9 en su teclado.

2. Los miembros del público que desean comentar en un artículo específico de la agenda, mientras que el artículo se este presentando durante la reunión, pueden participar por cualquiera de los siguientes medios:
Cuando el Presidente del Comité solicite comentarios públicos sobre un artículo de la agenda, el anfitrión de la reunión Zoom o su designado, primero determinará quién quiere testificar (entre los que están en la reunión por vía electrónica o telefónica) y luego llamará a los oradores (speakers) y activará la bocina para el orador, uno a la vez. Todo orador, será transmitido por audio en altavoz solamente.

3. Si un miembro del público desea comentar sobre un artículo de la agenda en particular, se le es sumamente recomendable que envie sus comentarios por escrito por correo electrónico a la Agencia de Administración de Recursos del Agua (Agencia) a WRApubliccomment@co.monterey.ca.us antes de las 5:00 P. M. el Martes antes de la reunión del Comité. Para ayudar al personal de la Agencia a identificar el número del artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique la fecha de la reunión del Comité y el número del artículo de la agenda en la línea de asunto. Comentarios recibidos en la fecha limite del Martes a las 5 P.M, serán distribuidos al Comité y serán colocados en el registro.

4. Los miembros del público que deseen hacer un comentario público general para temas que no están en la agenda del día o que deseen comentar en un artículo específico mientras se escucha la presentación, lo pueden hacer enviando un comentario por correo electrónico, preferiblemente limitado a 250 palabras o menos, a WRApubliccomment@co.monterey.ca.us. Para ayudar al personal de la Agencia a identificar el artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique el nombre del Comité (por ejemplo: Comité de Asesor de Gestion de la Cuenca) y el número del artículo de la agenda (por ejemplo: Artículo # 10). Se hará todo lo posible para leer el comentario en el registro, pero algunos comentarios pueden no leerse en voz alta debido a limitaciones de tiempo. Los comentarios recibidos después del cierre del período de comentarios públicos sobre un artículo de la agenda serán parte del registro si se reciben antes que termine la reunión del Comité.

5. Si los oradores u otros miembros del público tienen documentos que desean distribuir al Comité

para un artículo de la agenda, se les recomienda enviar dichos documentos antes de las 5:00 P.M. el Martes antes de la reunión a: WRApubliccomment@co.monterey.ca.us. Para ayudar al personal de la Agencia a identificar el número del artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique la fecha de la reunion del Comité y el número de agenda en la línea de asunto.

6. Si los miembros del público desean presentar documentos o presentaciones de PowerPoint mientras hablan, deben enviar el documento electrónicamente antes de las 5:00 P.M. del Martes antes de la reunión a WRApubliccomment@co.monterey.ca.us (Si se presenta después de ese plazo, el personal hará los mejores esfuerzos, pero no puede garantizar que esté disponible su PowerPoint para presentar durante la reunión del Comité).

7. Las personas con discapacidades que deseen solicitar una modificación o modificación razonable para observar o participar en la reunión pueden realizar dicha solicitud enviando un correo electrónico a WRApubliccomment@co.monterey.ca.us. La solicitud debe hacerse a más tardar el mediodía del Martes antes de a la reunión del Comité para dar tiempo a la Agencia para que atienda la solicitud .

8. El Presidente y / o Secretario pueden establecer reglas razonables según sea necesario para llevar a cabo la reunión de manera ordenada.

Call to Order

Roll Call

Public Comment

Consent Calendar

1. Approve the Minutes of the Basin Management Advisory Committee meeting held on July 7, 2021.

Attachments: Draft Action Minutes BMAC July 7, 2021

Scheduled Matters

2. Consider receiving a report on the Groundwater Extraction Management System (GEMS) 2020 Groundwater Extraction Summary Report.

Attachments: Board Report
GW Ext Summary Report 2020

3. Consider receiving a report on the 2021 Salinas River Discharge Measurement Series.

Attachments: Board Report

Salinas River Series Memo

4. Consider receiving a report on revision to the Well Permit Applications Update and provide guidance to Staff on recommended changes.

Attachments: Board Report

Current Well Application Update

Proposed Well Application Update

Staff Reports

5. Proposition 1 Implementation Grant Update: *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley*

Attachments: Proposition 1 Grant Update

6. Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin

Attachments: GSA Activities Update

7. Update on Agency Modeling Activities

Attachments: Agency Modeling Activities Update

Calendar

8. Consider future agenda items and set next meeting date

Adjournment

Monterey County

Board Report

Legistar File Number: WRABMAC 21-059

Item No.1

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

September 01, 2021

Introduced: 8/25/2021
Version: 1

Current Status: Draft
Matter Type: WRA BMAC Item

Approve the Minutes of the Basin Management Advisory Committee meeting held on July 7, 2021.

Monterey County

1441 Schilling Place
Salinas, CA 93901

Action Minutes - Draft

Wednesday, July 7, 2021

8:30 AM

IMPORTANT COVID-19 NOTICE ON PAGE 2-4
AVISO IMPORTANTE SOBRE COVID-19 EN LA PAGINA 2-4

Water Resources Agency Basin Management Advisory Committee

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John Baillie
Deidre Sullivan
Matthew Simis
David Bunn
Bill Lipe
Kevin Piearcy
Amy White
Marisela Cerda
Patrick Breen
Patrick Collins

IMPORTANT NOTICE REGARDING COVID 19 AND PARTICIPATION IN THE BASIN MANAGEMENT ADVISORY COMMITTEE MEETING

The Basin Management Advisory Committee meeting will be held by teleconference in order to minimize the spread of the COVID 19 virus, in accordance with the State of Emergency proclaimed by Governor Newsom on March 4, 2020, Executive Order N 29 20 issued by Governor Newsom on March 17, 2020, and the Shelter in Place Order issued by the Monterey County Health Officer on March 17, 2020, as may be periodically amended.

To participate in this Basin Management Advisory Committee meeting, the public is invited to observe and address the Committee telephonically or electronically. Instructions for public participation are below:
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AVISO IMPORTANTE SOBRE COVID 19 Y PARTICIPACIÓN EN LA REUNIÓN DEL COMITE DE ASESOR DE GESTION DE LA CUENCA

La reunión del Comité de Asesor de Gestion de la Cuenca se llevará a cabo por teleconferencia para minimizar la propagación del virus COVID 19, de acuerdo con el Estado de Emergencia proclamado por el Gobernador Newsom el 4 de Marzo del 2020, Orden Ejecutiva N 29 20 emitida por el Gobernador Newsom el 17 de Marzo del 2020, y la Orden de Refugio en el Lugar") emitida por el Oficial de Salud del Condado de Monterey el 17 de Marzo del 2020, según se pueda enmendar periódicamente.

Para participar en esta reunión del Comité de Asesor de Gestion de la Cuenca el público están invitados a observar y dirigirse al Comité telefónicamente o por vía electrónica. Las instrucciones para la participación pública están a continuación:
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4. Los miembros del público que deseen hacer un comentario público general para temas que

no están en la agenda del día o que deseen comentar en un artículo específico mientras se escucha la presentación, lo pueden hacer enviando un comentario por correo electrónico, preferiblemente limitado a 250 palabras o menos, a WRApubliccomment@co.monterey.ca.us. Para ayudar al personal de la Agencia a identificar el artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique el nombre del Comité (por ejemplo: Comité de Asesor de Gestion de la Cuenca) y el número del artículo de la agenda (por ejemplo: Artículo # 10). Se hará todo lo posible para leer el comentario en el registro, pero algunos comentarios pueden no leerse en voz alta debido a limitaciones de tiempo. Los comentarios recibidos después del cierre del período de comentarios públicos sobre un artículo de la agenda serán parte del registro si se reciben antes que termine la reunión del Comité.

5. Si los oradores u otros miembros del público tienen documentos que desean distribuir al Comité para un artículo de la agenda, se les recomienda enviar dichos documentos antes de las 5:00 P.M. el Martes antes de la reunión a: WRApubliccomment@co.monterey.ca.us. Para ayudar al personal de la Agencia a identificar el número del artículo de la agenda con el cual se relaciona el comentario, se solicita al público que indique la fecha de la reunion del Comité y el número de agenda en la línea de asunto.

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8. El Presidente y / o Secretario pueden establecer reglas razonables según sea necesario para llevar a cabo la reunión de manera ordenada.

Call to Order

The meeting was called to order at 8:30 a.m.

Roll Call

Present: John Baillie, Matthew Simis, David Bunn, Bill Lipe, Marisela Cerda, Patrick Breen
Absent: Deidre Sullivan, Kevin Piearcy, Amy White, Patrick Collins

Public Comment

None

Consent Calendar

1. Approve the Minutes of the Basin Management Advisory Committee meeting held on June 2, 2021.

Attachments: Draft Action Minutes June 2, 2021

Upon Motion by Matthew Simis and Second by Bill Lipe The Committee approved the Minutes of the Basin Management Advisory Committee meeting held on June 2, 2021.

Ayes, Baillie, Simis, Bunn, Lipe, Cerda, Breen
Noes: None
Absent: Sullivan, Piearcy, White, Collins

Scheduled Matters

2. Consider receiving a report on moving averages representing different periods of average groundwater elevations and precipitation and provide guidance to Staff for a report to the Agency Board of Directors.

Attachments: Board Report
Moving Averages Data Packet

Upon Motion by Matthew Simis and Second by Bill Lipe the Committee received a report on moving averages representing different periods of average groundwater elevations and precipitation.

Ayes, Baillie, Simis, Bunn, Lipe, Cerda, Breen
Noes: None
Absent: Sullivan, Piearcy, White, Collins

3. Consider receiving a draft outline for a Special Report on *Salinas Valley Water Usage: An Analysis of 25 Years of Groundwater Extraction Reporting* and provide guidance to Staff.

Attachments: Board Report
Salinas Valley Water Usage

Upon Motion by Mathew Simis and Second by BIll Lipe the Committee received a draft outline for a Special Report on Salinas Valley Water Usage: An Analysis of 25 Years of Groundwater Extraction Reporting.

Ayes, Baillie, Simis, Bunn, Lipe, Cerda, Breen
Noes: None
Absent: Sullivan, Piearcy, White, Collins

PUblic Comment: Tom Virsik

Staff Reports

4. Proposition 1 Implementation Grant Update: *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley*

Attachments: Proposition 1 Grant Update

5. Update on Well Permit Application Activities

Attachments: Well Permit Application Activities

6. Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin

Attachments: 4_GSA Activities Update

7. Update on Agency Modeling Activities

Attachments: Agency Modeling Activities

Status Report

Calendar

8. Consider future agenda items and set next meeting date

Adjournment

The meeting adjourned at 9:15 a.m.

Introduced: 8/25/2021 **Current Status:** Agenda Ready

Version: 1 **Matter Type:** WRA BMAC Item

Consider receiving a report on the Groundwater Extraction Management System (GEMS) 2020 Groundwater Extraction Summary Report.

RECOMMENDATION:
It is recommended that the Monterey County Water Resources Agency Basin Management Advisory Committee:

Receive a report on the Groundwater Extraction Management System (GEMS) 2020 Groundwater Extraction Summary Report.

SUMMARY:
Staff has prepared the 2020 Groundwater Extraction Summary Report. This report includes Staff's analysis and the summation of extraction data collected through the GEMS Program. This annual report is updated each year with the recently collected data.

DISCUSSION:
The Groundwater Extraction Summary Report is produced annually and provides a summary overview and discussion of groundwater extraction information from over 1,800 groundwater wells, with information broken down by subarea and crop type (Attachment 1). It also provides a summary of the forecasted conservation practices for both agricultural and urban entities.

OTHER AGENCY INVOLVEMENT:
None

FINANCING:
There is no financial impact for receiving this report. The activities associated with completing this report is funded through Fund 116 and included in each year's budget.

Prepared by: Shaunna Murray, Senior Water Resources Engineer, (831) 755-4860
Tamara Voss, Associate Hydrologist, (831) 755-4860
Nicole Koerth, Hydrologist, (831) 755-4860
April Woods, Water Resources Technician, (831) 755-4860
Marinn Browne, Water Resources Technician, (831) 755-4860

Approved by: Brent Buche, General Manager, (831) 755-4860

Attachment:
2020 Groundwater Extraction Summary Report - Provisional

Monterey County

Board Report

Item No.

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

Legistar File Number: WRABMAC 21-057

September 01, 2021

Introduced: 8/25/2021
Version: 1

Current Status: Agenda Ready
Matter Type: WRA BMAC Item

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Prepared by: Shaunna Murray, Senior Water Resources Engineer, (831) 755-4860
Tamara Voss, Associate Hydrologist, (831) 755-4860
Nicole Koerth, Hydrologist, (831) 755-4860
April Woods, Water Resources Technician, (831) 755-4860
Marinn Browne, Water Resources Technician, (831) 755-4860

Approved by: Brent Buche, General Manager, (831) 755-4860

Attachment:
2020 Groundwater Extraction Summary Report - Provisional

2020

Groundwater Extraction Summary Report

Monterey County Water Resources Agency

July 2021

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Overview of the Groundwater Reporting Program

History of the Groundwater Reporting Program

In 1993, the Monterey County Board of Supervisors adopted Ordinances No. 3717 and 3718 that require water suppliers within Zones 2, 2A, and 2B to report water-use information for groundwater extraction facilities (wells) and service connections, with a discharge pipe having an inside diameter of at least three inches, to the Monterey County Water Resources Agency (Agency).

The purpose of the Groundwater Reporting Program is to provide the Agency with the most accurate water-use information available to effectively manage groundwater resources. In order to obtain accurate water pumping information, methods of directly measuring water extractions have been implemented.

The Agency collects groundwater extraction data from well operators annually for a period beginning November 1 and ending October 31 ("reporting year"). Data collection began with the 1992-1993 reporting year. Information submitted by more than three hundred well operators in Agency management zones of the Salinas Valley (Figure 1) is stored in an Agency database.

Since 1991, the Agency has required the annual submittal of Agricultural Water Conservation Plans (Ordinance 3851), which outline the best management practices (BMPs) that are to be adopted each year by growers in the Salinas Valley. In 1996, an ordinance was passed that requires the filing of Urban Water Conservation Plans (Ordinance 3886). Developed as the urban counterpart of the agricultural water conservation plans, this program provides an overview of the BMPs to be implemented by urban water purveyors as conservation measures.

For management purposes, the Agency divides a portion of the Salinas Valley Groundwater Basin into four hydrologic subareas or zones; Pressure, East Side, Forebay, and Upper Valley. These subareas are hydrologically and hydraulically connected, and their boundaries are defined by differences in local hydrogeology and recharge.

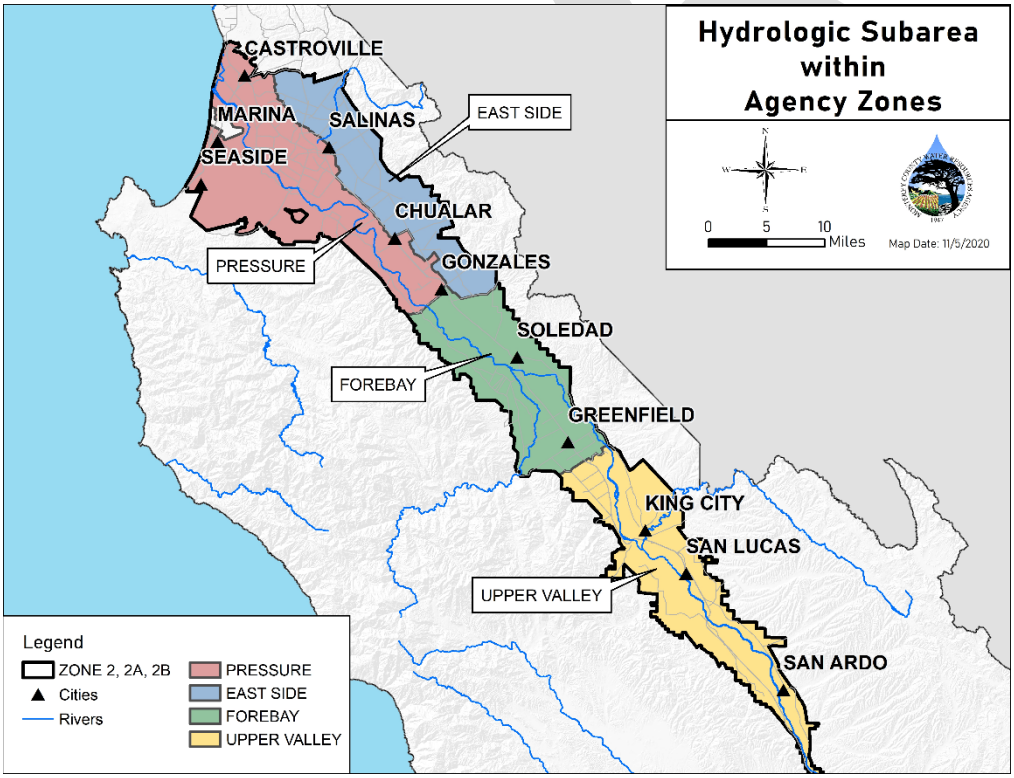
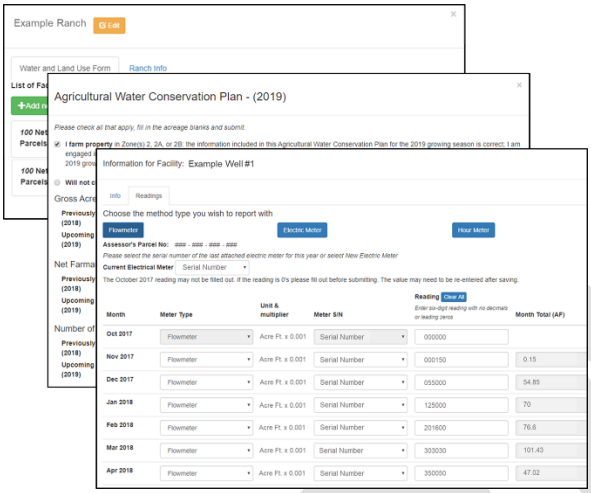


Figure 1. Hydrologic Subareas within Agency Zones 2, 2A, and 2B

Groundwater Summary Report

The purpose of this report is to summarize the data submitted to the Agency by well operators in February 2021 from the following annual forms:

- Groundwater Extraction Forms (agricultural and urban)
- Water Conservation Plans (agricultural and urban)
- Water and Land Use Forms (agricultural)



The agricultural data from the groundwater extraction program covers the reporting year of November 1, 2019, through October 31, 2020; the urban data covers calendar year 2020. The agricultural and urban water conservation plans for 2021 are also summarized. This report is intended to present a synopsis of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements that are being implemented to reduce the total amount of water pumped. It is not the purpose of this report to thoroughly analyze the factors that contribute to increases or decreases in pumping.

Reporting Format

Groundwater extraction data are presented in this report by measurement in acre-feet (AF). One acre-foot is equal to 325,851 gallons.

Reporting Methods

The Groundwater Reporting Program provides well operators with a choice of three different reporting methods: Water Flowmeter, Electrical Meter, or Hour Meter (timer). The summary of groundwater extractions presented in this report is compiled from data generated by all three reporting methods. Ordinance 3717 requires annual pump efficiency tests and/or meter calibration of each well to ensure the accuracy of the data reported. The distribution of methods used for the 2020 reporting year was: 83% Flowmeter; 16% Electrical Meter and <1% Hour Meter.

Disclaimer

While the Agency has made every effort to ensure the accuracy of the data presented in this report, it should be noted that the data are submitted by individual reporting parties. In addition, since so many factors can affect the equipment calibration, it is understood that no reporting method is 100 percent accurate. The Agency maintains strict quality assurance in the compilation, standardization, and entry of the data received. Changes to historical data may occur due to additional submittals after the due date. Rounding errors may cause the total extraction values displayed to be within 5 AF of actual totals. The Agency received Groundwater Extraction Reports from ninety-nine percent (95%) of the 1,877 wells in Zones 2, 2A, and 2B of the Salinas Valley for the 2020 reporting year. Agricultural and Urban Water Conservation Plan submittal compliance for 2020 was eighty-three percent (83%) eighty-six percent (86%), respectively.

Groundwater Extraction Form – Data Summary

Total Extractions by Subarea and Type of Use

All data presented in this section are derived from the agricultural and urban Groundwater Extraction Forms.

Table 1. Extraction Data by Subarea and Type of Use.

Subarea	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
Pressure	97,821	16,464	**114,285**
East Side	75,125	13,617	**88,742**
Forebay	124,643	7,590	**132,233**
Upper Valley	128,016	2,827	**130,843**
Total (AF)	**425,605**	**40,498**	**466,103**
Percent of Total	**91.3%**	**8.7%**	**100.0%**

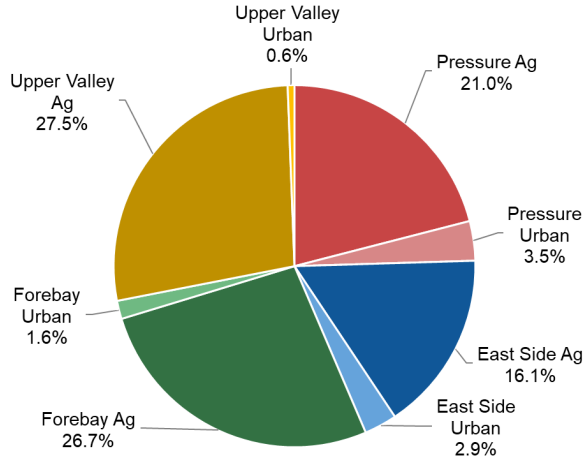


Figure 2. Percentage of Ag and Urban Extractions by Subarea.

Urban Extraction Data by City or Area

The total groundwater extractions attributed to urban use include residential, commercial, institutional, industrial, and governmental pumping, and are summarized below.

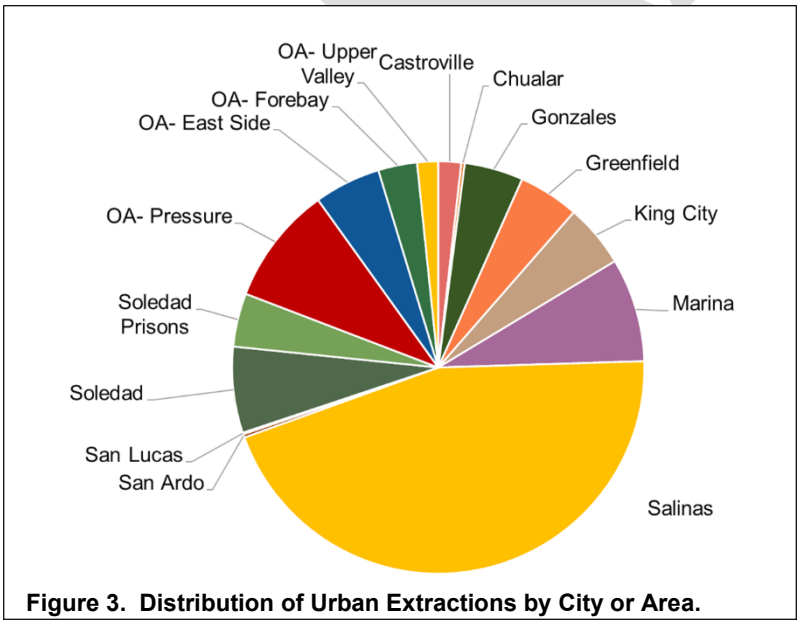


Figure 3. Distribution of Urban Extractions by City or Area.

Table 2. Urban Extractions by City or Area

City or Area	Urban Pumping (AF)	Percentage
Castroville	725	1.79%
Chualar	109	0.27%
Gonzales	1,868	4.61%
Greenfield	1,925	4.75%
King City	2,004	4.95%
Marina	3,296	8.14%
Salinas	18,214	44.97%
San Ardo	110	0.27%
San Lucas	48	0.12%
Soledad	2,735	6.75%
Soledad Prisons	1,695	4.19%
OA- Pressure	3,758	9.28%
OA- East Side	2,111	5.21%
OA- Forebay	1,235	3.05%
OA- Upper Valley	666	1.64%
Total	**40,499**	**100.00%**

OA=Other Area

Total Groundwater Extractions in Zones 2, 2A, 2B

This figure provides a spatial representation of groundwater extractions within Zones 2, 2A, and 2B for the 2020 reporting year. The figures and tables on the next six pages provide extraction information by subarea. The number of wells shown in Figures 4 to 15 may be different than the total number of wells in the program, as stated on Page 2. This is due to delinquent extraction reports and the exact location of some wells being unknown.

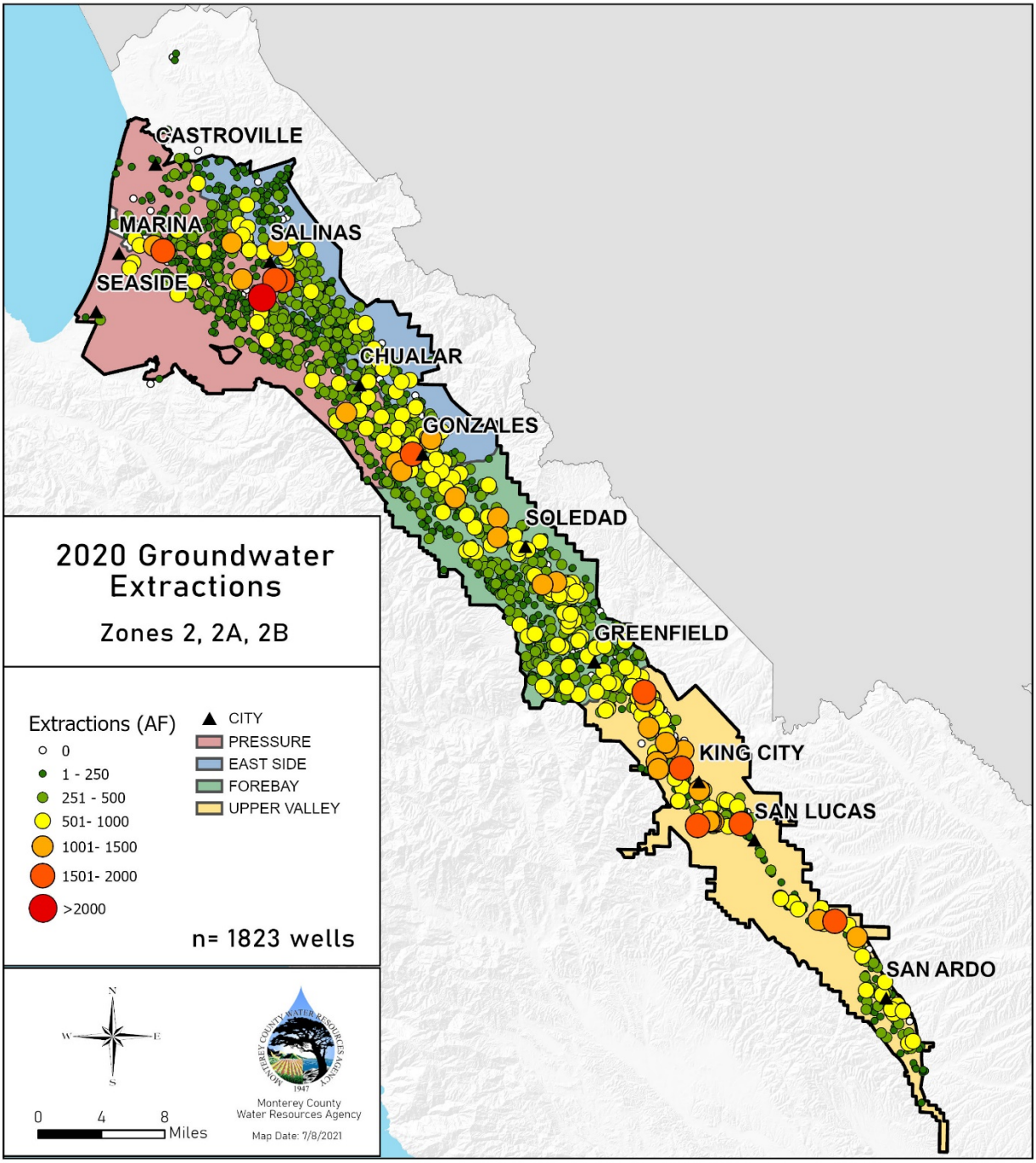


Figure 4. 2020 Groundwater Extractions (AF).

Pressure Subarea – Extraction Data

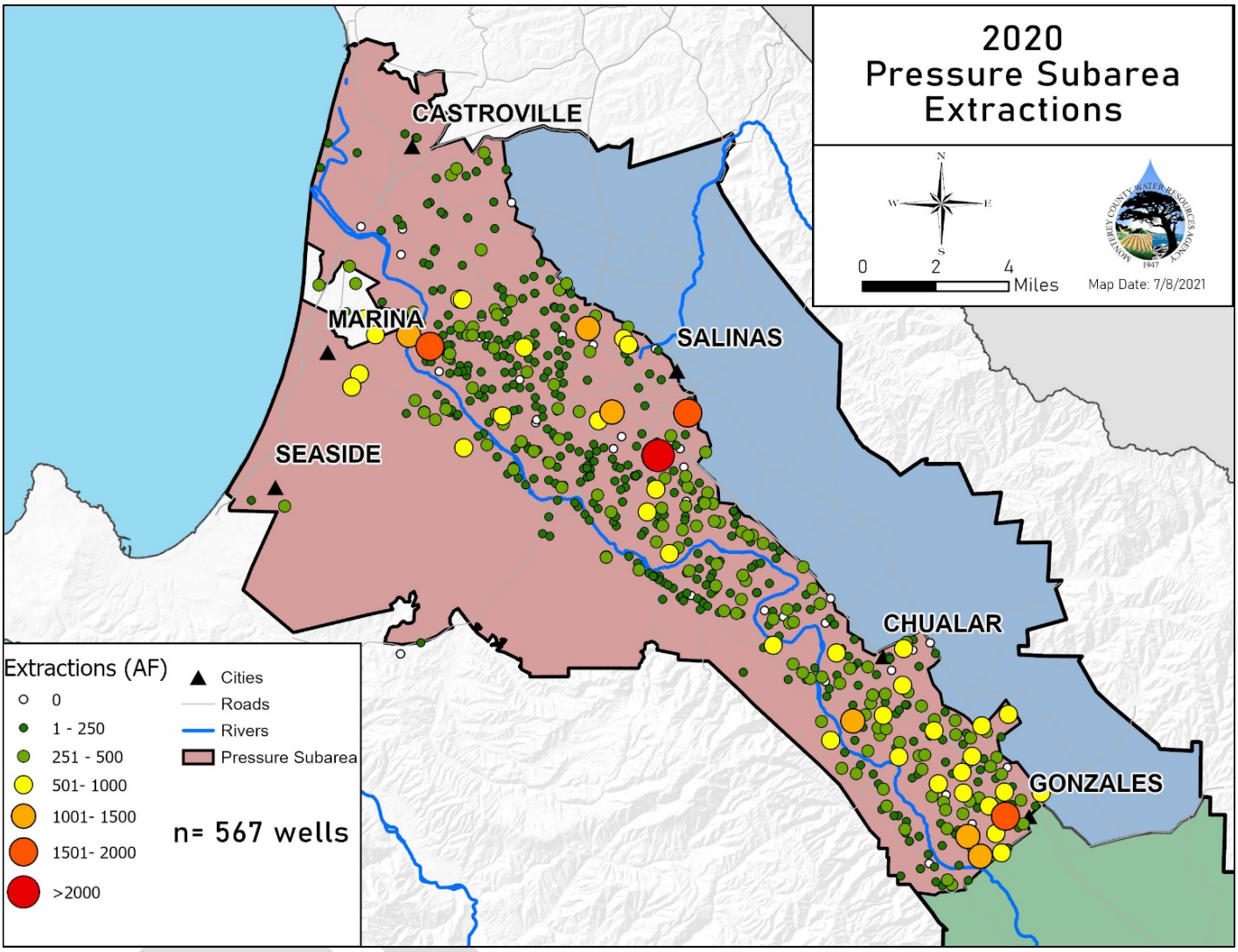


Figure 5. 2020 Groundwater Extractions in the Pressure Subarea.

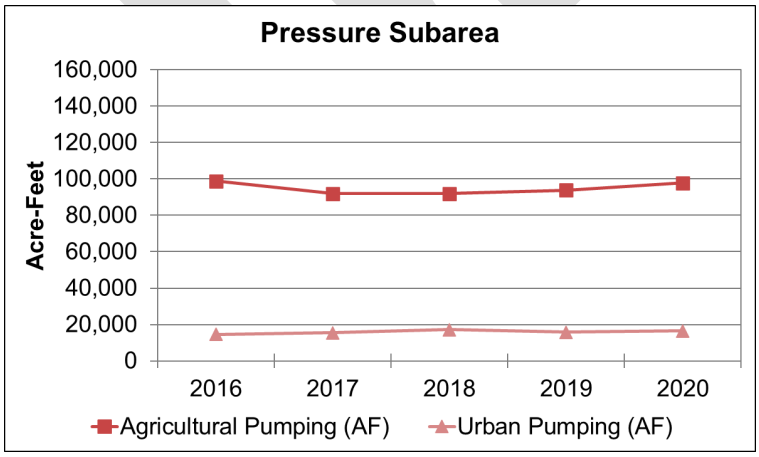


Figure 6. Agricultural and Urban Extractions (AF) in the Pressure Subarea 2016-2020.

Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
2020	97,821	16,452	114,273
2019	93,829	15,885	109,714
2018	92,010	17,246	109,256
2017	91,901	15,523	107,424
2016	98,890	14,605	113,495

Table 3. Total, Agricultural, and Urban Extractions (AF) in the Pressure Subarea 2016-2020.

CSIP, Zone 2B and Area of Impact- Extraction Data

The Castroville Seawater Intrusion Project (CSIP) delivers recycled water from the Salinas Valley Reclamation Project, treated Salinas River water from the Salinas River Diversion Facility, and groundwater from ten supplemental wells to 12,000 acres of irrigated land in the Castroville area, referred to as Zone 2B, in an effort to reduce groundwater pumping near the coast. Pumping from non-CSIP supplemental wells has decreased since CSIP began operations in 1998 but is still occurring (Figure 8). The Area of Impact encompasses the region where chloride concentrations in the 180-Ft and 400-Ft Aquifers are 250 mg/L or greater. Groundwater within the Area of Impact is considered vulnerable due to the presence of pathways for seawater intrusion to migrate vertically from the impaired overlying aquifers (Figure 7, Table 4).

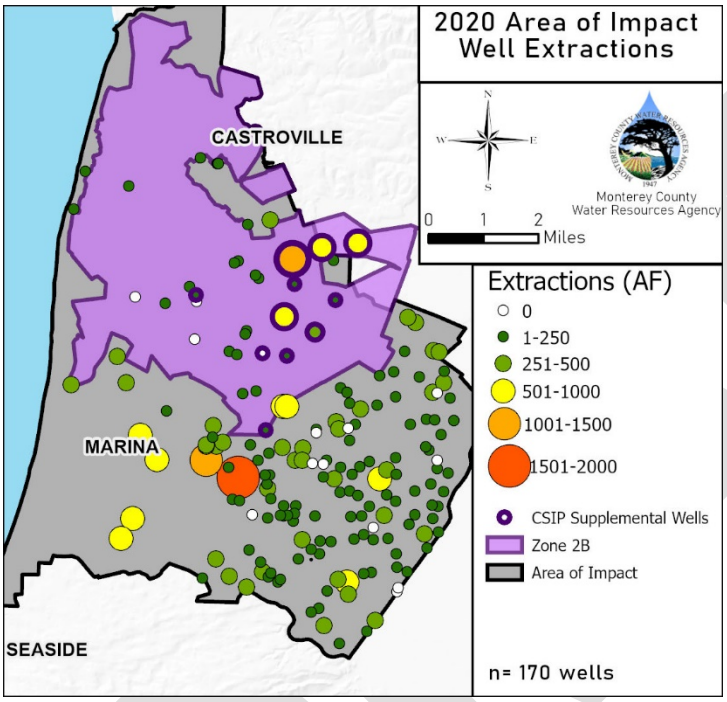


Figure 7. 2020 Groundwater Extractions (AF) in the Area of Impact.

Aquifer	Agriculture Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
180-Ft Aquifer or East Side Shallow	2,302	4	2,306
180 and 400-Ft Aquifer	998	300	1,298
400-Ft Aquifer or East Side Deep	12,418	1,277	13,695
Deep Aquifers	6,208	1,760	7,968
Unknown	3,022	0	3,022
Total (AF)	24,948	3,341	28,290

Table 4. 2020 Extraction Data in the Area of Impact by Aquifer and Type of Use

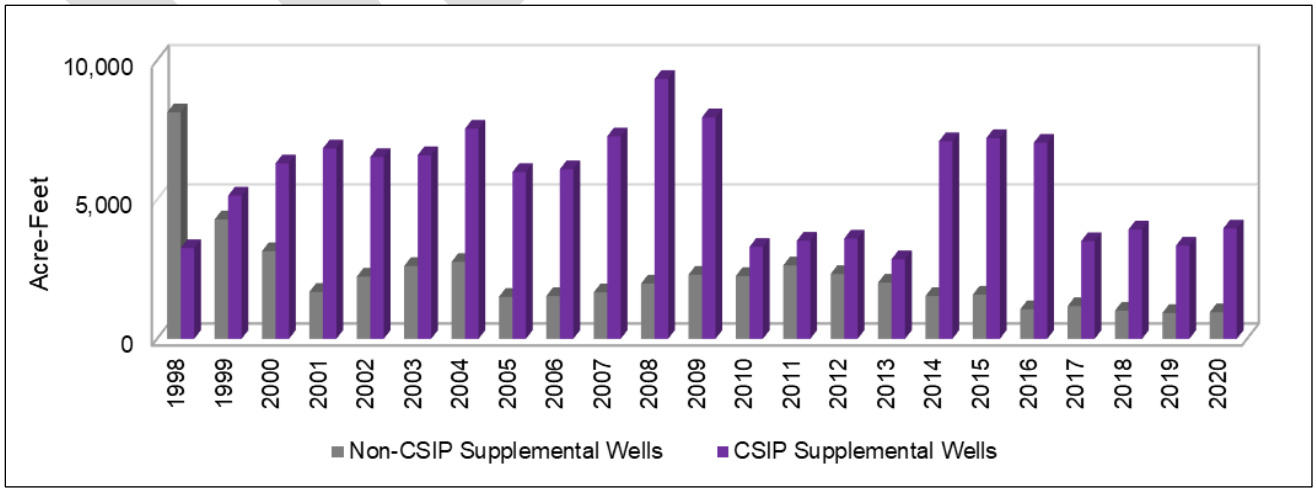


Figure 8. Groundwater Extractions in Zone 2B from CSIP and Non-CSIP Supplemental Wells, 1993-2020

Deep Aquifers – Extraction Data

The first production well in the Deep Aquifers was installed in 1974. As of December 2020, fifty-seven wells have been installed in the Deep Aquifers, with seventeen installed since 2017 (Figure 9). 9 of the 17 wells installed since 2017 have not yet reported any extractions as this reporting year. The amount of water extracted from the Deep Aquifers has increased in recent years (Figure 10, Table 5). The potential for inducing leakage from the overlying impaired aquifers is a serious concern as groundwater extractions from the Deep Aquifers continue to increase.

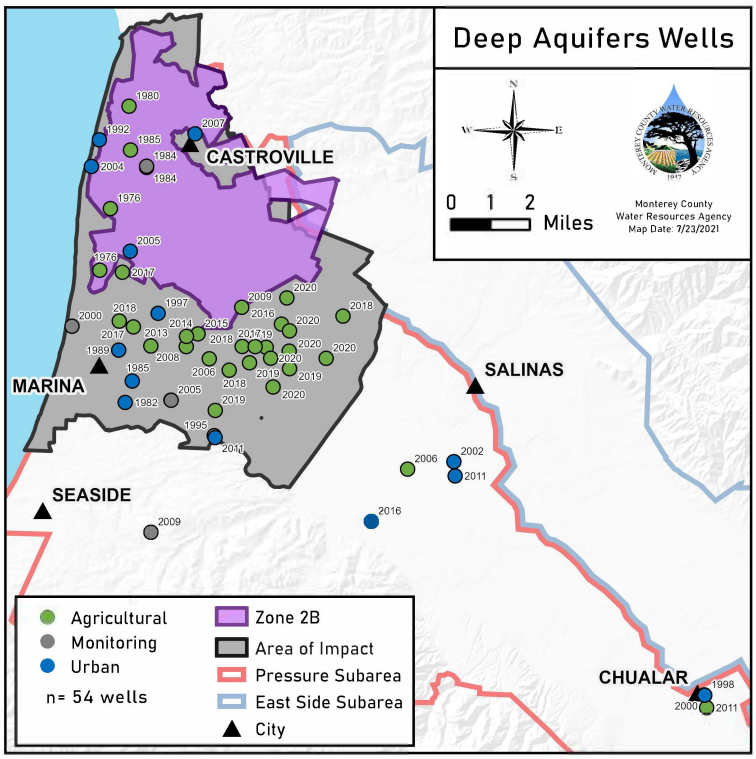


Figure 9. Deep Aquifers Wells by Year Drilled and Type of Use

Reporting Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
1993	1,507	2,054	**3,561**
1994	2,620	1,992	**4,612**
1995	2,302	2,036	**4,338**
1996	1,990	2,137	**4,127**
1997	2,556	2,170	**4,726**
1998	1,648	1,906	**3,554**
1999	96	2,055	**2,151**
2000	1	2,305	**2,306**
2001	0	2,368	**2,368**
2002	0	2,416	**2,416**
2003	0	2,745	**2,745**
2004	0	2,747	**2,747**
2005	0	2,701	**2,701**
2006	0	2,341	**2,341**
2007	58	2,131	**2,189**
2008	384	2,375	**2,759**
2009	696	2,450	**3,146**
2010	982	2,236	**3,218**
2011	927	2,173	**3,100**
2012	1,397	2,424	**3,821**
2013	1,097	2,505	**3,602**
2014	2,031	4,404	**6,435**
2015	2,010	4,363	**6,373**
2016	4,293	4,259	**8,552**
2017	4,958	4,558	**9,516**
2018	4,855	4,790	**9,645**
2019	5,331	5,016	**10,347**
2020	6,996	4,348	**11,344**

Table 5. Deep Aquifers Groundwater Extractions by Type of Use, 1993-2020

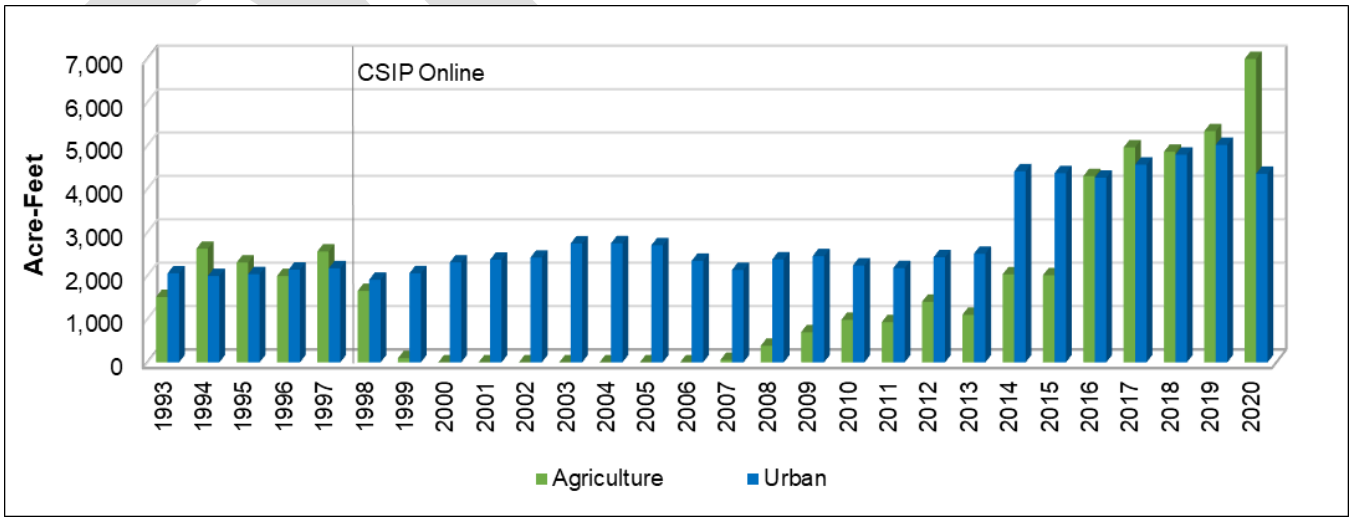


Figure 10. Deep Aquifers Groundwater Extractions by Type of Use, 1993-2020

East Side Subarea – Extraction Data

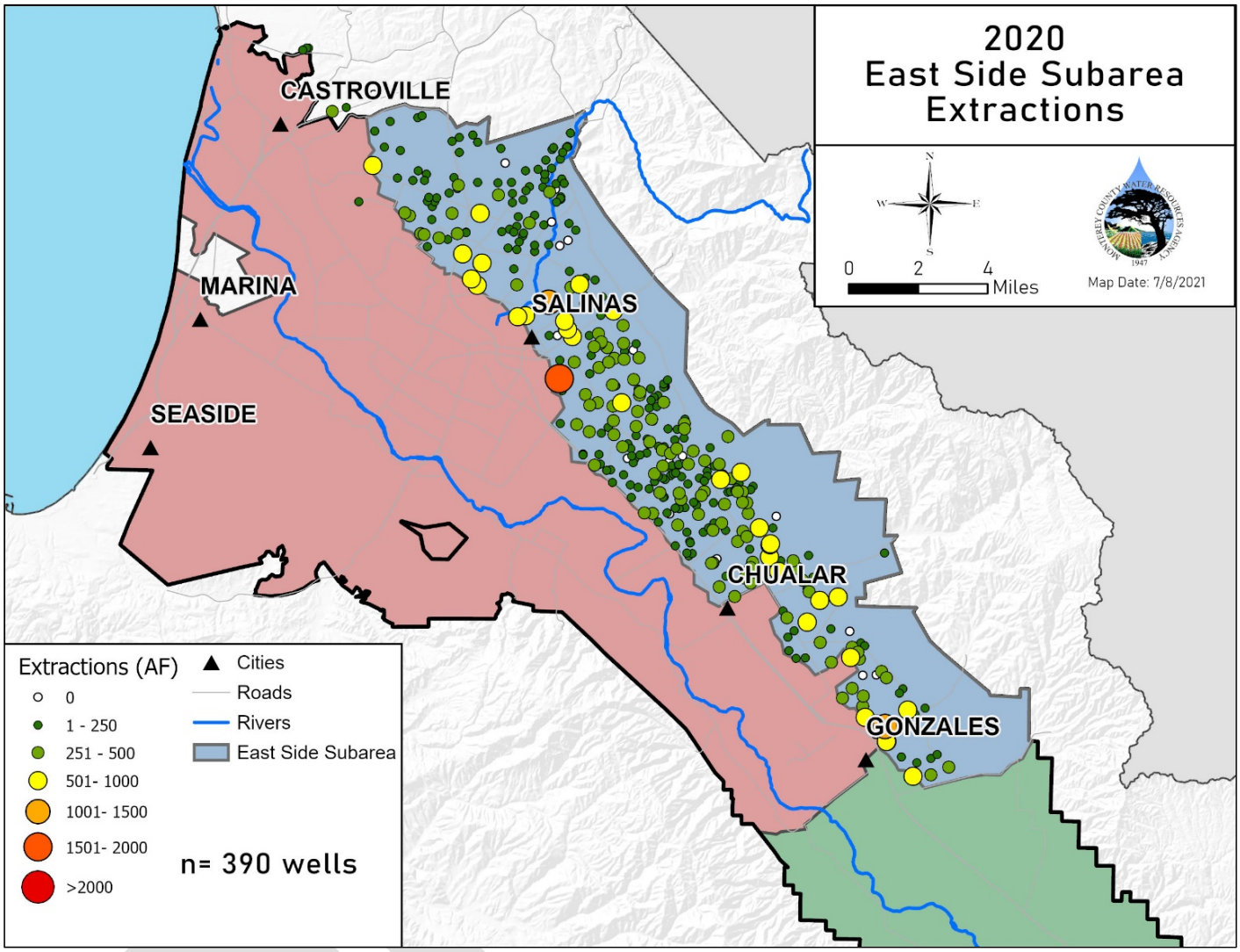


Figure 11. 2020 Groundwater Extractions in the East Side Subarea.

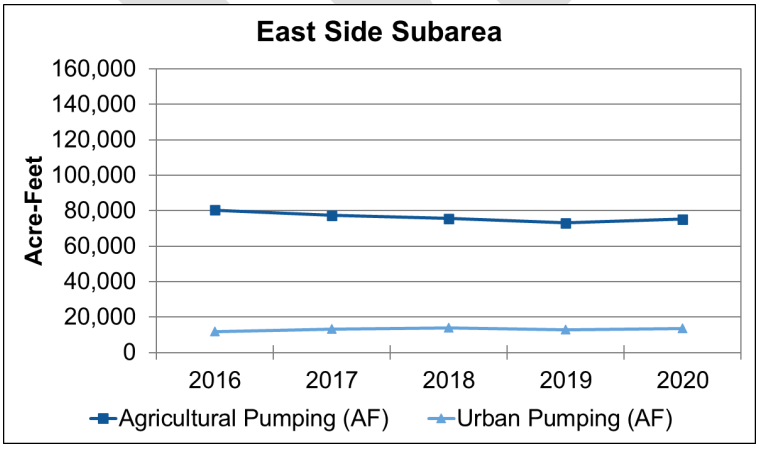


Figure 12. Agricultural and Urban Extractions (AF) in the East Side Subarea 2016-2020.

Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
2020	75,125	13,617	88,742
2019	73,006	12,822	85,828
2018	75,629	13,938	89,567
2017	77,353	13,258	90,611
2016	80,379	11,802	92,181

Table 6. Total, Agricultural, and Urban Extractions (AF) in the East Side Subarea 2016-2020.

Forebay Subarea – Extraction Data

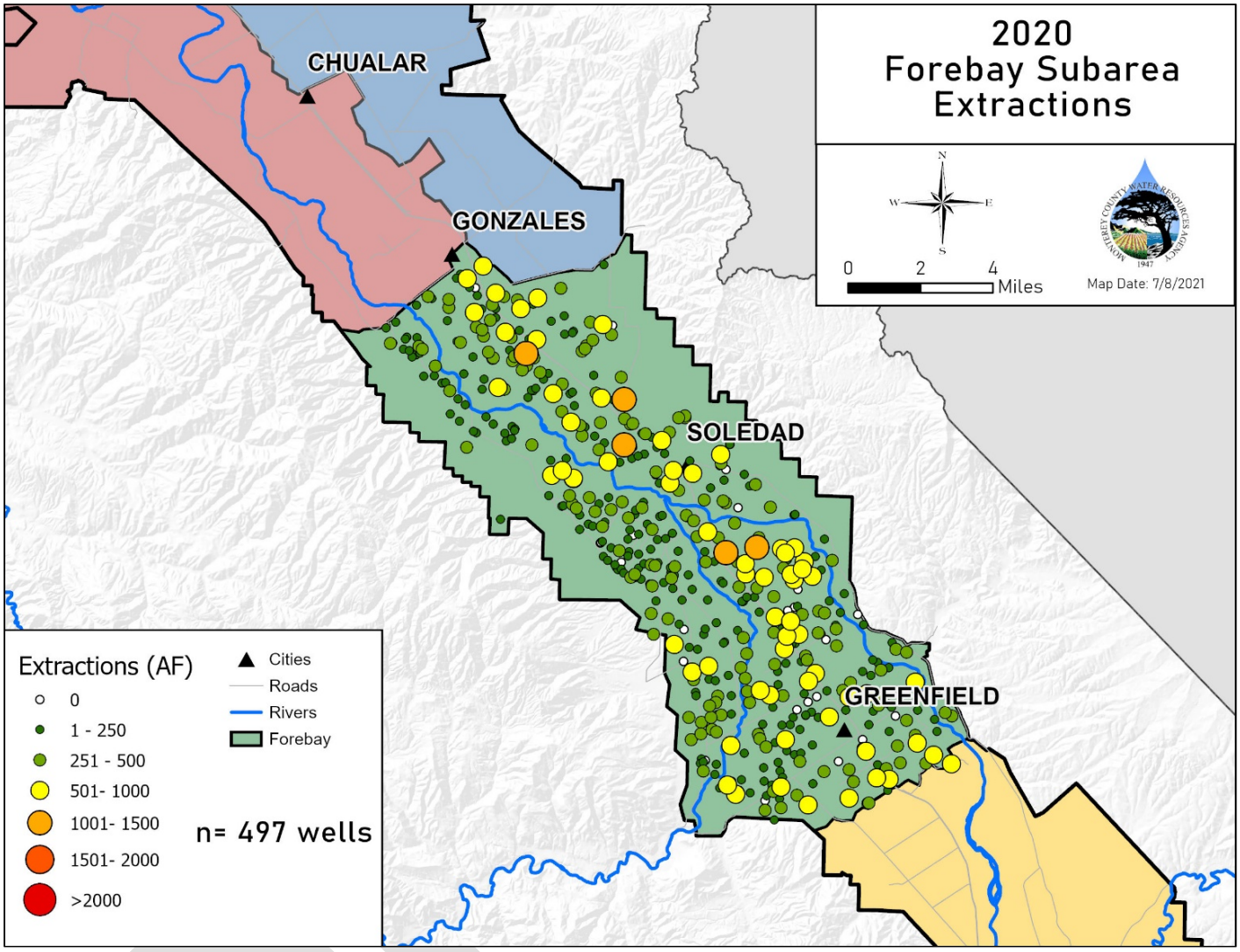


Figure 13. 2020 Groundwater Extractions in the Forebay Subarea.

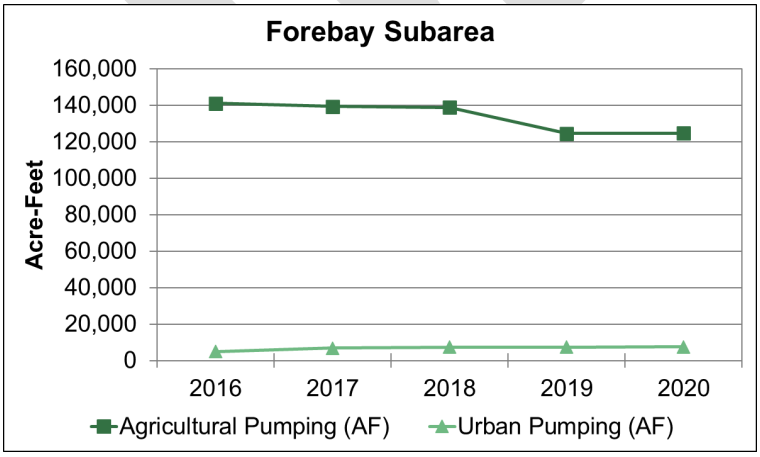


Figure 14. Agricultural and Urban Extractions (AF) in the Forebay Subarea 2016-2020.

Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
2020	124,643	7,590	132,233
2019	124,600	7,374	131,974
2018	138,838	7,303	146,141
2017	139,359	6,764	146,123
2016	141,163	4,866	146,029

Table 7. Total, Agricultural, and Urban Extractions (AF) in the Forebay Subarea 2016-2020.

Upper Valley Subarea – Extraction Data

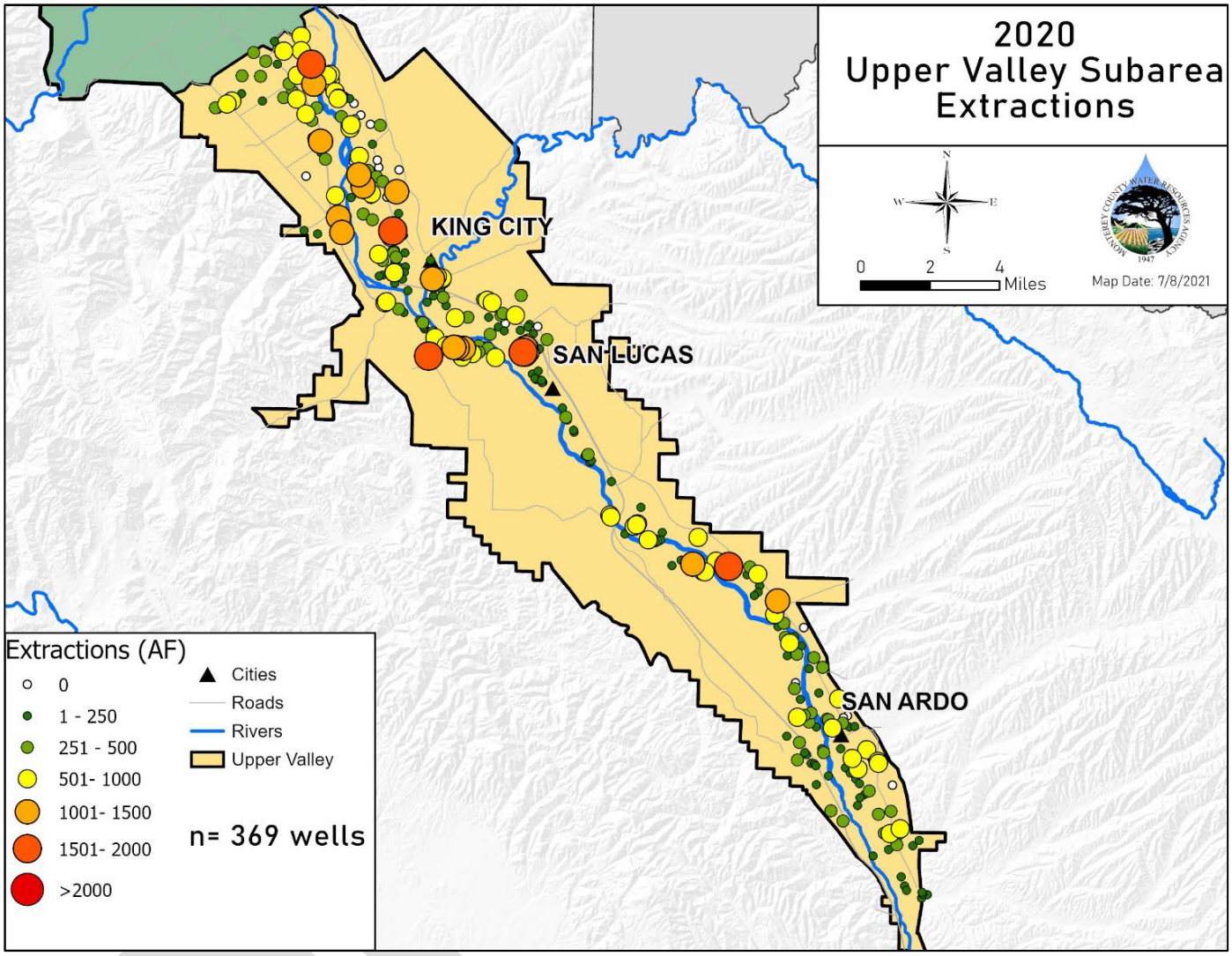


Figure 15. 2020 Groundwater Extractions in the Upper Valley Subarea

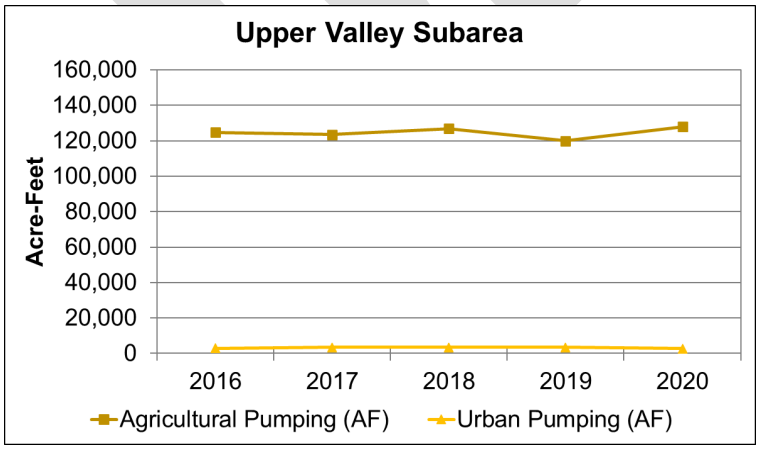


Figure 16. Agricultural and Urban Extractions (AF) in the Upper Valley Subarea 2016-2020.

Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Pumping (AF)
2020	128,016	2,827	130,844
2019	120,025	3,430	122,907
2018	126,919	3,418	130,337
2017	123,446	3,407	126,853
2016	124,678	2,991	127,669

Table 8. Total, Agricultural, and Urban Extractions (AF) in the Upper Valley Subarea 2016-2020.

Agricultural Water Conservation – Data Summary

The Agricultural Water Conservation Plans include information on net irrigated acreage, irrigation methods, and crop type. This information is forecasted and indicates what the grower plans to do in the upcoming year. Figure 17 and Table 9 present a breakdown of irrigation methods by crop type. Figure 18 shows the change in irrigation methods over the length of the GEMS program and Figure 19 shows the top ten Best Management Practices (BMPs) to be implemented in 2021.

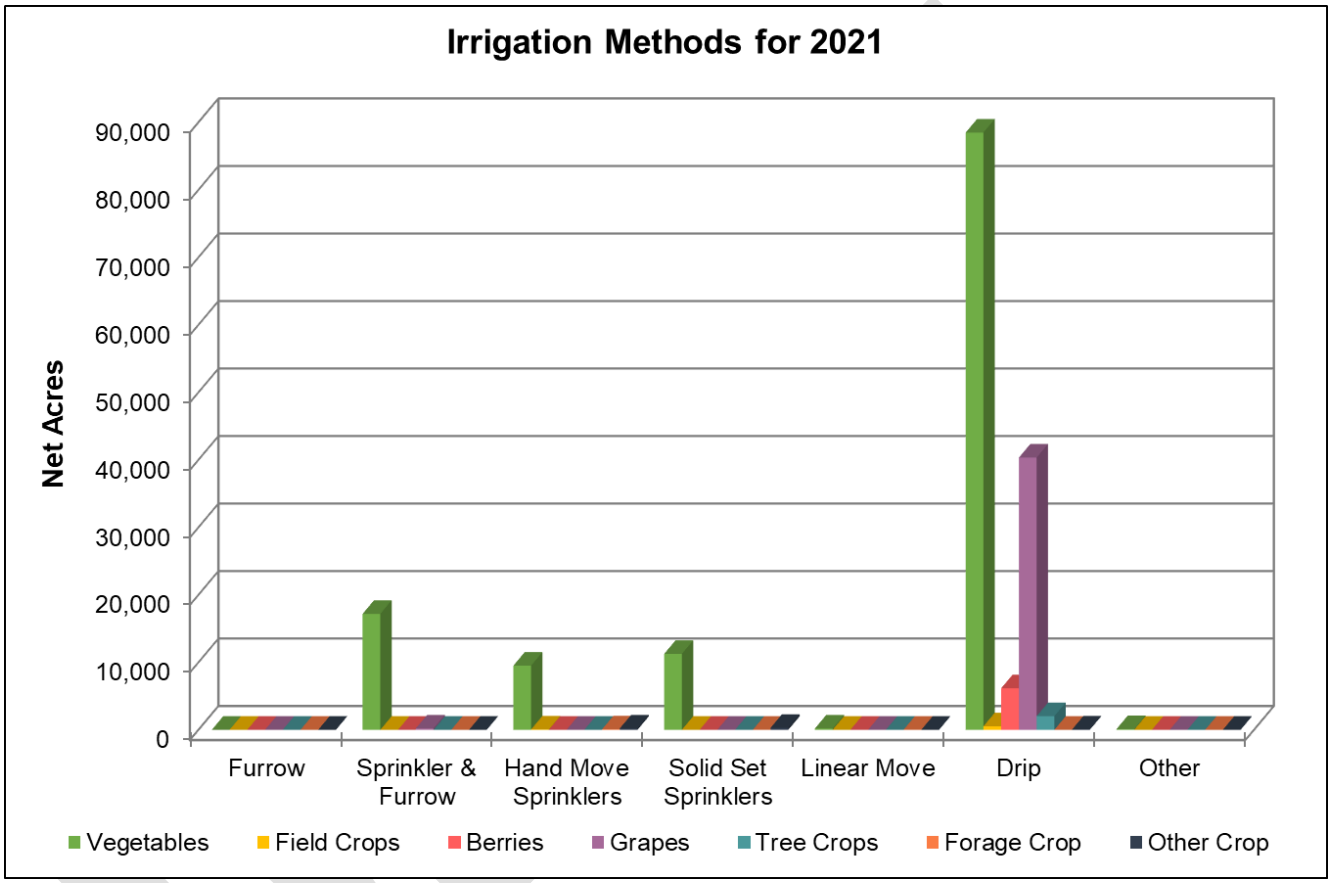


Figure 17. 2021 Forecasted Net Acre Distribution of Irrigation Methods by Crop Type.

2021	Furrow	Sprinkler & Furrow	Hand Move Sprinklers	Solid Set Sprinklers	Linear Move	Drip	Other	Total
Vegetables	0	17,366	9,499	11,242	194	88,477	102	126,880
Field Crops	0	0	54	0	0	514	0	567
Berries	0	0	0	0	0	6,149	0	6,149
Grapes	0	0	0	0	0	40,327	0	40,327
Tree Crops	0	0	0	0	0	2,020	0	2,020
Forage Crop	0	0	61	3	15	0	0	79
Other Crop	0	0	198	288	0	46	0	532
Unirrigated								1,705
Total	**0**	**17,366**	**9,812**	**11,533**	**209**	**137,533**	**102**	**178,260**

Table 9. Net Acres by Irrigation Method and Crop Type.

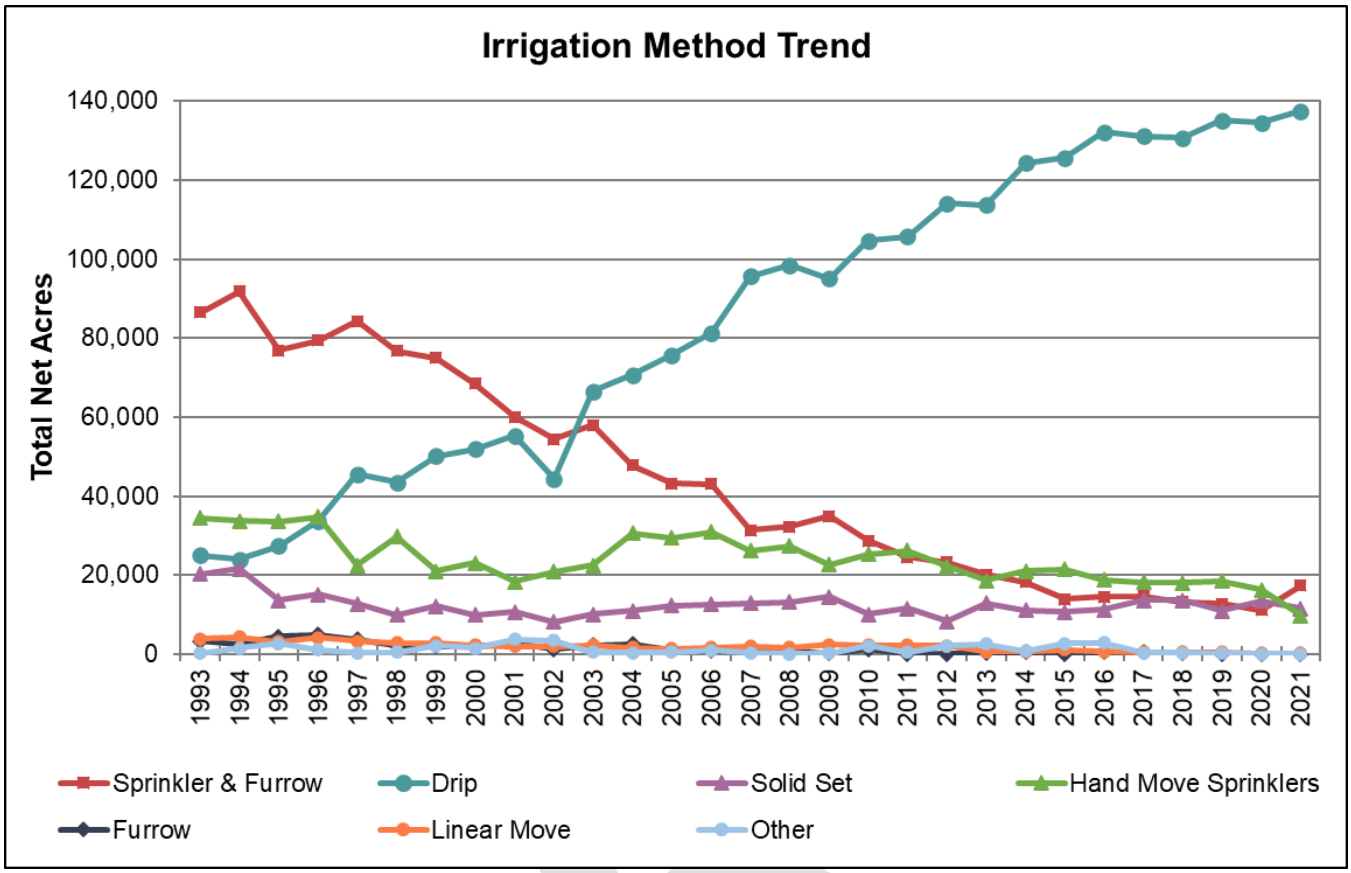


Figure 18. Changes in Irrigation Methods Used Over Time (1993 – 2021) in Zones 2, 2A, and 2B.

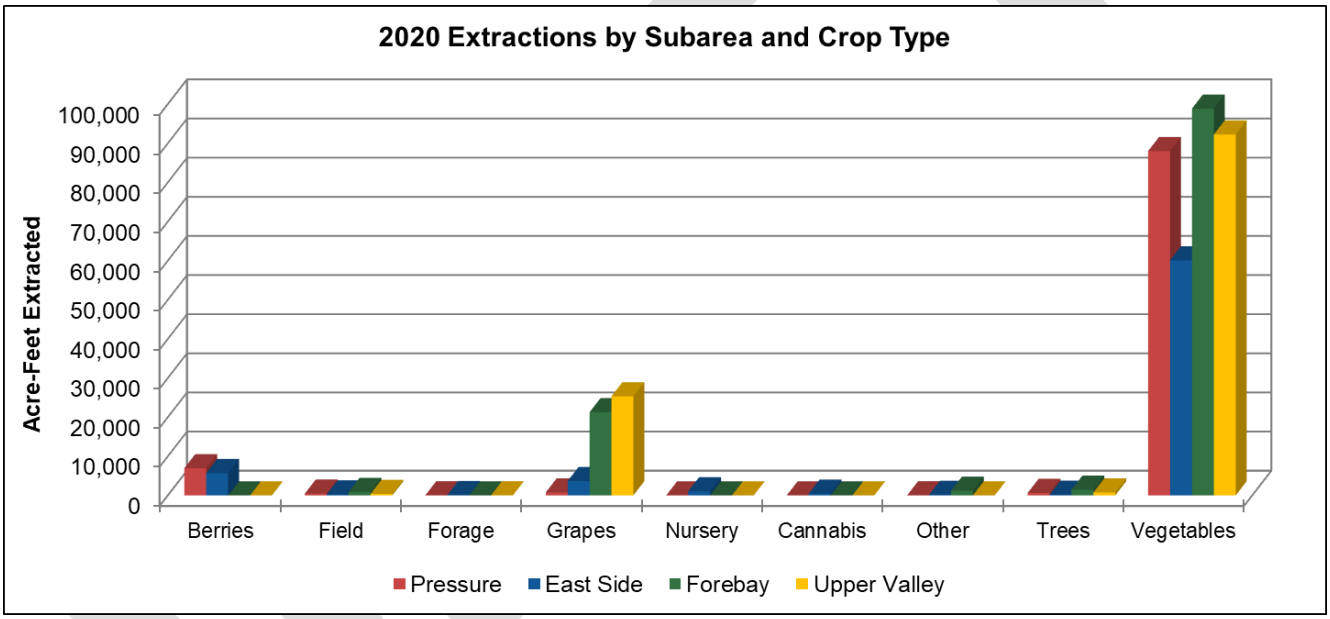
Figure 19. Top Ten BMPs Forecasted for 2021 Based on Reported Net Acres.

Water and Land Use Form – Data Summary

The following three figures show the agricultural water extracted (Figure 20), irrigated net acres (Figure 21), and amount of water used per acre (Figure 22) by hydrologic subarea and crop type based on data submitted on the Water and Land Use forms. The data account for all crop types reported and all reporting methods: water flowmeter, electrical meter, and hour meter.

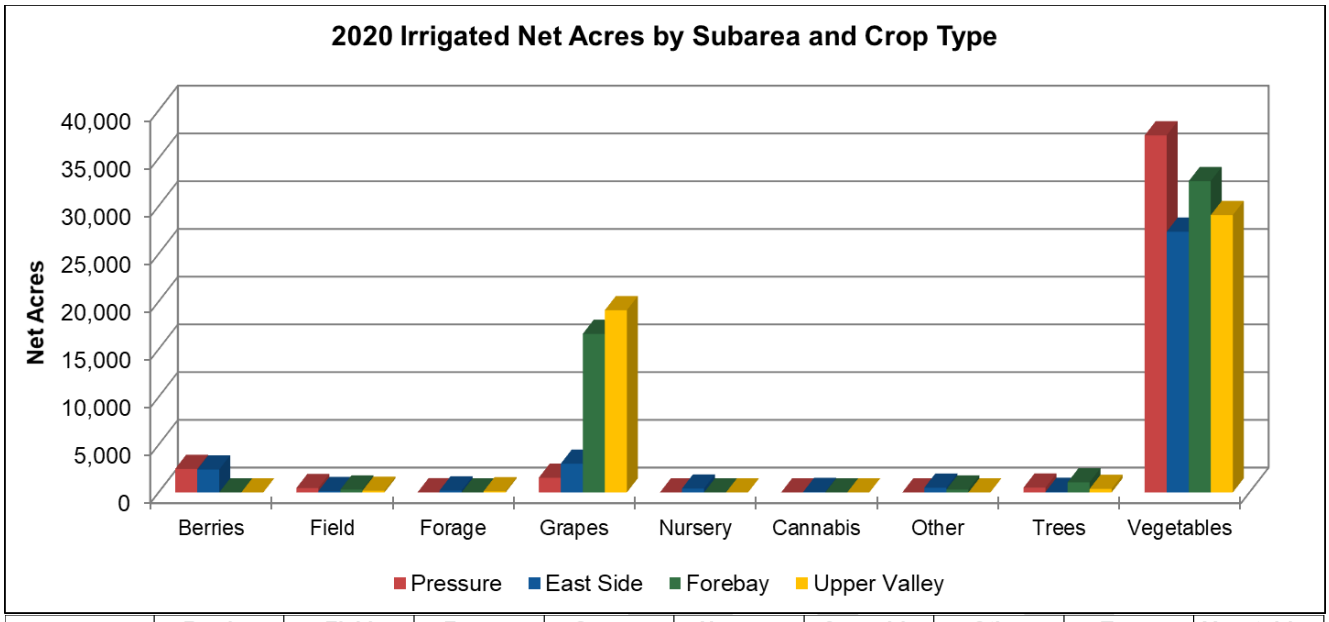
Changing weather patterns, variable soil types, and crop types affect the amount of water needed for efficient irrigation. Even during a normal rain year, pumping rates will vary from one subarea to another and crop types will vary depending on economic demand.

Examples of Crop Type categorizations include: strawberries and raspberries under Berries; beans and grains under Field Crops; alfalfa and pasture under Forage Crops; avocados and lemons under Tree Crops; and sod, flower bulbs, ornamentals, and cactus pears under Other Crops.



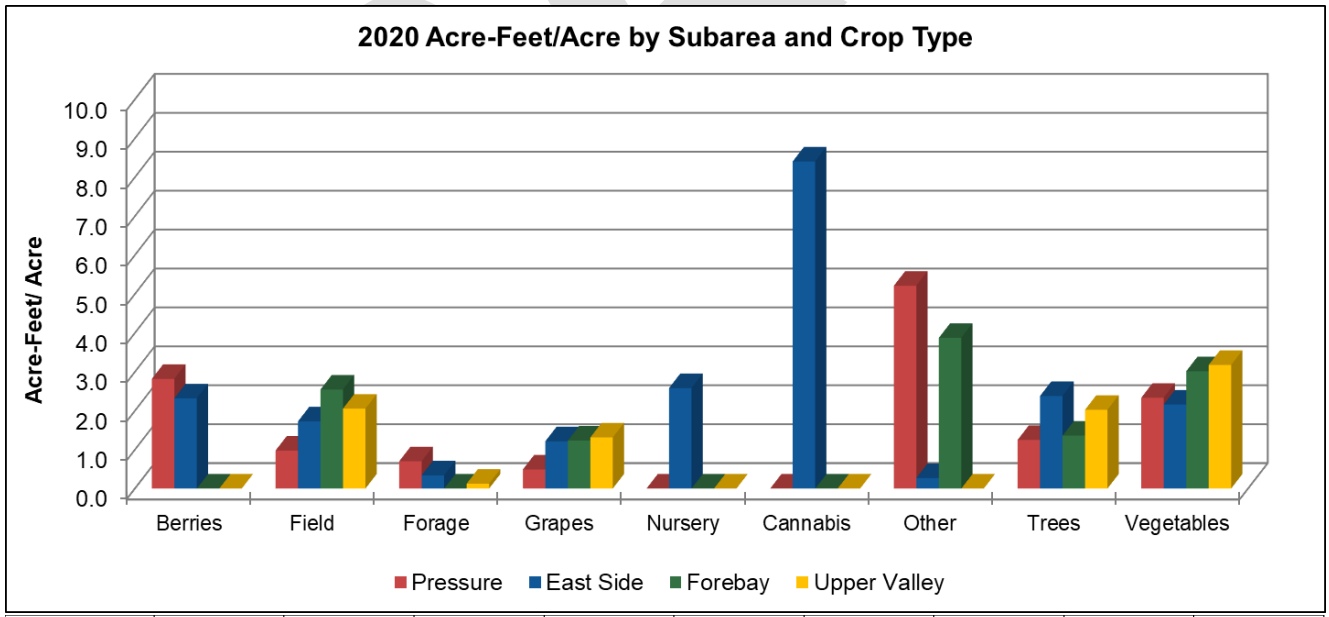
2020	Berries (AF)	Field (AF)	Forage (AF)	Grapes (AF)	Nursery (AF)	Cannabis (AF)	Other (AF)	Trees (AF)	Vegetables (AF)
Pressure	6,945	445	7.0	753	-	-	26.1	628	88,006
East Side	5,693	241	69.0	3,655	1,042	439	134	155	60,051
Forebay	-	863	-	21,258	-	-	1,179	1,440	98,849
Upper Valley	-	360	15.6	25,319	-	-	-	748	92,240

Figure 20. 2020 Extractions Reported by Crop Type and Subarea.



2020	Berries (Net Acres)	Field (Net Acres)	Forage (Net Acres)	Grapes (Net Acres)	Nursery (Net Acres)	Cannabis (Net Acres)	Other (Net Acres)	Trees (Net Acres)	Vegetables (Net Acres)
Pressure	2,465	456	10.0	1,540	-	-	5.0	503	37,405
East Side	2,402	140	204	3,009	404	52.2	497	65.0	27,309
Forebay	-	306	-	16,616	-	-	305	1,059	32,613
Upper Valley	-	176	125	19,087	-	-	-	370	29,053

Figure 21. 2020 Irrigated Net Acres Reported by Crop Type and Subarea.



2020	Berries (AF/Acre)	Field (AF/Acre)	Forage (AF/Acre)	Grapes (AF/Acre)	Nursery (AF/Acre)	Cannabis (AF/Acre)	Other (AF/Acre)	Trees (AF/Acre)	Vegetables (AF/Acre)
Pressure	2.8	1.0	0.7	0.5	-	-	5.2	1.2	2.3
East Side	2.3	1.7	0.3	1.2	2.6	8.4	0.3	2.4	2.2
Forebay	-	2.5	-	1.2	-	-	3.9	1.4	3.0
Upper Valley	-	2.1	0.1	1.3	-	-	-	2.0	3.2

Figure 22. 2020 Acre-Feet/Acre by Crop Type and Subarea.

Urban Water Conservation – Data Summary

Since 1996, the Agency has collected data on the Urban Water Conservation Plan program. Tables 10 and 11 show the top ten Best Management Practices (BMPs) for 2021, as a percentage of total acreage reported for "large" water systems (200 or more customer connections), and "small" water systems (between 15 and 199 customer connections). The reported water use per connection for different connection classes are then summarized for large (Table 12, Figure 23) and small water systems (Table 13, Figure 24).

Table 10. Top Ten BMPs – Large Water Systems.

Top Ten BMPs Implemented for Large Water Systems	2021
Advise customers when it appears possible that leaks exist on customer's side of water meter	100%
Complete an audit of water distribution system at least every three years as prescribed by American Water Works Association	100%
Establish a program to retrofit any existing unmetered connections and bill by volume of use	100%
Implement requirements that all new connections be metered and billed by volume of use	100%
Provide conservation information in bill inserts	97%
Enact and enforce measure prohibiting water waste as specified in Monterey County Water Resources Agency Ordinance No. 3932 or as subsequently amended, and encourage the efficient use of water	96%
Perform distribution system leak detection and repair whenever the audit reveals that it would be cost-effective	95%
Enforcement and support of water conserving plumbing fixture standards, including gradual requirement for High Efficiency Toilets (HET) in all new construction	94%
Coordinate with other entities in regional efforts to promote water conservation practices	92%
Provide conservation training, information, and incentives necessary to encourage use of conservation practices	92%

Table 11. Top Ten BMPs – Small Water Systems.

Top Ten BMPs Implemented for Small Water Systems	2021
Advise customers when it appears possible that leaks exist on customer's side of water meter	77%
Perform distribution system leak detection and repair whenever the audit reveals that it would be cost-effective	76%
Implement requirements that all new connections be metered and billed by volume of use	74%
Establish a program to retrofit any existing unmetered connections and bill by volume of use	73%
Implementation of conservation pricing policy	73%
Support of legislation prohibiting sale of toilets using more than 1.6 gpf	69%
Provide guidelines, information, and/or incentives for installation of more efficient landscapes and water saving practices	52%
Complete an audit of water distribution system at least every three years as prescribed by American Water Works Association	45%
Encourage and promote the elimination of non-conserving pricing and adoption of conservation pricing policies	43%
Enact and enforce measure prohibiting water waste as specified in Monterey County Water Resources Agency Ordinance No. 3932 or as subsequently amended, and encourage the efficient use of water	29%

Table 12. Water Use per Connection – Small Water Systems (2016-2020).

Small Water Systems: Water Use (AF) Per Connection Class	2016	2017	2018	2019	2020
Single-Family Residential	0.426	0.516	0.411	0.429	0.429
Multi-Family Residential	0.640	0.689	0.567	0.763	0.738
Commercial/ Institutional	0.709	0.940	0.769	0.864	0.806
Industrial	54.826	54.437	52.240	46.986	37.142
Landscape Irrigation	1.100	1.934	3.220	3.559	6.565
Other	0.454	1.098	2.819	3.066	3.920

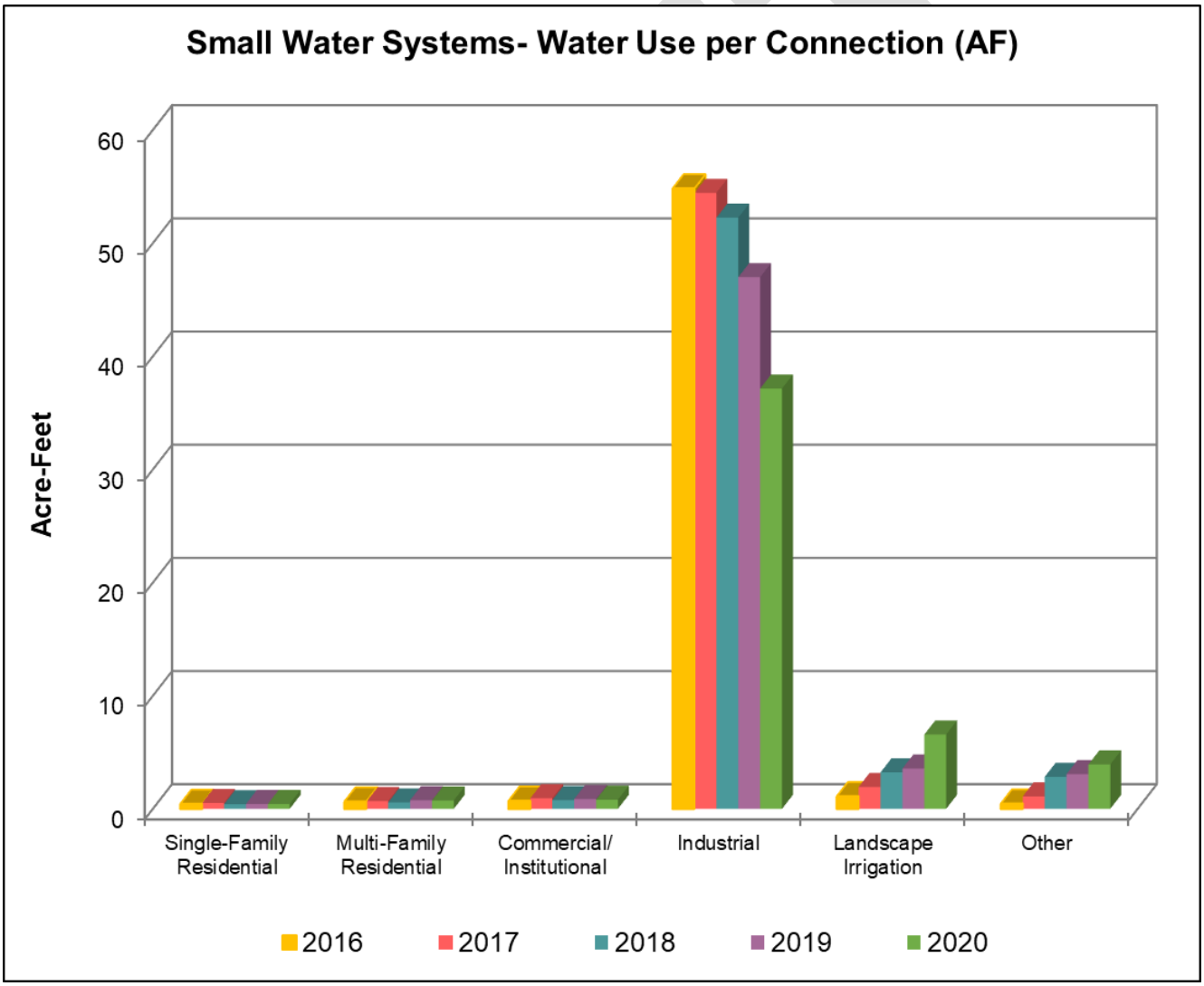


Figure 23. Urban Water Use per Connection – For Small Water Systems

Table 13. Water Use per Connection – Large Water Systems (2016-2020).

Large Water Systems: Water Use (AF) Per Connection Class	2016	2017	2018	2019	2020
Single-Family Residential	0.274	0.292	0.282	0.277	0.273
Multi-Family Residential	0.858	1.026	0.892	0.827	1.032
Commercial/ Institutional	1.579	1.583	1.635	1.553	1.414
Industrial	15.491	15.718	19.879	18.712	20.480
Landscape Irrigation	1.195	2.138	2.157	2.133	2.318
Agricultural Irrigation	38.649	21.223	87.650	110.451	124.190
Other	1.918	0.934	2.382	2.034	2.191

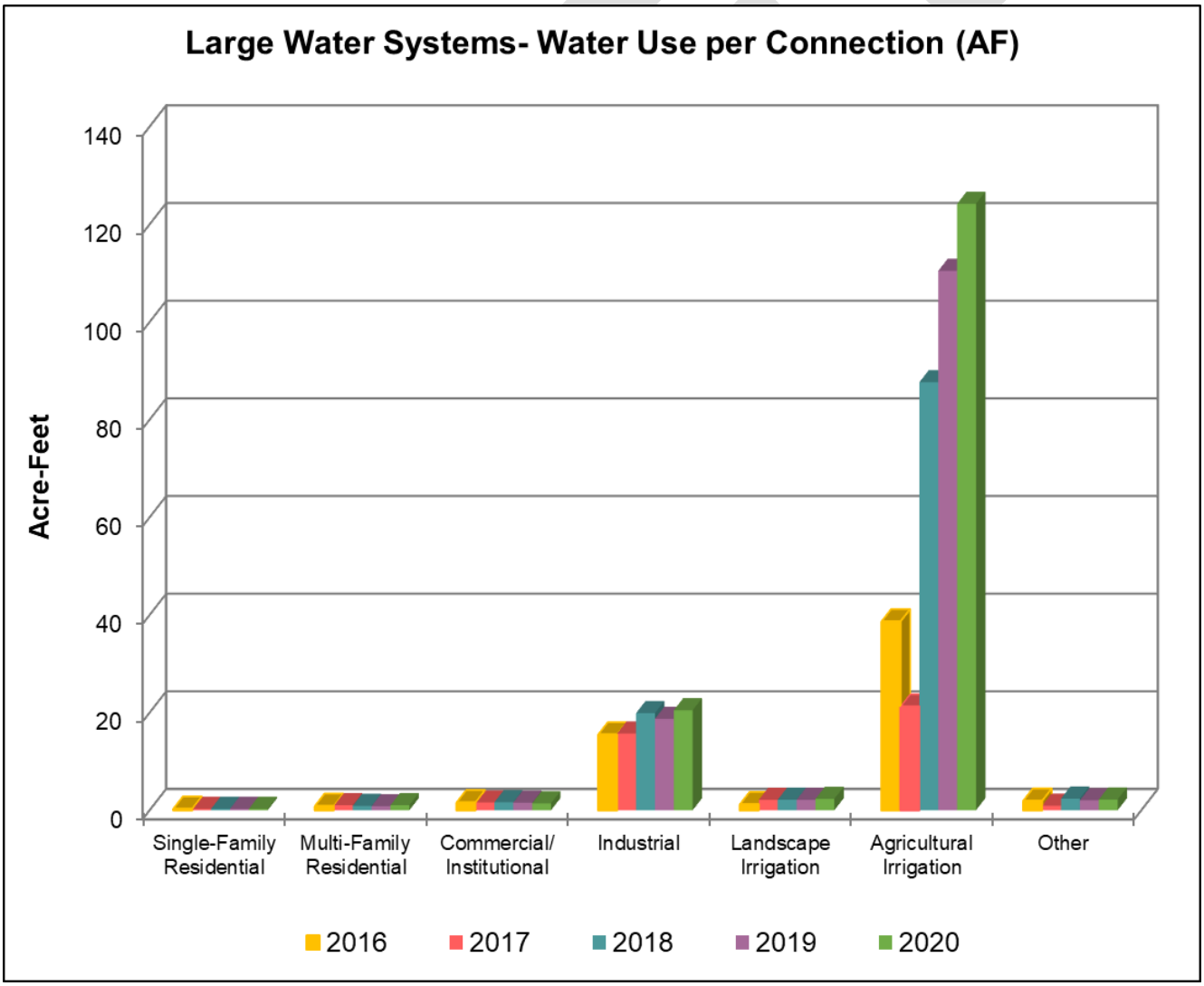


Figure 24. Urban Water Use per Connection – For Large Water Systems

Monterey County
Board of Supervisors

Luis Alejo	District #1
John M. Phillips	District #2
Chris Lopez	District #3
Wendy Root Askew, Chair	District #4
Mary Adams, Vice- Chair	District #5

Monterey County Water Resources Agency
Board of Directors

Mark Gonzalez	District #1
Mike Scattini	District #2
Marvin Borizini	District #3
Deidre Sullivan	District #4
Ken Ekelund	District #5
Matt Simis	Grower-Shipper Association
Jason Smith	Monterey County Farm Bureau
John Baillie, Chair	Agricultural Advisory Committee
Mike LeBarre, Vice-Chair	City Select Committee

Monterey County Water Resources Agency

Brent Buche, General Manager
Elizabeth Krafft, Deputy General Manager

Groundwater Extraction Summary Report Team

Howard Franklin, Senior Hydrologist
Tamara Voss, Associate Hydrologist
Nicole Koerth, Water Resources Hydrologist
April Woods, Water Resources Technician

For more information, contact:

Monterey County Water Resources Agency

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Introduced: 8/25/2021 **Current Status:** Agenda Ready

Version: 1 **Matter Type:** WRA BMAC Item

Consider receiving a report on the 2021 Salinas River Discharge Measurement Series.

RECOMMENDATION:
It is recommended that the Monterey County Water Resources Agency Basin Management Advisory Committee:

Receive a report on the 2021 Salinas River Discharge Measurement Series.

SUMMARY:
The 2021 Salinas River Discharge Measurement Series (River Series) occurred over July 19-21, 2021, with ten measurements being performed by Agency and USGS staff. Overall, the 2021 River Series documented an entirely losing system with 624 cfs, or 1,237 acre-feet per day, lost across the ninety-one sampled river miles. The 2021 River Series recorded more flow lost than in the 2020 River Series, reversing a decreasing trend observed in the River Series since the 2012-16 drought. This comes as the Salinas Valley faces its second consecutive water year with dry or dry-normal water conditions, groundwater elevations falling for the first time since their post-drought recovery, a shortened reservoir conservation release season, and the entire county now experiencing extreme drought conditions.

DISCUSSION:
The River Series provides valuable information in understanding the hydrologic conditions under which reservoir releases and flows in the Salinas River are managed, by quantifying the amount of discharge, or flow, lost across the various reaches between the reservoirs and the furthest downstream station.

The 2021 Salinas River Discharge Measurement Series (River Series) occurred during July 19-21, 2021. Agency and USGS staff performed ten measurements downstream of the Nacimiento and San Antonio reservoirs. The 2021 River Series documented an entirely losing system with 624 cfs, or 1,236 acre-feet/day, lost between the confluence of the reservoirs and the furthest downstream Spreckels station. This 2021 River Series recorded more flow lost than in the 2020 River Series, reversing a decreasing trend seen in the River Series since the 2012-16 drought. More information about the reach-to-reach variations in flow loss rates, comparison to historical and recent River Series, and discussion on factors that may have influenced the 2021 flow losses can be found in the 2021 Salinas River Discharge Measurement Series Results Memo (Attachment 1).

OTHER AGENCY INVOLVEMENT:
None.

FINANCING:
There is no financial impact in receiving this report.
Funds 111, 116: Data Collection, Processing, Analysis and Reporting

Prepared by: Shaunna Murray, Senior Water Resources Engineer, (831) 755-4865
Tamara Voss, Associate Hydrologist, (831) 755-486
Nicole Koerth, Hydrologist, (831) 755-4860

Approved by: Brent Buche, General Manager, (831) 755-4860

Attachment:
2021 Salinas River Discharge Measurement Series Results Memo

Introduced: 8/25/2021 **Current Status:** Agenda Ready

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OTHER AGENCY INVOLVEMENT:
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Approved by: Brent Buche, General Manager, (831) 755-4860

Attachment:
2021 Salinas River Discharge Measurement Series Results Memo

WATER RESOURCES AGENCY

M E M O R A N D U M

Monterey County

August 6, 2021

2021 Salinas River Discharge Measurements Series Results

The Salinas River Discharge Measurement Series (River Series) provides valuable information towards understanding the hydrologic conditions under which reservoir releases and flows in the Salinas River are managed. The 2021 River Series occurred during July 19-21, 2021. Ten streamflow measurements were performed by Monterey County Water Resources Agency (Agency) and US Geological Survey (USGS) staff. Overall, the 2021 River Series documented an entirely losing system with 624 cfs, or 1,236 acre-feet per day, lost across the ninety-one sampled river miles. The 2021 River Series recorded more flow lost than in the 2020 River Series, reversing a decreasing trend seen in the River Series since the 2012-16 drought. Further analysis into the reach-to-reach variations in flow loss rates, comparison to historical and recent River Series, and discussion on factors that may have influenced the 2021 River Series are discussed below.

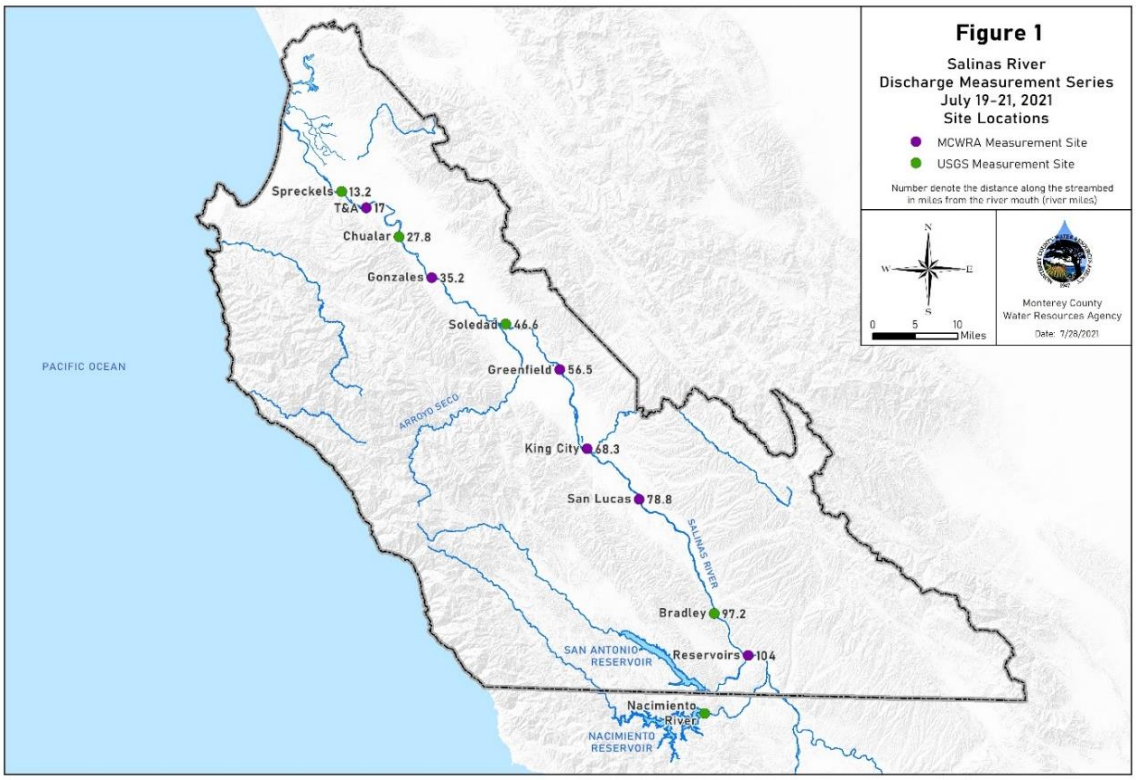

Figure 1. Salinas River Discharge Measurement Series Site Locations

Sample sites were located downstream of Nacimiento and San Antonio Reservoirs, within the lower one hundred miles of the Salinas River watershed (Figure 1). Combined reservoir releases were held around 650 cubic feet per second (cfs) for five days prior to the River Series (Figure 2). This allowed for any variations in flow to move through the system prior to sampling so that changes in flow would not be an artifact of changes in reservoir releases.

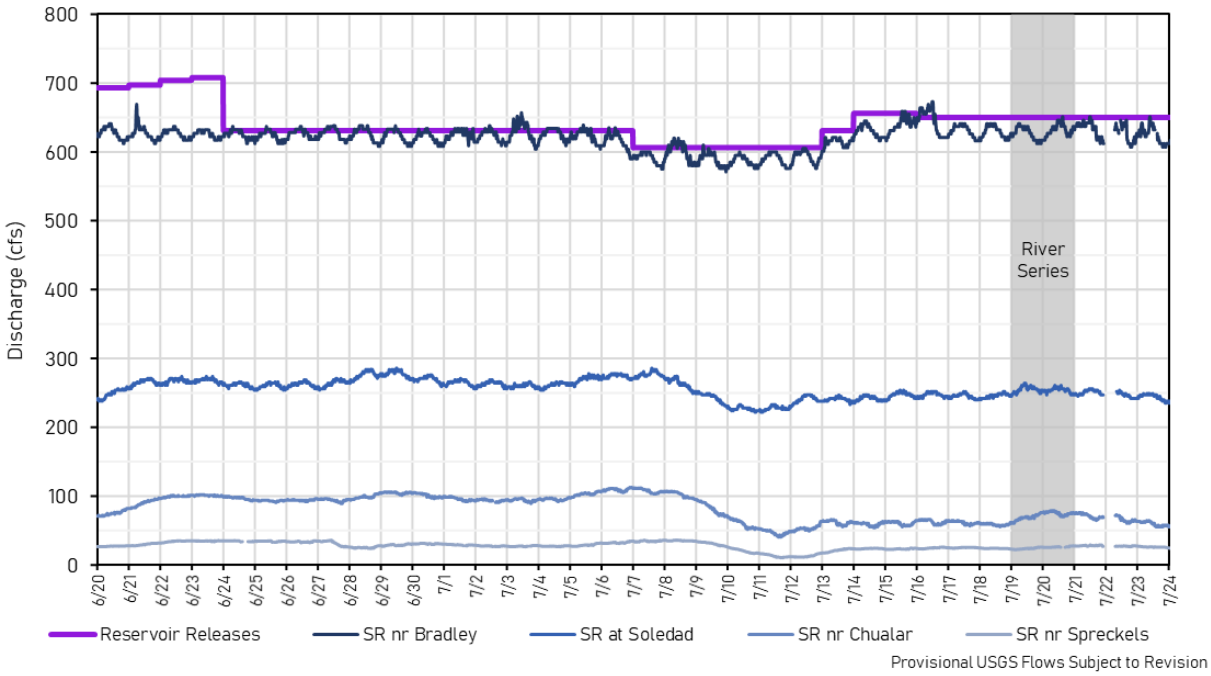

Figure 2. Reservoir Releases and Salinas River Discharge at USGS Gages

River Series measurements were coordinated with USGS staff to coincide with their routine monthly calibration measurements at the five USGS automated gage stations on the Salinas River. USGS staff performed measurements at established USGS gages. Agency staff performed measurements at the San Lucas (river mile 78.8), King City (river mile 68.3), Greenfield (river mile 56.5), Gonzales (river mile 35.2) and T&A, a site approximately two miles south of the town of Spreckels (river mile 17.0) sites. All Agency measurements were collected using an acoustic doppler velocimeter.

The San Lucas site was relocated during the 2018 survey after access issues at the previously established site (river mile 80.6). The relocated site (river mile 78.8) has been utilized for every survey since 2018. The Spreckels site was temporarily relocated to river miles 13.5 and 13.2 during the 2017-2018 and 2019 river surveys, respectively, due to construction but was returned to the original site (river mile 13.0) in 2020. The 2021 River Series occurred slightly earlier in the summer than in recent years, due to the low volume of water in the reservoirs resulting in a shortened conservation season.

Discharge (Q) results for each site are summarized in Table 1 and graphed by river mile in Figure 3. The changes in flow (ΔQ) between measurement sites, referred to as a 'river reach' and reach-to-reach loss rates (ΔQ/RM) are summarized in Table 2.

Table 1. Discharge Measurement Results for 2021 River Series					
Measurement Site Name	River Mile (RM)	Measurement			Discharge Q (cfs)
		Date	Time	Source	
San Antonio		7/20/2021	7:00	MCWRA	240*
Nacimiento		7/20/2021	8:30	USGS	410
Combined Reservoirs	104	7/20/2021	7:00	MCWRA	650**
Bradley	97.5	7/20/2021	10:46	USGS	637
San Lucas	78.8	7/20/2021	8:01	MCWRA	510
King City	68.3	7/20/2021	12:01	MCWRA	419
Greenfield	56.5	7/21/2021	8:43	MCWRA	329
Soledad	46.7	7/20/2021	13:14	USGS	258
Gonzales	35.2	7/19/2021	11:25	MCWRA	138
Chualar	27.8	7/20/2021	10:57	USGS	74.8
T&A	17	7/19/2021	9:07	MCWRA	28.3
Spreckels	13	7/20/2021	13:29	USGS	26.4

* Reservoir releases as reported by the Agency
**Combined release from San Antonio releases and Nacimiento USGS Station

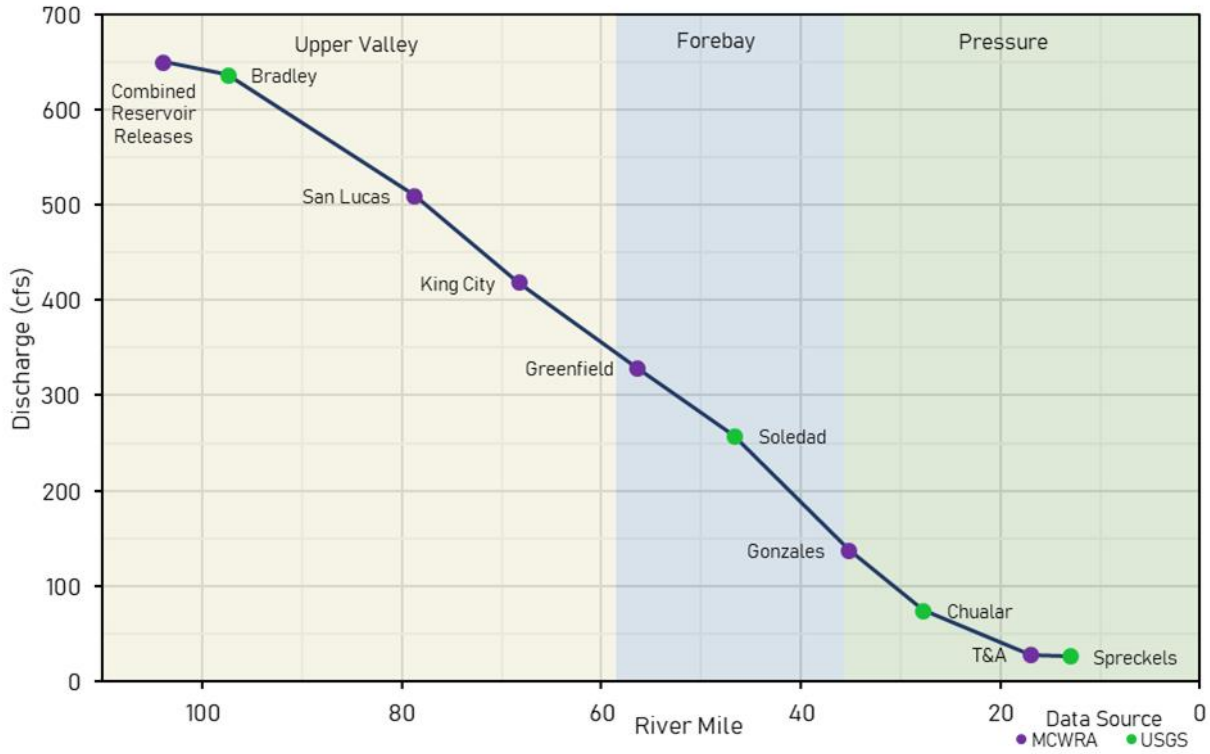

Figure 3. Discharge Measurement Series Results for the 2021 Salinas River Series

Table 2. Flow Loss Rates by River Reach					
River Reach	Upstream River Mile	Downstream River Mile	Length of Reach (miles)	ΔQ (cfs)	ΔQ/RM (cfs/mile)
Reservoirs- Bradley	104	97.5	6.5	13	2.0
Bradley- San Lucas	97.5	78.8	18.7	127	6.8
San Lucas- King City	78.8	68.3	10.5	91	8.6
King City- Greenfield	68.3	56.5	11.8	90	7.6
Greenfield- Soledad	56.5	46.7	9.8	71	7.3
Soledad- Gonzales	46.7	35.2	11.5	120	10.4
Gonzales- Chualar	35.2	27.8	7.4	64	8.6
Chualar- T&A	27.8	17	10.8	47	4.3
T&A- Spreckels	17	13	4	2	0.5
Chualar- Spreckels *	27.8	13	14.8	48	3.3

* Included for comparison of loss rates discussed in text

During the April through October conservation season, Salinas River flows are maintained by the modulated release of accumulated winter and spring flows stored in Nacimiento and San Antonio reservoirs. The Salinas River is predominantly a losing stream, meaning the amount of flow decreases downstream as water from the river recharges the underlying aquifers, or is taken up by riparian vegetation. By contrast, a gaining stream would show an increase in the amount of flow downstream as groundwater was discharged to the surface water system. Table 1 and Figure 3 show that all of the 2021 measurements decreased downstream, indicating an entirely losing stream for the sampled portion of the Salinas River. By taking the difference between the combined reservoir releases and the flow at the most downstream Spreckles station, the total flow lost over the 91 miles of the River Series would be:

650 cfs – 26 cfs = 624 cfs

Assuming the reservoir releases remained constant over a twenty-four hour period, this loss rate can be converted to a daily volume for comparison to water stored in the reservoirs. Using a conversion factor of 1 cfs to 1.983 acre-feet/day, this loss rate would equate to 1,237 acre-feet per day lost between the two stations.

1,289 acre-feet/day – 52 acre-feet/day = 1,237 acre-feet/day

A total flow loss of 624 cfs suggests that on average 6.86 cfs are lost every river mile. However, flow is not lost at the same rate throughout the entire system. Variations in loss rates across the different reaches can be seen in loss rate hydrographs (Figure 4). These hydrographs compare 2021 discharge loss rates per river mile (ΔQ/RM) to the mean loss rates for each reach. Mean loss rates are calculated from the reference period of 1995-2011, the most recent extended period of consecutive years in which River Series surveys were conducted. This period immediately preceded the recent five-year drought (2012-2016), during which conservation releases were curtailed due to lack of available water and no River Series measurements were performed.

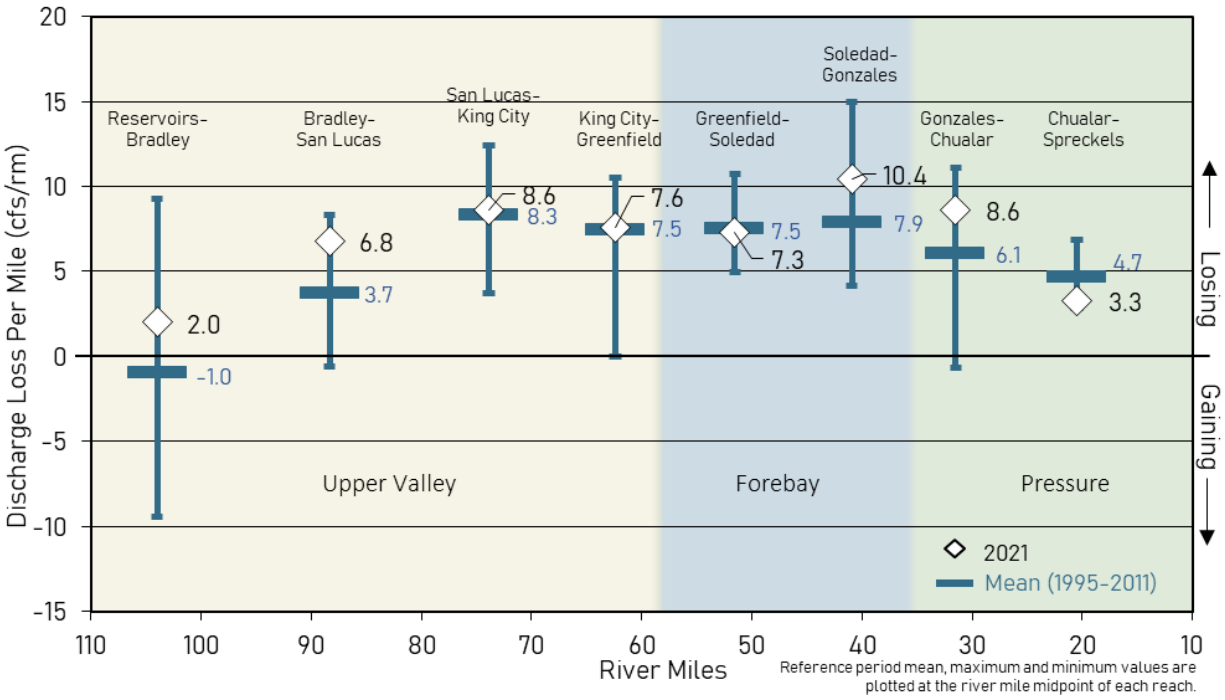

Figure 4. Comparison of 2021 Reach-to-Reach Discharge Loss Rates to 1995-2011 Loss Rate Ranges

Historically, the only section of the Salinas River considered a gaining reach, or having a loss rate less than zero, is the stretch between the confluence of the reservoirs and Bradley in the Upper Valley (-1.0 cfs/rm on average). River Series data collected since end of the recent drought has showed this reach has shifted to a losing reach, including a loss of 2.0 cfs/rm recorded during the 2021 series. This reach remained the lowest loss rate observed during the 2021 series. The San Lucas-to-King City reach, which historically has the highest loss rates in the system (8.3 cfs/rm on average) saw a smaller reach loss rate in 2021 (8.6 cfs/rm) compared to recent years (10.6 cfs/rm in 2020, 12.7 cfs/rm in 2019). This reach is characterized by galleries of production wells in direct hydraulic communication with the Salinas River. Continuing downstream, 2021 loss rates remained similar to reference period averages through the King City-to-Greenfield and Greenfield-to-Soledad reaches. The Soledad-to-Gonzales reach saw the highest loss rate in the 2021 River Series (10.4 cfs). This reach and the Gonzales-to-Chualar reach saw above average loss rates in water year 2021, while the furthest downstream reach, Chualar-to-Spreckels, saw a below average loss rate.

The lowest loss rate observed during the 2021 River Series was 2.0 cfs/rm at the furthest upstream Reservoirs-to-Bradley reach. The next lowest loss rate was in the furthest downstream reach, Chualar-to-Spreckels (3.3 cfs/rm), over strata dominated by low permeability clay layers of the 180/400-Ft Aquifer Subbasin, followed by the Bradley-to-San Lucas reach (6.8 cfs/rm), located within the hydrogeologically constricted portion of the Upper Valley. Overall, half of the reaches showed 2021 loss rates exceeding reference period averages, and three reaches remaining similar to their reference period averages (within +/- 4% difference).

The flow lost during the 2021 River Series can also be compared with the River Series since the 2012-2016 drought. Figure 5 shows the variability in hydrologic conditions and water year types under which reservoir releases and Salinas River flows have been managed in order to deliver similar downstream flows to Spreckels. For example, water year 2017 was a wet year, followed by a dry-normal year in 2018, a wet year in 2019, a dry-normal year in 2020 and a dry year in 2021. Overall, there has been a decreasing trend in the amount of total flow lost between the reservoirs and Spreckels since the end of the drought. However, water year 2021 was the first year this trend reversed, with more flow being lost to the system than in the previous year. Several factors can impact flows and flow losses in the Salinas River including weather, riparian vegetation, groundwater extractions, surface diversions, the degree of aquifer depletion and antecedent moisture conditions which reflect the degree of saturation in the subsurface.

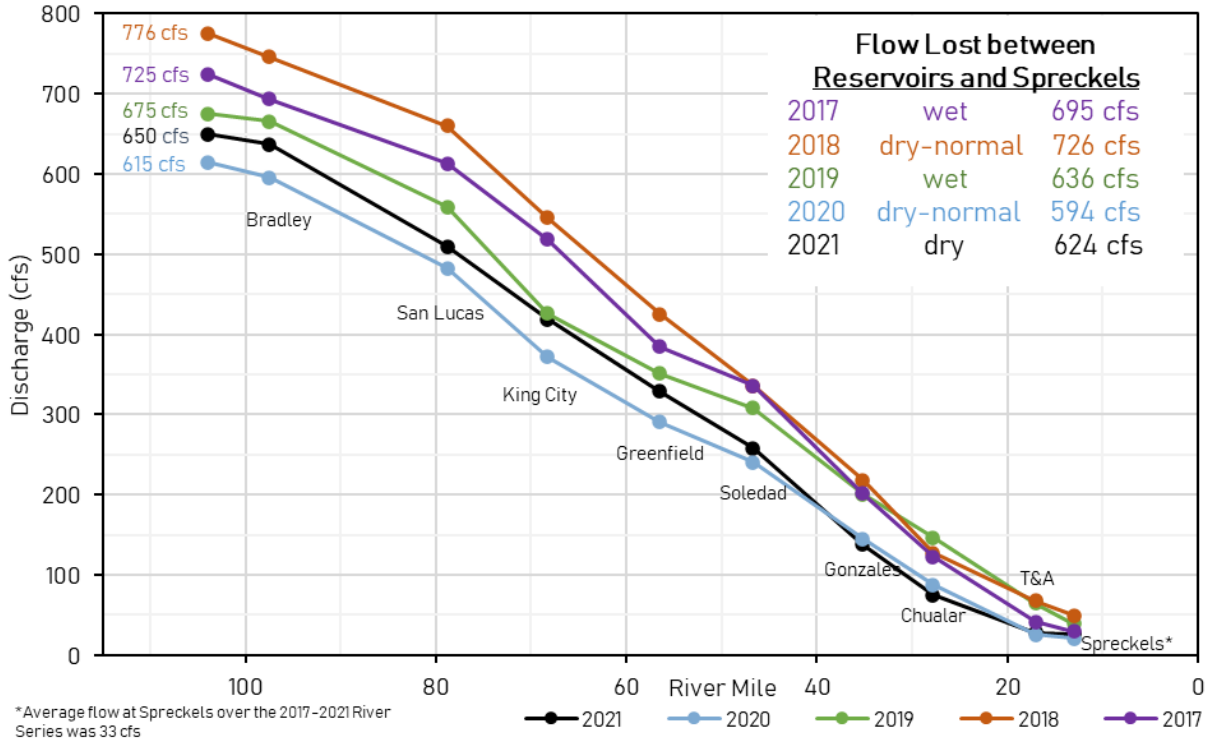

Figure 5. 2021 Discharge Measurements Compared to 2017-2020 River Series

One way to evaluate antecedent groundwater conditions is by looking at the water year type and timing of natural flows in the system. While the River Series occurs in late summer, usually after several months of conservation releases, natural flows can indicate the amount of groundwater recharge that occurred during the winter and spring recharge period. For example, frequent rainfall over an extended period of time allows for the subsurface to become saturated, which promotes groundwater recharge, while times with episodic storms may only penetrate the top portion of the subsurface and potentially dry out before recharging the aquifers. There has been a range in the frequency and intensity of natural flows in the years since the drought, as illustrated by the mean daily discharge at the USGS Arroyo Seco near Reliz streamgage (Figure 6). This gage is often used to represent unimpaired, natural flows in the Salinas Valley watershed. Some years saw

continuous flow in the Arroyo Seco throughout the winter and spring, while others only saw a few rain events that resulted in short periodic flows. Even though each of the 2017-2021 annual River Series events all documented an entirely losing system, the frequency, duration, or intensity of natural flows was not strongly correlated to the amount of flow lost during the River Series. It should be noted that other variables besides natural flows may need to be considered to better represent antecedent groundwater conditions and their impact on flow in the Salinas River.

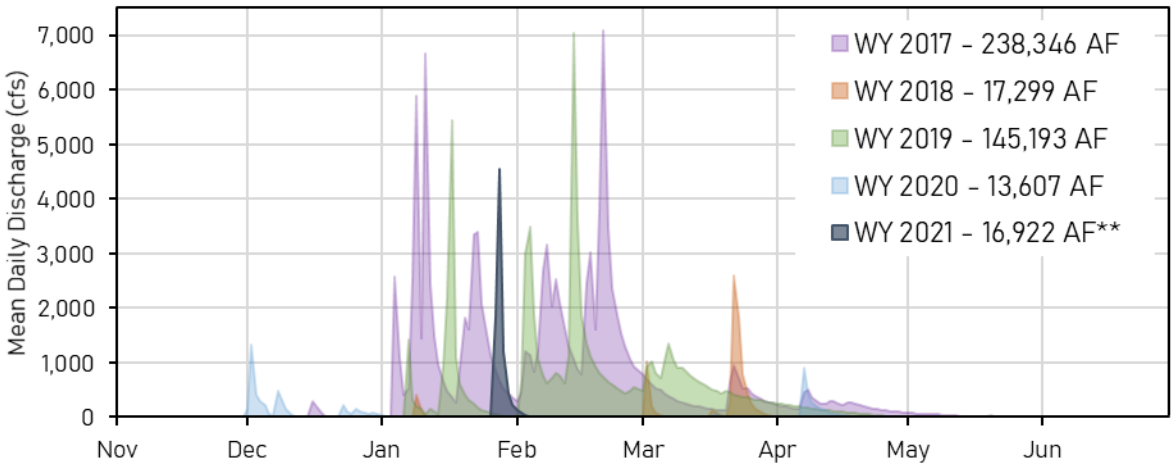

Figure 6. Mean Daily Discharge by Water Year at the USGS Arroyo Seco near Reliz Gage

Another factor that can influence flow losses in the river is the degree of aquifer depletion, which can be thought of as the long-term decline in groundwater levels and groundwater in storage due to pumping. If groundwater levels are lower than average, there is more aquifer storage available to accept recharge from the river system, compared to when groundwater levels are higher. Figure 7 shows the average groundwater elevations in the Forebay subarea over the last decade. The first year of the drought had little impact on groundwater levels, but 2013-2016 saw a steep basin-wide decline in groundwater levels. In water year 2017, the first wet year following the drought, groundwater levels showed a rapid recovery, followed by a slower but continual recovery through 2019. By water year 2020, groundwater levels started to stabilize or slow in their recovery from drought levels. The return of groundwater levels to pre-drought levels, with the exception of the Deep Aquifers and the East Side Subarea[1], indicated a lessening in the degree of aquifer depletion by water year 2020. However, water year 2021 was the first year since the recent drought where groundwater levels started to decline again. This reversal in the groundwater level trend may explain the higher amount of flow that was lost in the 2021 River Series compared to the previous year.

[1] The Quarterly Conditions Report shows groundwater elevations for the major aquifers and subareas in the Salinas Valley, and is updated every quarter of the water year. These reports can be accessed at: https://www.co.monterey.ca.us/government/government-links/water-resources-agency/documents/quarterly-salinas-valley-water-conditions

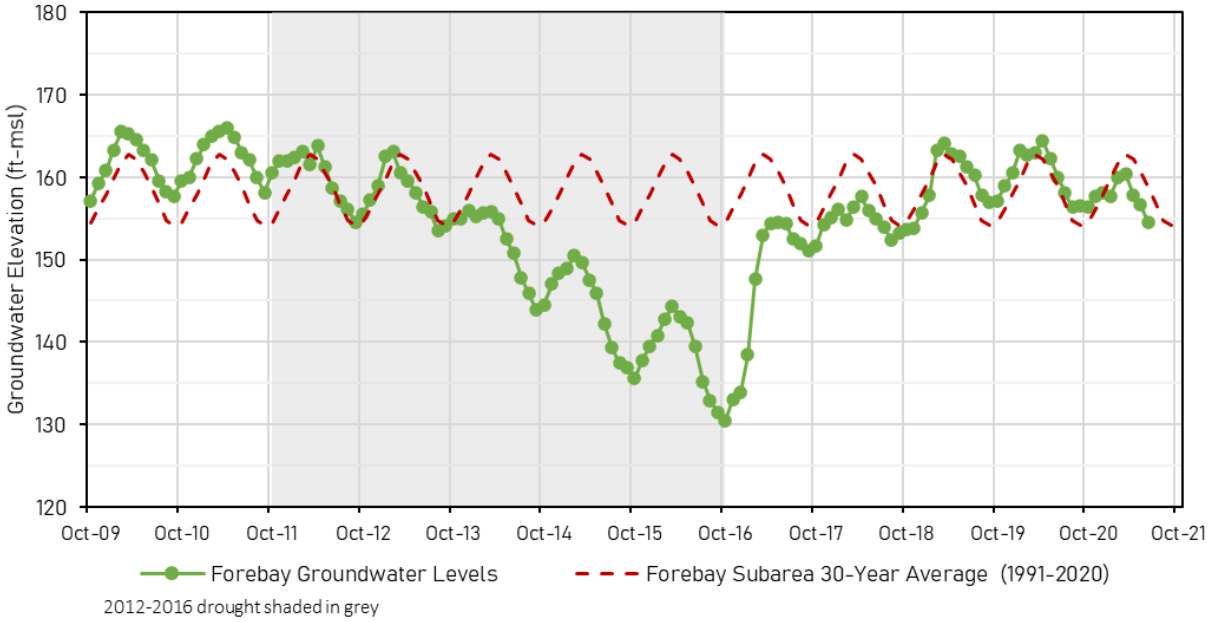

Figure 7. Groundwater Level Trends in the Forebay Subarea

Some of the aforementioned factors may have a larger impact on flows and flow loss rates in some reaches of the river than others. The extent to which these variables may contribute to reach-to-reach loss rates in the Salinas River is beyond the scope of this memorandum but warrants further investigation. These variables may be better quantified in the future using tools such as the Salinas Valley Integrated Hydrologic Model (SVIHM).

Overall, the 2021 River Series documented an entirely losing system with 624 cfs, or 1,237 acre-feet per day, lost across the ninety-one sampled river miles. Half of the reaches saw loss rates exceeding, or losing more water than, their reference period averages, while three reaches saw loss rates similar to their reference period averages. The 2021 River Series recorded more flow lost than in the previous year, reversing a decreasing trend observed in the River Series since the 2012-16 drought. This comes as the Salinas Valley faces its second consecutive water year with dry or dry-normal water conditions, groundwater elevations falling for the first time since their post-drought recovery, a shortened reservoir conservation release season, and the entire county now experiencing extreme drought conditions.

Introduced: 8/26/2021 **Current Status:** Agenda Ready

Version: 1 **Matter Type:** WRA BMAC Item

Consider receiving a report on revision to the Well Permit Applications Update and provide guidance to Staff on recommended changes.

RECOMMENDATION:
It is recommended that the Monterey County Water Resources Agency Basin Management Advisory Committee:

Receive a report on revision to the Well Permit Applications Update and provide guidance to Staff on recommended changes.

SUMMARY/DISCUSSION:
Agency staff provides a Well Permit Applications Update to the Board of Directors and the Basin Management Advisory Committee on a monthly basis. These updates originated as a report on Agency involvement in the well application process following adoption of the 2010 Monterey County General Plan.

In January 2020, the Basin Management Advisory Committee and the Board of Directors received a report on Revisions to the Well Permit Applications Update. These revisions expanded the update to include all categories of well permit applications reviewed by the Agency, and an expanded report on construction of wells in the Deep Aquifers.

Agency Staff are now proposing an additional revision to the Well Permit Applications Update. This will include a spatial representation of the permits received and would supplement the summary table (Table 1). The current update is included as Attachment 1. A version of the update including the proposed revision is included as Attachment 2.

OTHER AGENCY INVOLVEMENT:
None.

FINANCING:
There is no financial impact in receiving this report.

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Tamara Voss, Associate Hydrologist, (831) 755-4860
Amy Woodrow, Hydrologist, (831) 755-4860

Nicole Koerth, Hydrologist, (831) 755-4860

Approved by: Brent Buche, General Manager

Attachment :

1. Well Application Update- Current
2. Well Application Update- Proposed Revision

Introduced: 8/26/2021 **Current Status:** Agenda Ready

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Approved by: Brent Buche, General Manager

Attachment :

1. Well Application Update- Current
2. Well Application Update- Proposed Revision

Well Permit Application Activities Update

SUMMARY/DISCUSSION:
In support of Monterey County's Well Permit Application Program the Agency acts as technical advisor to the program's lead agency, the Environmental Health Bureau (EHB). In accordance with a 1991 interdepartmental Memorandum of Agreement between the Agency and EHB, the Agency performs a comprehensive review process on well permit applications for new wells pumping five acre-feet of water or more per year, as well as for proposed well destructions and repairs.

The Agency provides review and/or advisement to EHB within five (5) business days of receiving new well permit applications. The Agency also reviews final well designs and annular seal depth proposals on an on-going basis and is committed to providing a response to EHB within twenty-four (24) hours of receiving design proposals.

The Agency receives funds that cover staff time for well application review, well completion report processing, and database maintenance from fees collected by EHB. The Agency's fees are defined in Article XI of the Monterey County Fee Resolution.

Table 1 (attached) provides a summation of well permit applications received in the last month for evaluation by Agency staff, categorized by permit type, Agency management area, and aquifer unit. Also included is a tabulation of new well applications reviewed for the fiscal year. This table is provided to the Board of Directors and Basin Management Advisory Committee on a monthly basis.

Publication of the Agency's Report, "Recommendations To Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin (October, 2017) and subsequent adoption of Interim Urgency Ordinance 5302 and Ordinance 5303 by the Monterey County Board of Supervisors (May 22, 2018 and June 26, 2018, respectively) have led to increased interest in data related to wells in and extractions from the Deep Aquifers (Figure 1).

Figure 2 depicts the history of well installation in the Deep Aquifers by water use category. As illustrated in the chart, a total of fifty-seven (57) wells have been installed in the Deep Aquifers since 1974, with twenty-five (25) of those wells being constructed in the last ten years, including fourteen (14) within the last three years. Figure 2 includes a tabular historical summary of reported annual Deep Aquifer well extractions by water use category.

Three (3) additional permit applications have been submitted for new Deep Aquifers wells but construction has not been completed as of the date of this report. The proposed wells were applied for as replacement wells after the expiration of Ordinance No. 5302, which expired on May 21, 2020.

OTHER AGENCY INVOLVEMENT:

None

FINANCING:
None

Prepared by: Nicole Koerth, Hydrologist, (831) 755-4860
Amy Woodrow, Hydrologist, (831) 755-4860
Tamara Voss, Associate Hydrologist (831) 755-4860

Attachments:
Table 1 - Summary of Well Permits Received
Figure 1- Map showing Deep Aquifer Wells
Figure 2 - Timeline of Well Installation in the Deep Aquifers with Summary of Deep Aquifer Groundwater Extractions

Table 1. Well Permit Applications Received by Category - July, 2021

Subarea/ Aquifer	Construction	Destruction	Repair	Other	Total	FY (21/22) Total
180-Ft Aquifer						0
400-Ft Aquifer						0
Deep Aquifers						0
East Side	1	3			4	4
Forebay						0
Upper Valley						0
Outside Zone 2C, Undefined GW Basin	7	2			9	9
Total	**8**	**5**			**13**	**13**

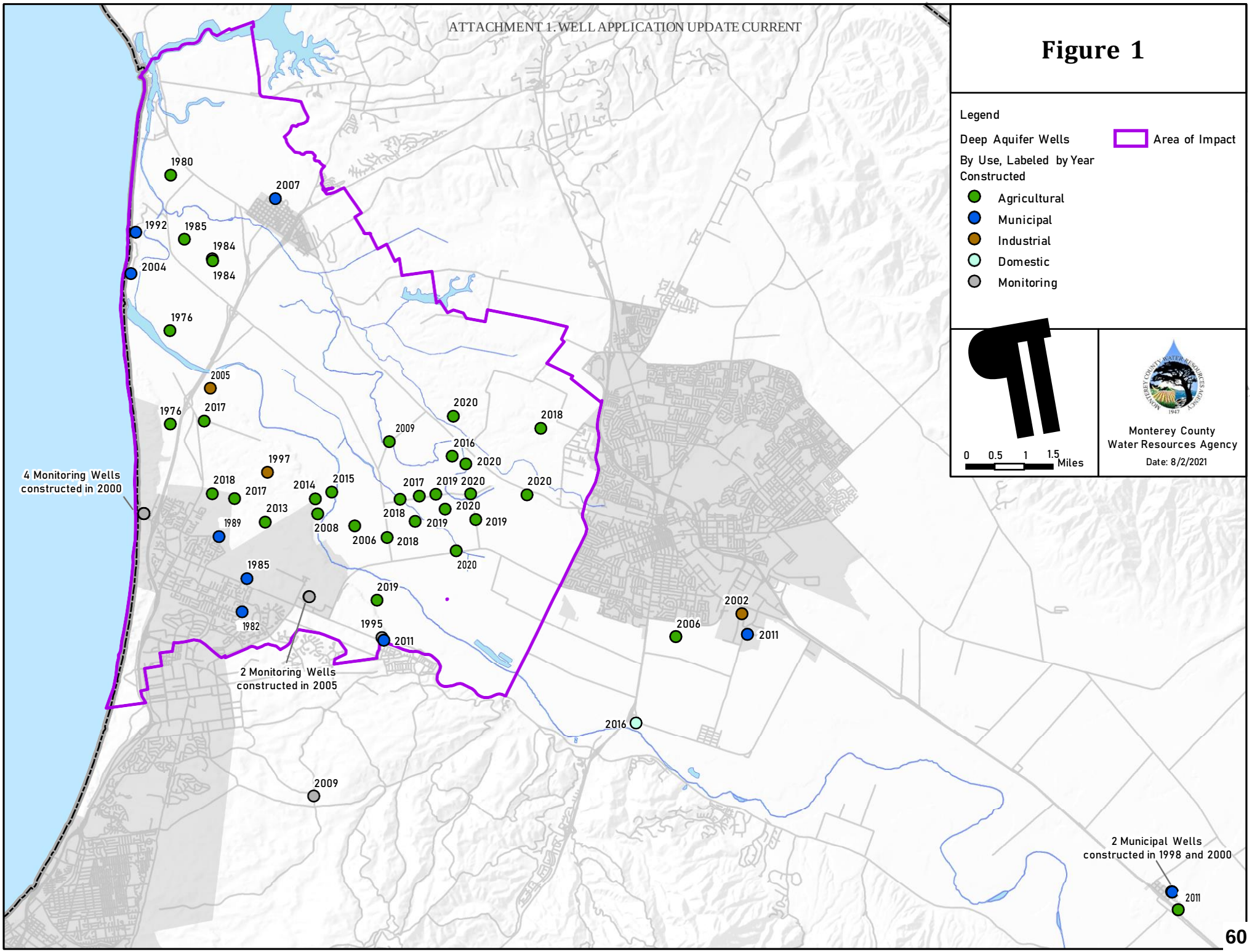
Figure 1
Legend
Deep Aquifer Wells
By Use, Labeled by Year Constructed
Agricultural
Municipal
Industrial
Domestic
Monitoring
Area of Impact
0 0.5 1 1.5 Miles
Monterey County Water Resources Agency
Date: 8/2/2021
4 Monitoring Wells constructed in 2000
2 Monitoring Wells constructed in 2005
2 Municipal Wells constructed in 1998 and 2000
1980
2007
1992
1985
1984
1984
2004
1976
2005
1976
2017
2020
2018
2009
2016
2020
1997
2018
2017
2014
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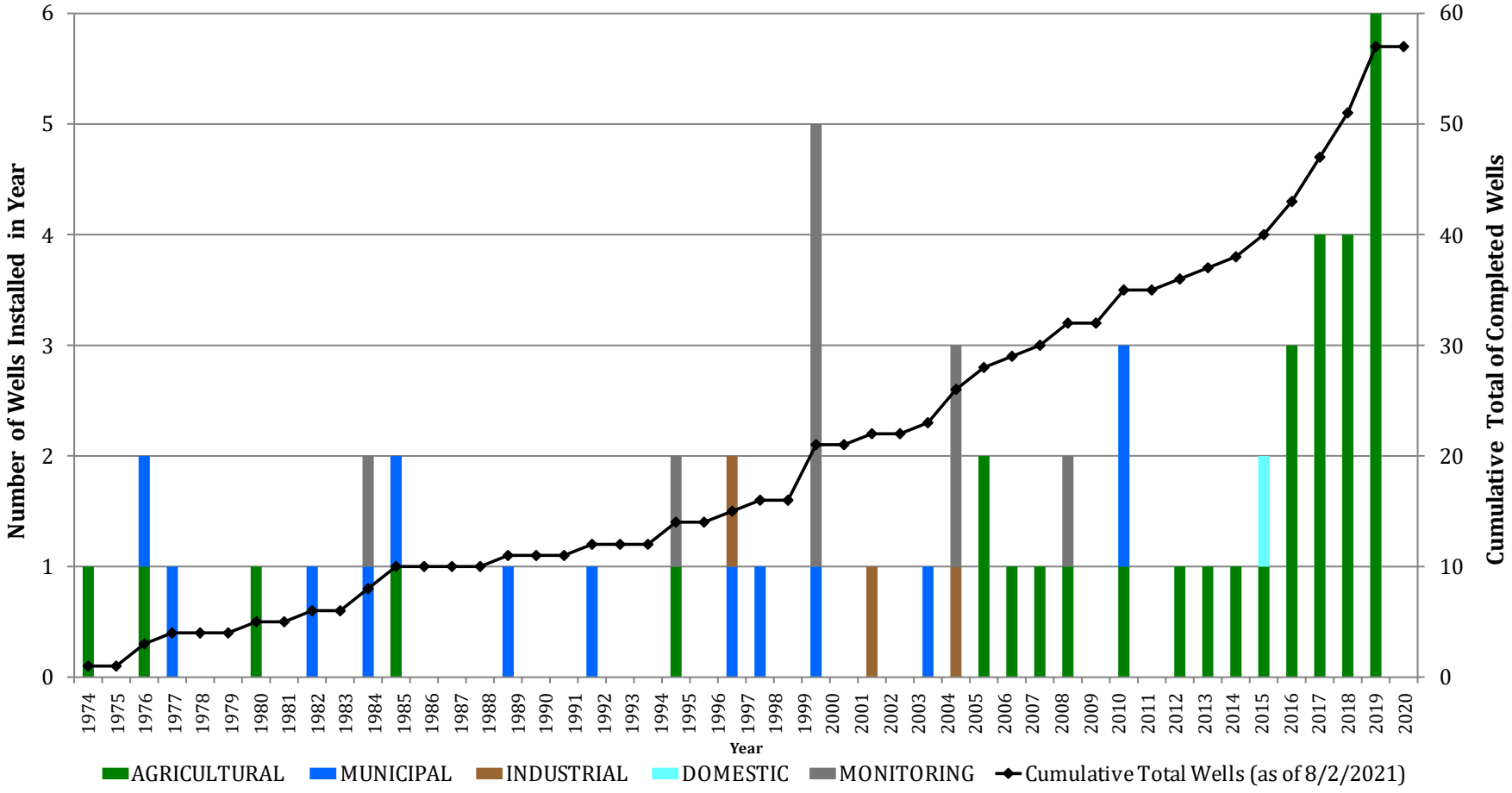
Figure 2

Timeline of Well Installation in Deep Aquifers of the 180/400 Foot Aquifer Subbasin

Source: MCWRA
Date: 8/2/2021



Deep Aquifers Groundwater Extraction History Since 1993*

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2,054	1,992	2,036	2,137	2,170	1,906	2,056	2,302	2,355	2,399	2,366	2,442	2,358	2,005	1,738	2,004	2,102	1,903	1,803	2,044	1,989	3,784	3,746	3,788	4,116	4,605	4,820
1,507	2,620	2,302	1,990	2,556	1,648	96	1	0	0	0	0	0	0	58	384	696	982	927	1,397	1,097	2,031	2,010	4,194	4,834	4,749	5,331
0	0	0	0	0	0	0	3	13	17	379	305	343	336	393	371	348	333	370	380	523	620	617	569	567	291	196
3,561	**4,612**	**4,338**	**4,127**	**4,725**	**3,554**	**2,151**	**2,307**	**2,368**	**2,416**	**2,745**	**2,747**	**2,701**	**2,341**	**2,189**	**2,759**	**3,146**	**3,218**	**3,100**	**3,821**	**3,608**	**6,436**	**6,373**	**8,551**	**9,516**	**9,645**	**10,347**

* Notes: Table includes all reported extraction data for the thirty-four (34) Deep Aquifer production wells that have reported extractions since inception of the Agency's GEMS program in 1993. Data are reported in acre-feet. Colors denote water use category (Municipal, Agricultural, Industrial). An additional twelve (12) recently constructed Deep Aquifers Agricultural production wells have yet to report extractions as of Reporting Year 2019.

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OTHER AGENCY INVOLVEMENT:

None

FINANCING:
None

Prepared by: Nicole Koerth, Hydrologist, (831) 755-4860
Amy Woodrow, Hydrologist, (831) 755-4860
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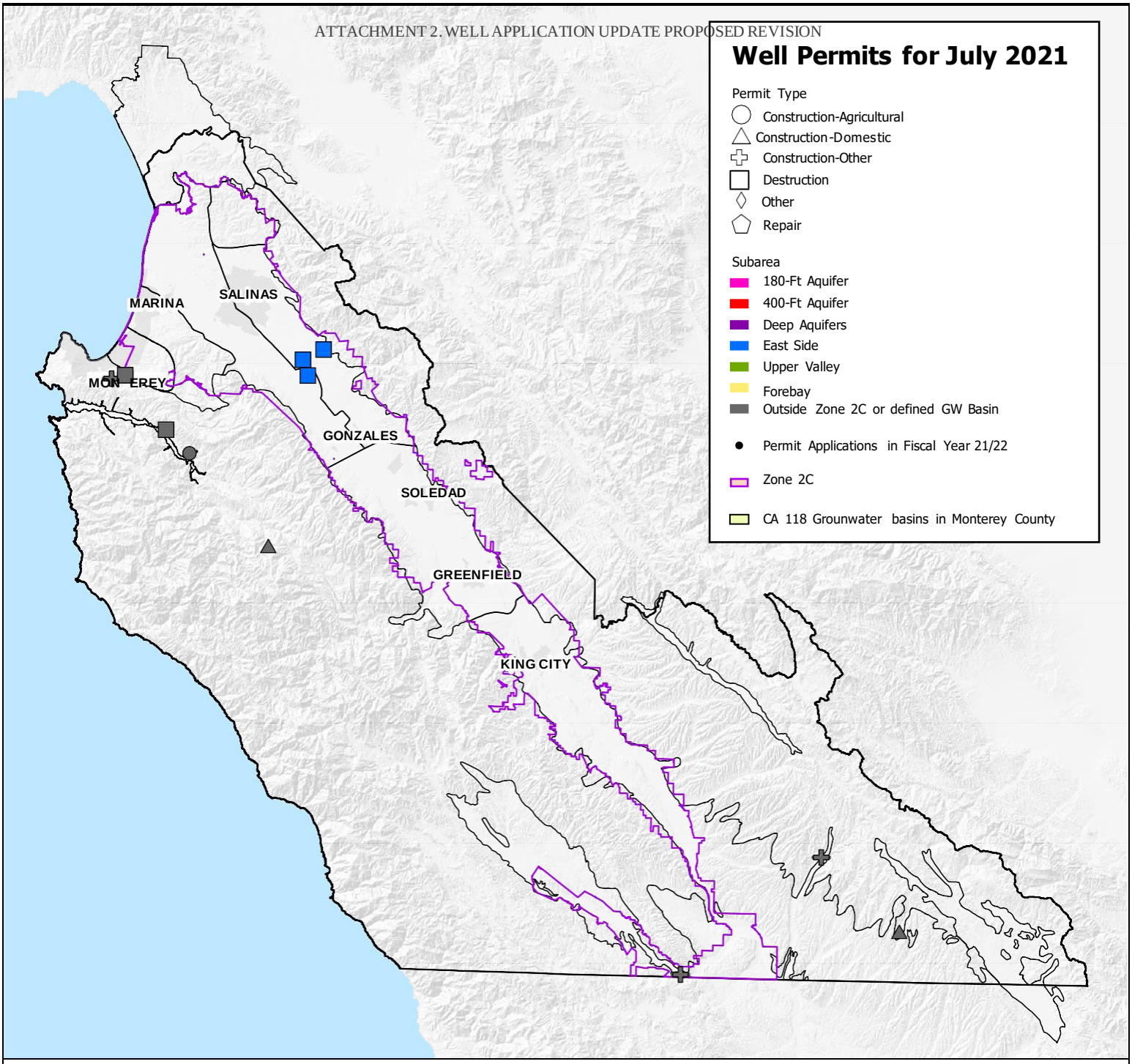

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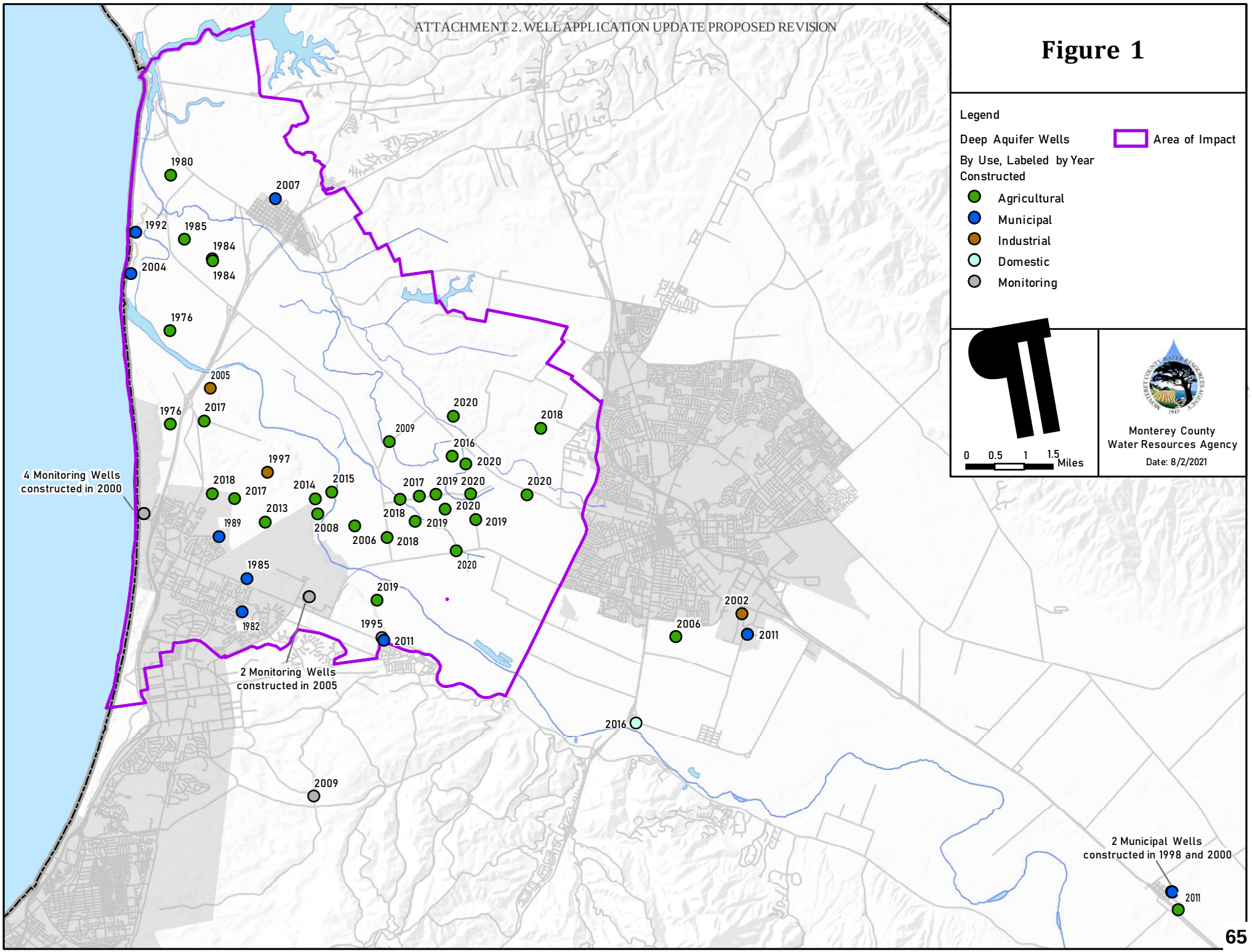
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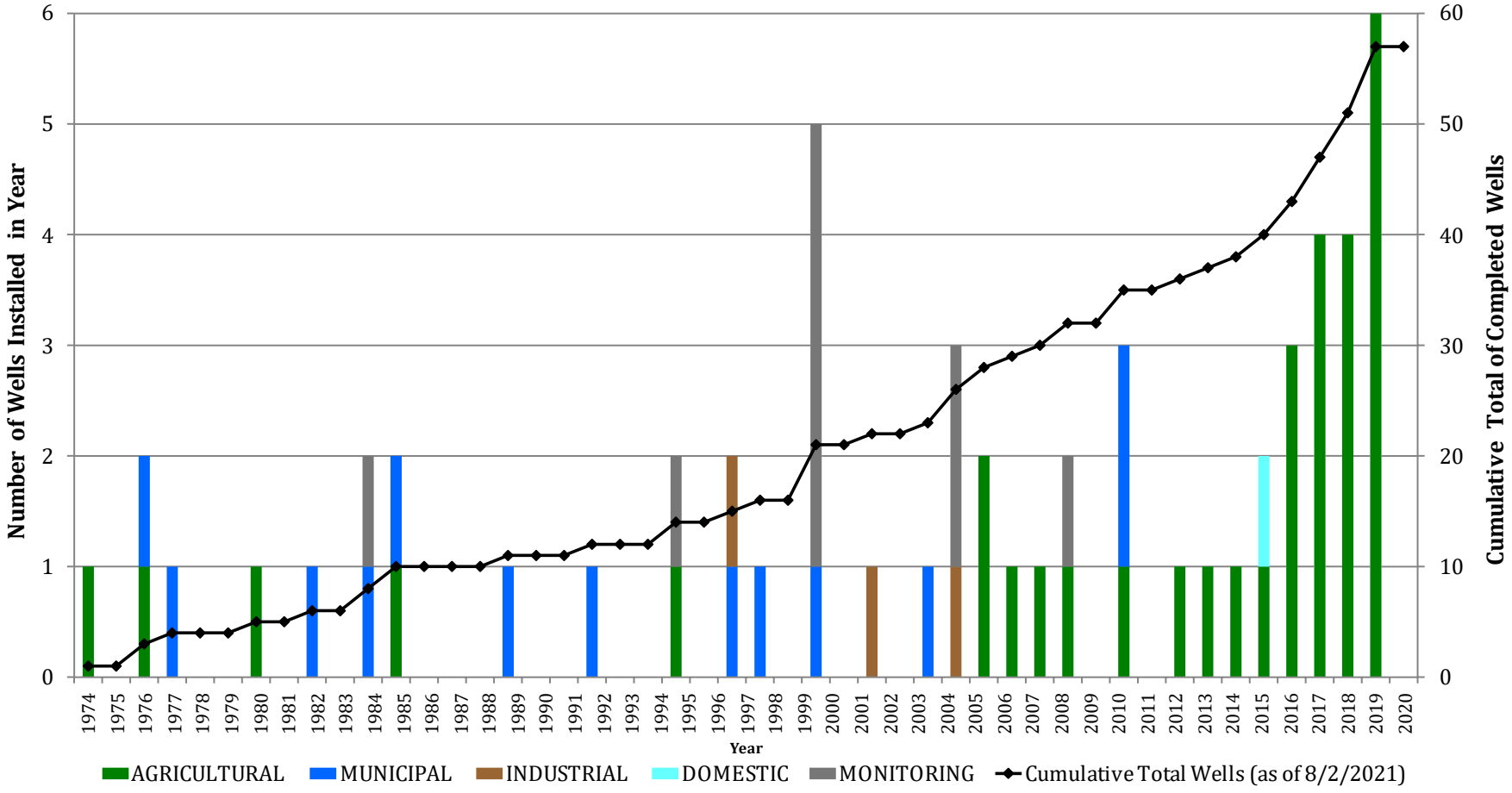
Figure 2

Timeline of Well Installation in Deep Aquifers of the 180/400 Foot Aquifer Subbasin

Source: MCWRA
Date: 8/2/2021



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Monterey County

Board Report

Legistar File Number: WRABMAC 21-060

Item No.5

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

September 01, 2021

Introduced: 8/26/2021
Version: 1

Current Status: Draft
Matter Type: WRA BMAC Item

Proposition 1 Implementation Grant Update: *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley*

Update on Proposition 1 Implementation Grant – *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley* Project

SUMMARY:
Implementation of the *Protection of Domestic Drinking Water Supplies for the Lower Salinas Valley* project (Project) is ongoing. The Project is funded in part by a Proposition 1 Implementation Grant from the State Water Resources Control Board (SWRCB).

DISCUSSION:

- Agency staff is finalizing agreements with two contractors to complete the well destruction work. On August 16, 2021, the Board of Directors approved the draft agreements and authorized the General Manager to execute the agreements.

- To date, thirty-eight wells will be ready for destruction as soon as well owner signatures are obtained on Right-of-Entry Agreements and well destruction permit applications, the General Manager has signed these documents, and the Monterey County Environmental Health Bureau has issued the well destruction permits.

OTHER AGENCY INVOLVEMENT:
State Water Resources Control Board

FINANCING:
Project totals $9,125,524 over a three-year period. The Project is funded in part (54%) by the SWRCB ($4,927,729) with the remaining 46% of the funding as local match from MCWRA. MCWRA is satisfying the match through a combination of in-kind services ($1,534,495) and additional funds ($2,663,300).

MCWRA was originally responsible for the full $2,663,300 in additional funds, but that amount has been reduced to $2,115,801 due to contributions from the Monterey County Cannabis Assignment ($399,499), Monterey One Water ($65,000), and Castroville Community Services District ($83,000). MCWRA has identified reserves in Fund 134 to cover any portion of the remaining $2,198,801 in additional funds that is not covered by contributions from outside sources.

In June 2021, MCWRA received reimbursement from the SWRCB for the first two quarters of the project, with funds totaling $78,314.

There is no financial impact in receiving this update.

Prepared by: Amy Woodrow, Hydrologist, (831) 755-4860
Tamara Voss, Associate Hydrologist, (831) 755-4860

Monterey County

Board Report

Legistar File Number: WRABMAC 21-062

Item No.6

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

September 01, 2021

Introduced: 8/26/2021
Version: 1

Current Status: Draft
Matter Type: WRA BMAC Item

Update on Groundwater Sustainability Agency activities in the Salinas Valley Basin

Update on Groundwater Sustainability Activities for August 2021

SUMMARY:

Monterey County Water Resources Agency (Agency) staff continues to meet regularly with Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) staff to discuss projects or other aspects of implementing Groundwater Sustainability Plans that may involve Agency staff or infrastructure. In addition to these meetings the Agency is represented on the Advisory Committee of the SVBGSA and participates on the Seawater Intrusion Group (SWIG) and SWIG-TAC.

DISCUSSION:

- At the August 12, 2021 Board of Directors meeting, the SVBGSA Board received draft Groundwater Sustainability Plans for the Eastside, Forebay, Langley, and Upper Valley Subbasins and approved release of the plans for a forty-five (45) day public comment period. https://svbgsa.org/subbasins/

- The Agency, SVBGSA, and USGS are continuing efforts to develop a multi-year cooperative agreement to support continued work on the Salinas Valley Integrated Hydrologic Model, as discussed at the June 2, 2021 BMAC meeting.

- The SVBGSA Advisory Committee did not meet in August 2021.

OTHER AGENCY INVOLVEMENT
None.

FINANCING:
There is no financial impact for receiving this report.

Prepared by: Amy Woodrow, Hydrologist, (831) 755-4860

Approved by: Brent Buche, General Manager

Monterey County

Board Report

Legistar File Number: WRABMAC 21-063

Item No.7

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

September 01, 2021

Introduced: 8/26/2021
Version: 1

Current Status: Draft
Matter Type: WRA BMAC Item

Update on Agency Modeling Activities

Update on Agency Modeling Activities

SUMMARY:

The Monterey County Water Resources Agency (Agency) continues to work on multiple projects involving the Salinas Valley Integrated Hydrologic Model (SVIHM or "historical model") and/or the Salinas Valley Operational Model (SVOM or "operational model"). Both the SVIHM and SVOM are tools developed by the U.S. Geological Survey (USGS), Agency, and Monterey County; the SVOM has been refined for use on the Interlake Tunnel Project by Wood Environment & Infrastructure, Inc. (Wood).

In addition to the Interlake Tunnel Project, the Agency is working with Monterey County to utilize the models are part of the Salinas Valley Basin Investigation.

DISCUSSION:

- On August 16, 2021, the Agency's Board of Directors approved an amendment to the Professional Services Agreement with Wood to revise the scope of work and increase the maximum payable amount under the agreement by $83,204.

- Agency staff and the USGS completed refinements to the SVIHM to address an under-simulation in the amount of groundwater pumping relative to data collected through the Agency's Groundwater Extraction Management System (GEMS).

- The Agency, SVBGSA, and USGS are continuing efforts to develop a multi-year cooperative agreement to support continued work on the Salinas Valley Integrated Hydrologic Model, as discussed at the June 2, 2021 BMAC meeting.

- The Agency and Wood continue to work closely with another consultant, ICF, to use the SVOM in support of ICF's work on the Environmental Impact Report for the Interlake Tunnel Project.

OTHER AGENCY INVOLVEMENT
None.

FINANCING:
There is no financial impact for receiving this report.

Prepared by: Amy Woodrow, Hydrologist, (831) 755-4860

Approved by: Brent Buche, General Manager

Monterey County

Board Report

Legistar File Number: WRABMAC 21-064

Item No.8

Board of Supervisors
Chambers
168 W. Alisal St., 1st Floor
Salinas, CA 93901

September 01, 2021

Introduced: 8/26/2021
Version: 1

Current Status: Draft
Matter Type: WRA BMAC Item

Consider future agenda items and set next meeting date