
MONTEREY COUNTY WATER RESOURCES AGENCY
1947

# Today's Action

Consider receiving the
2022 August Trough Groundwater
Level and
Seawater Intrusion Contour Maps

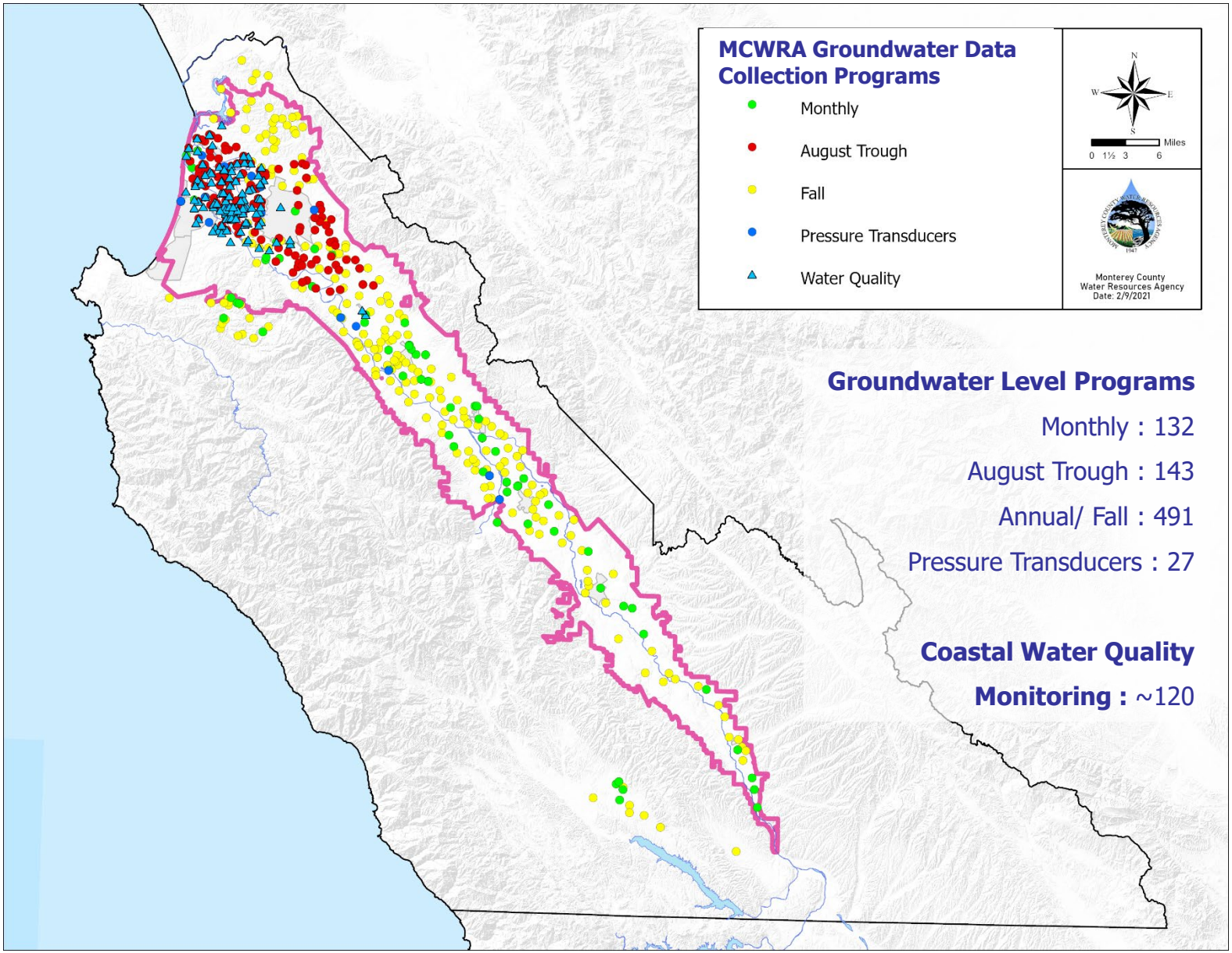
# Previous Committee Action

- Basin Management Advisory Committee received this report at their February meeting

- These activities can be linked to Strategic Plan Goals
  - B7 - Using data and analysis to make informed decisions based on science
  - E1 - Improve public outreach to increase transparency, communication education and information about Agency projects and programs
  - Program line items
    - 23 - Groundwater monitoring of dedicated wells
    - 50 - August Trough
    - 52 - Coastal WQ Monitoring Program

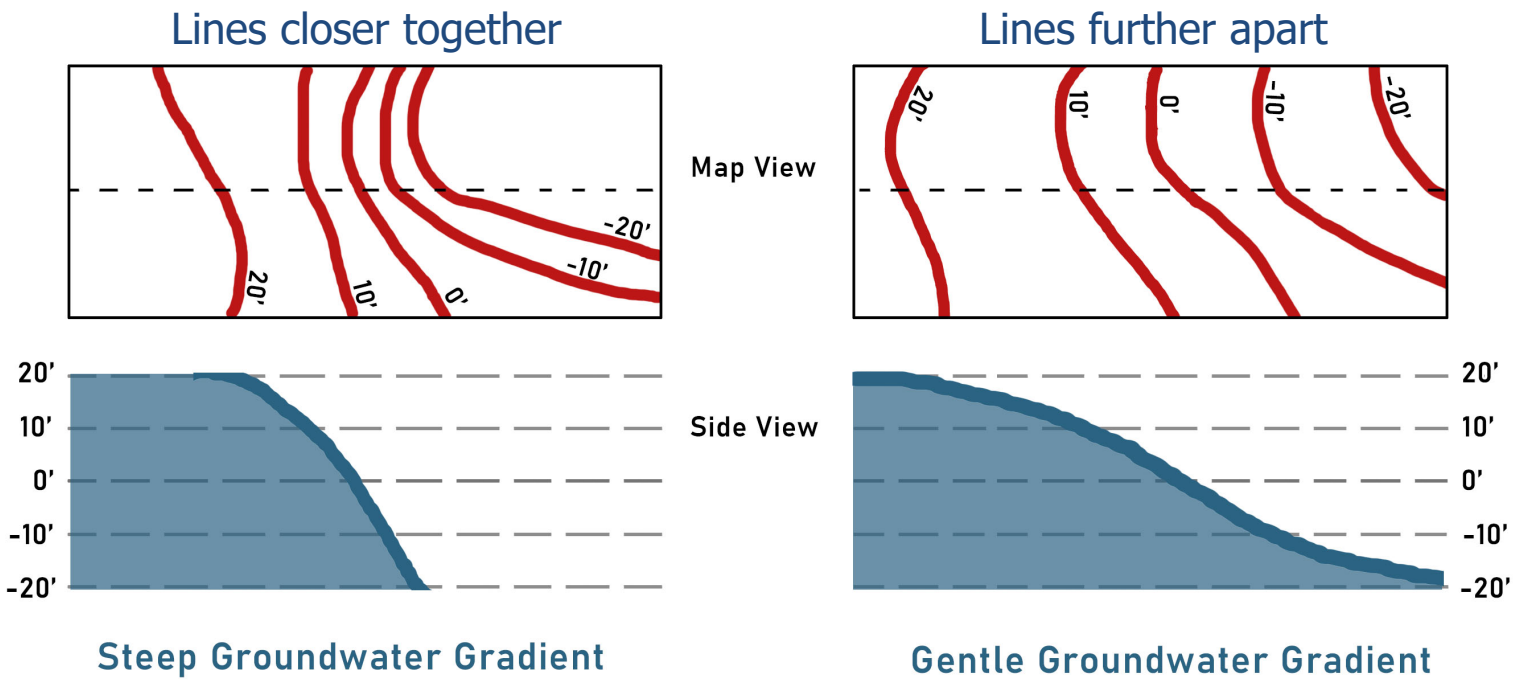
# Financial Impact

- No financial impact to receive this report
- Activities associated with this program are funded by Funds 111 and 116, and are included in each year's budget


MCWRA Groundwater Data Collection Programs
Monthly
August Trough
Fall
Pressure Transducers
Water Quality
N
W
E
S
Miles
0 1½ 3 6
Monterey County Water Resources Agency
Date: 2/9/2021
Groundwater Level Programs
Monthly : 132
August Trough : 143
Annual/ Fall : 491
Pressure Transducers : 27
Coastal Water Quality
Monitoring : ~120

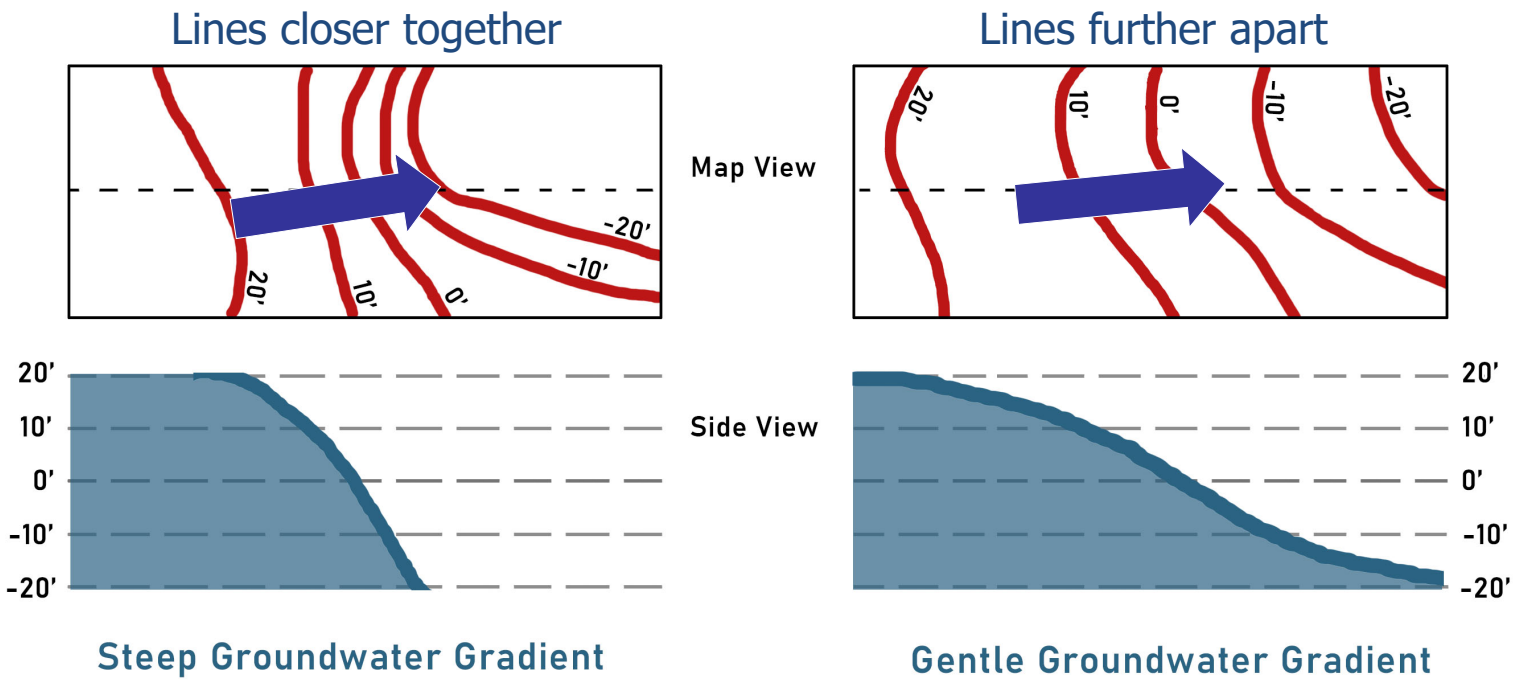
# What are Groundwater Level Contours?

- Lines on a map representing equal lines of groundwater levels, or elevations relative to mean sea level

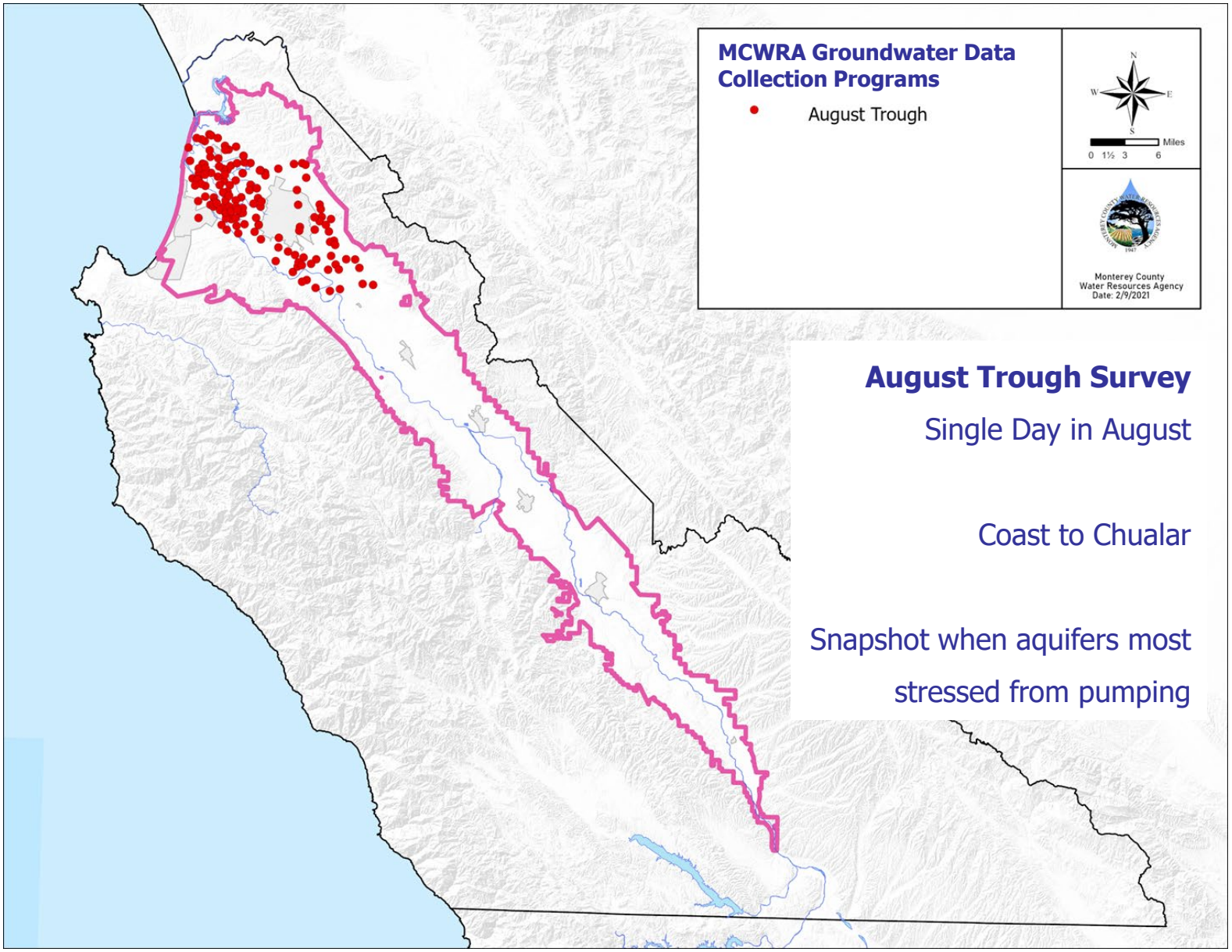


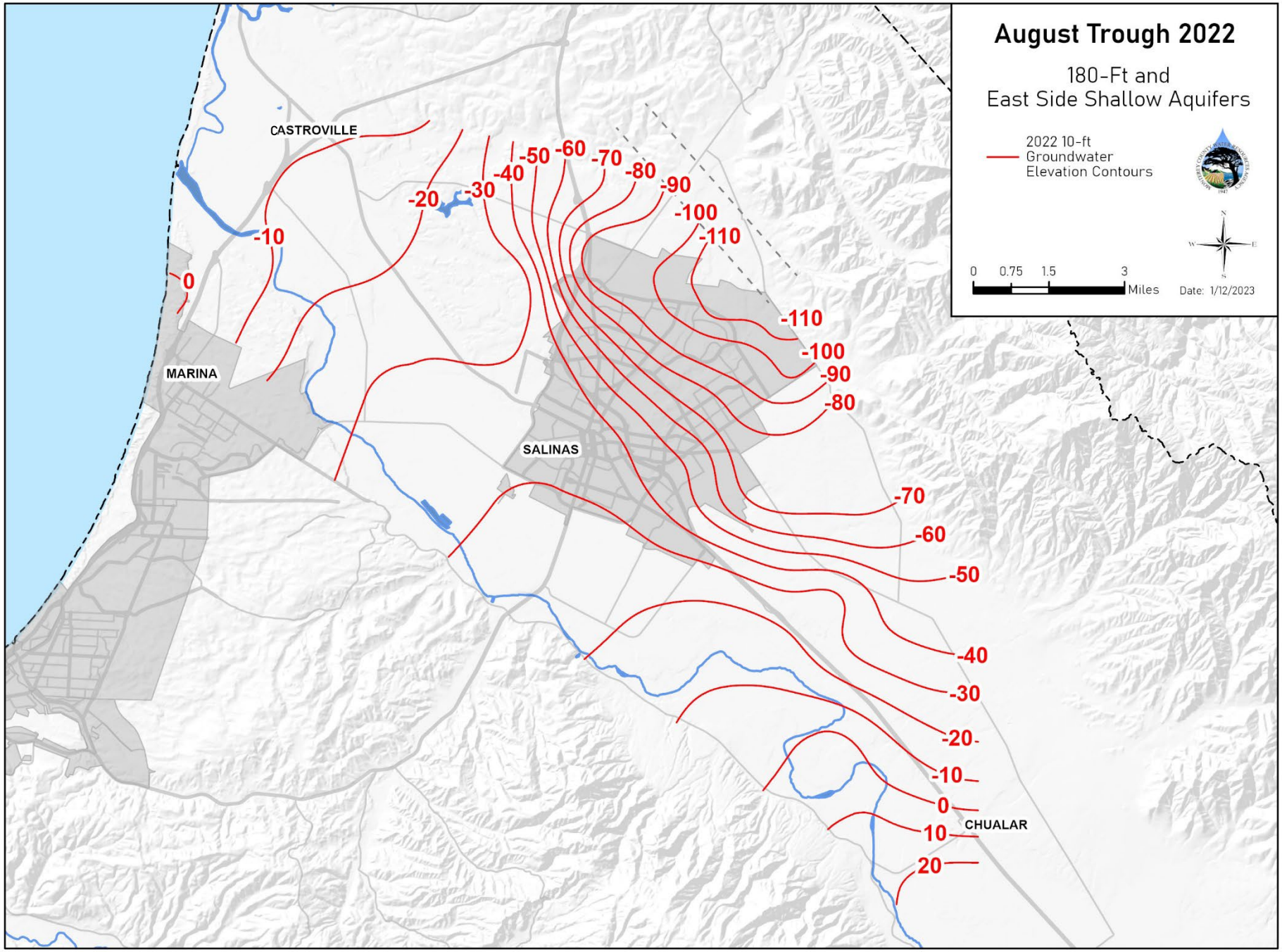
# What are Groundwater Level Contours?

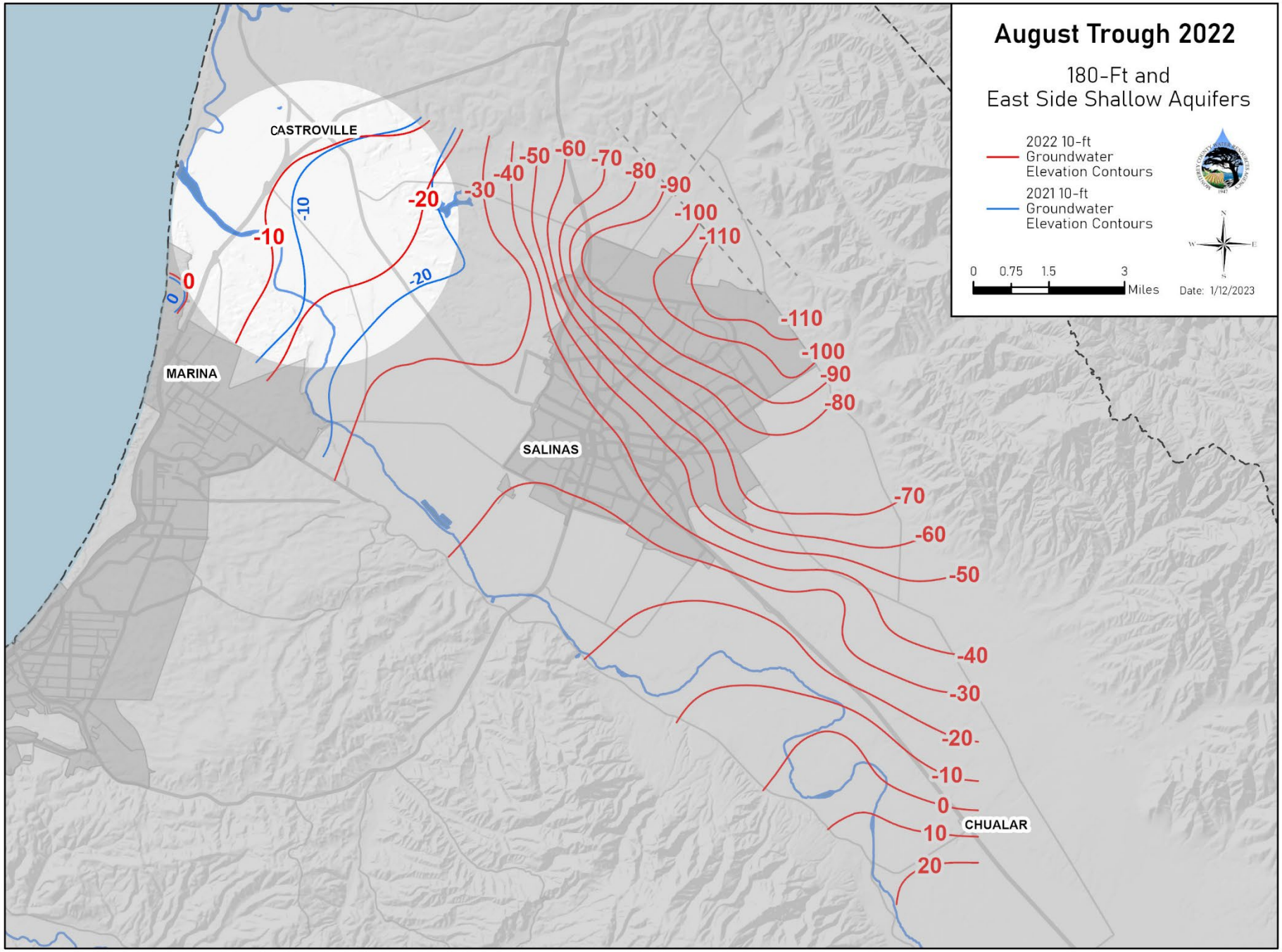
- Lines on a map representing equal lines of groundwater levels, or elevations relative to mean sea level

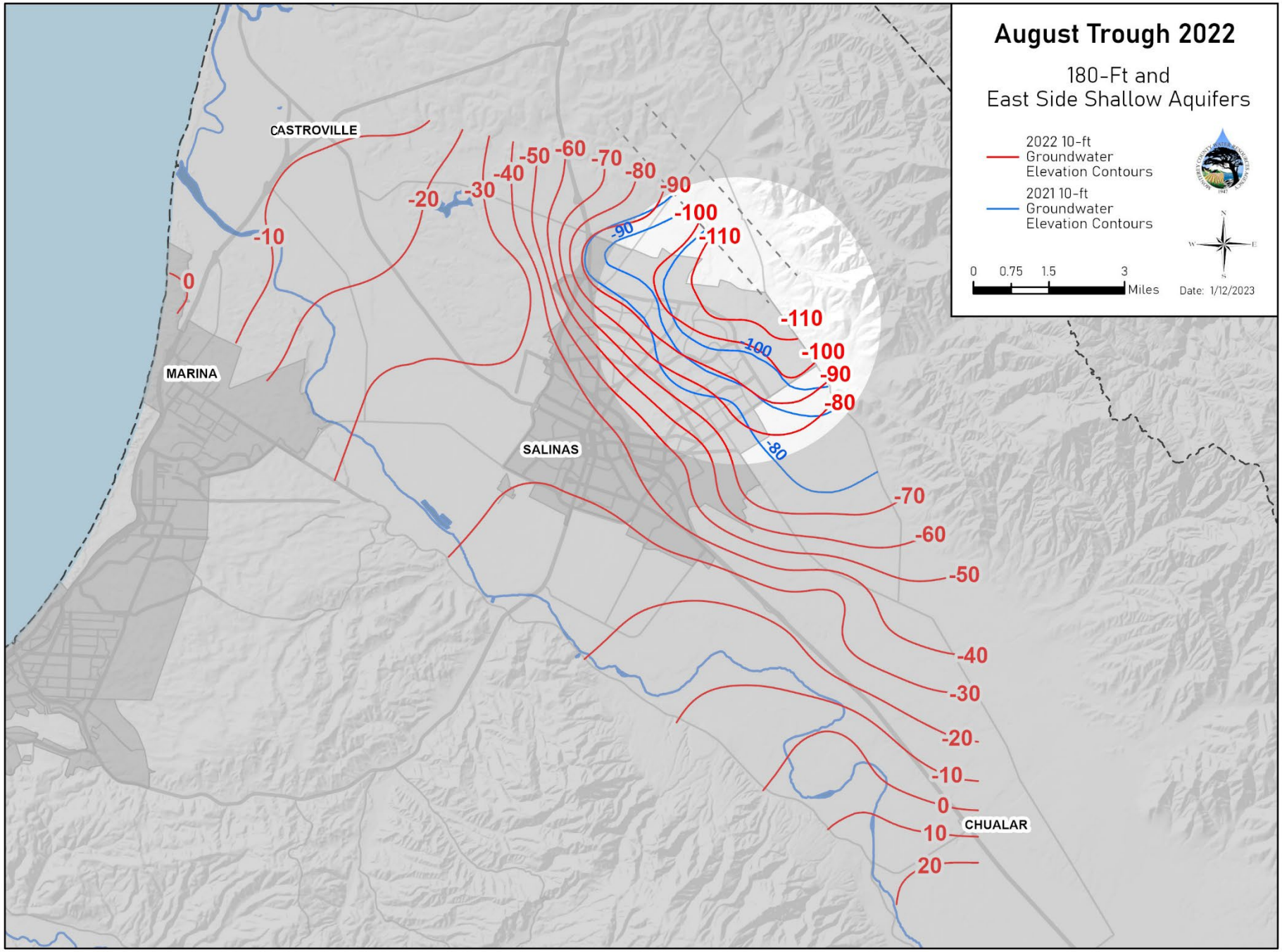


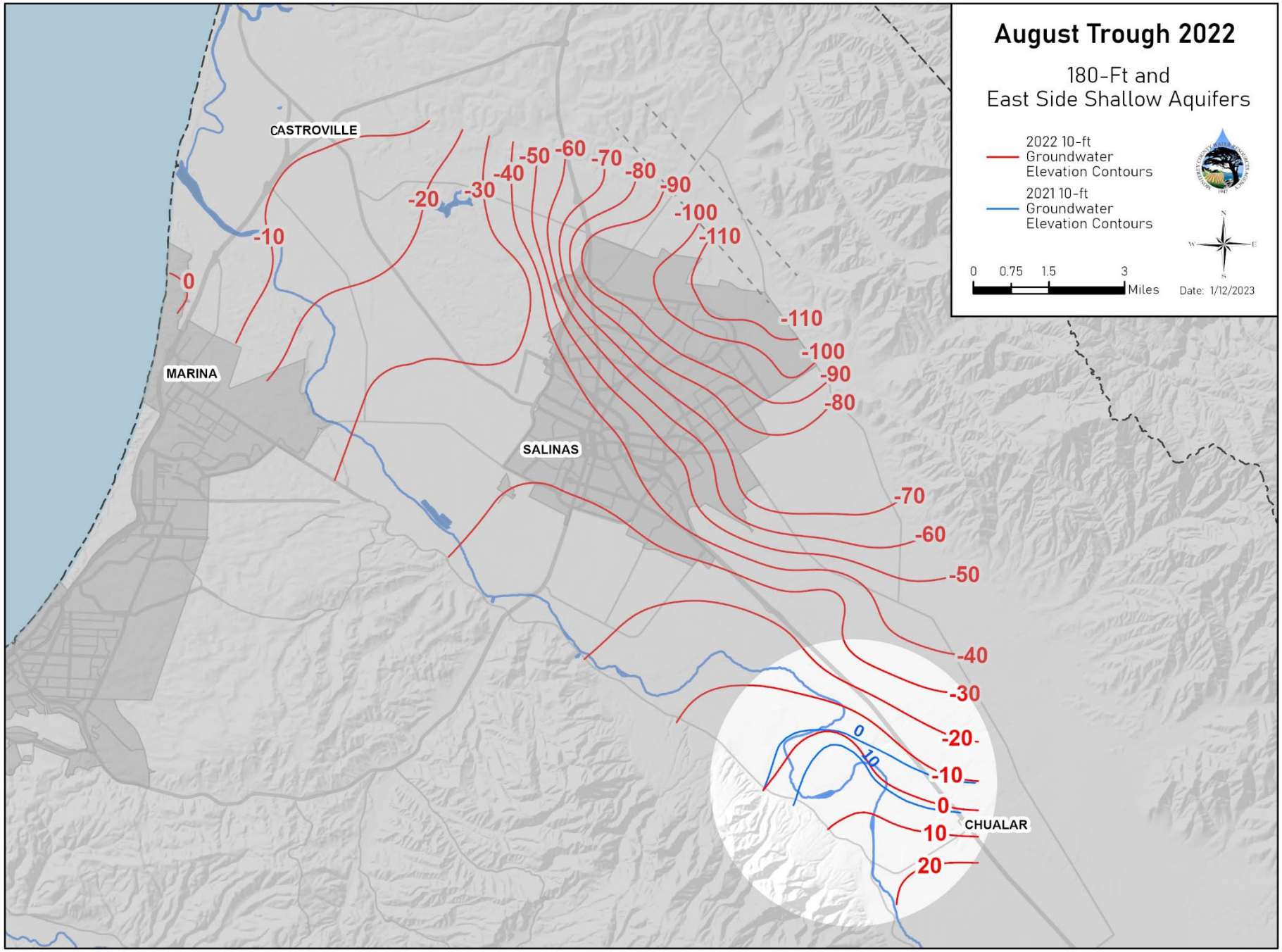
# August 2022
# Groundwater Level Contours

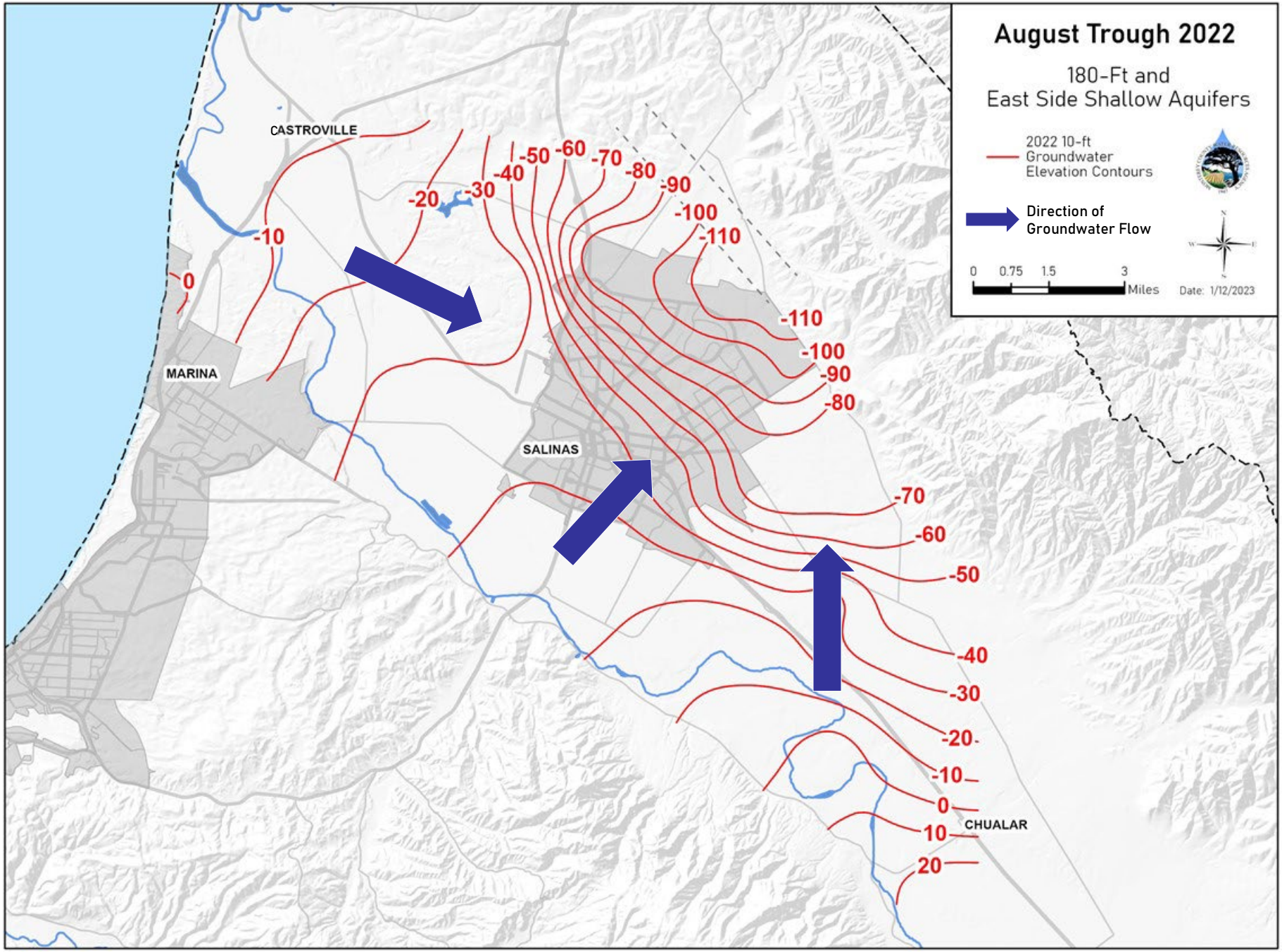

MCWRA Groundwater Data Collection Programs
August Trough
N
W
E
S
Miles
0 1½ 3 6
Monterey County Water Resources Agency
Date: 2/9/2021
August Trough Survey
Single Day in August
Coast to Chualar
Snapshot when aquifers most stressed from pumping

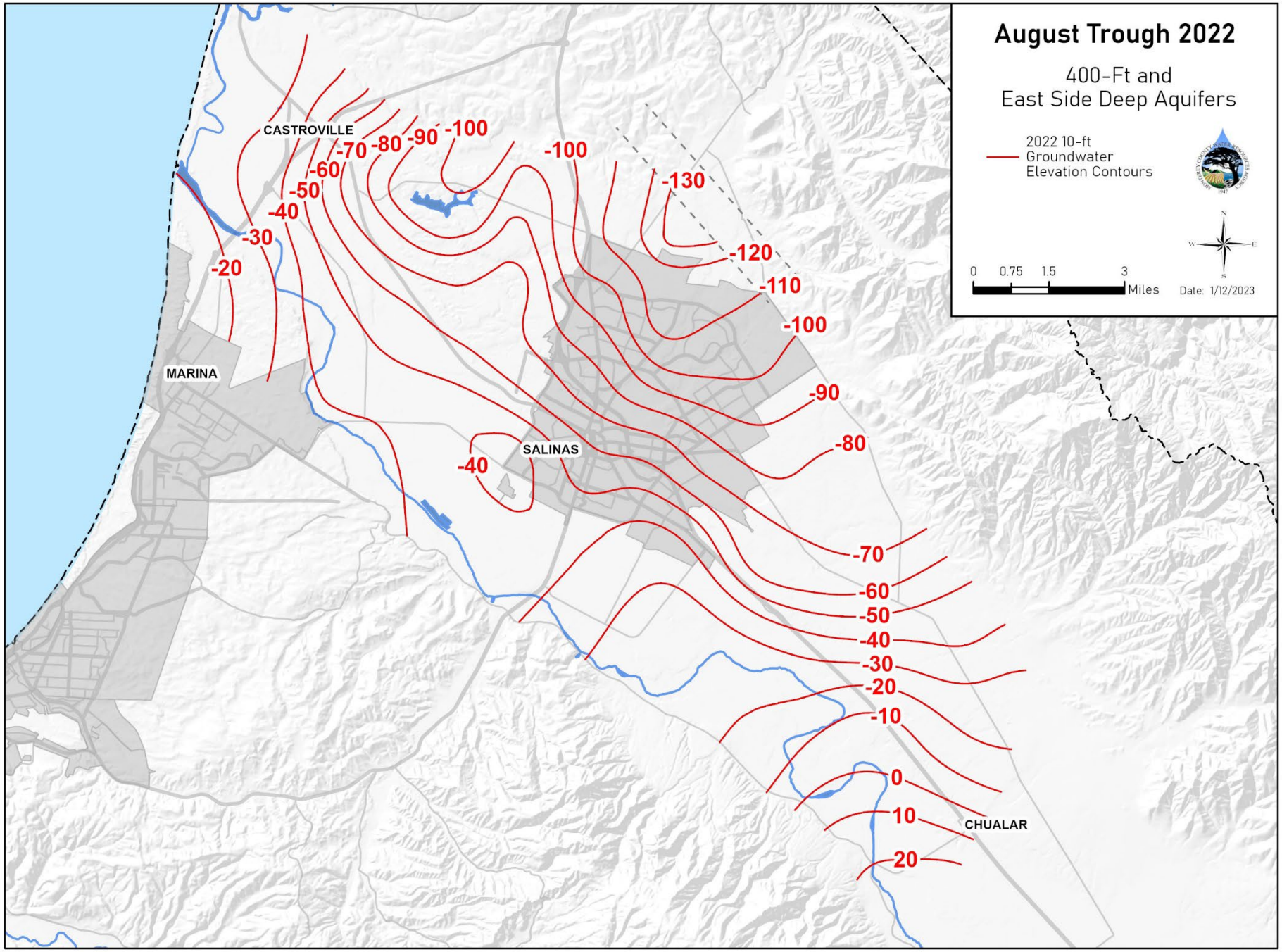

August Trough 2022
180-Ft and
East Side Shallow Aquifers
2022 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20

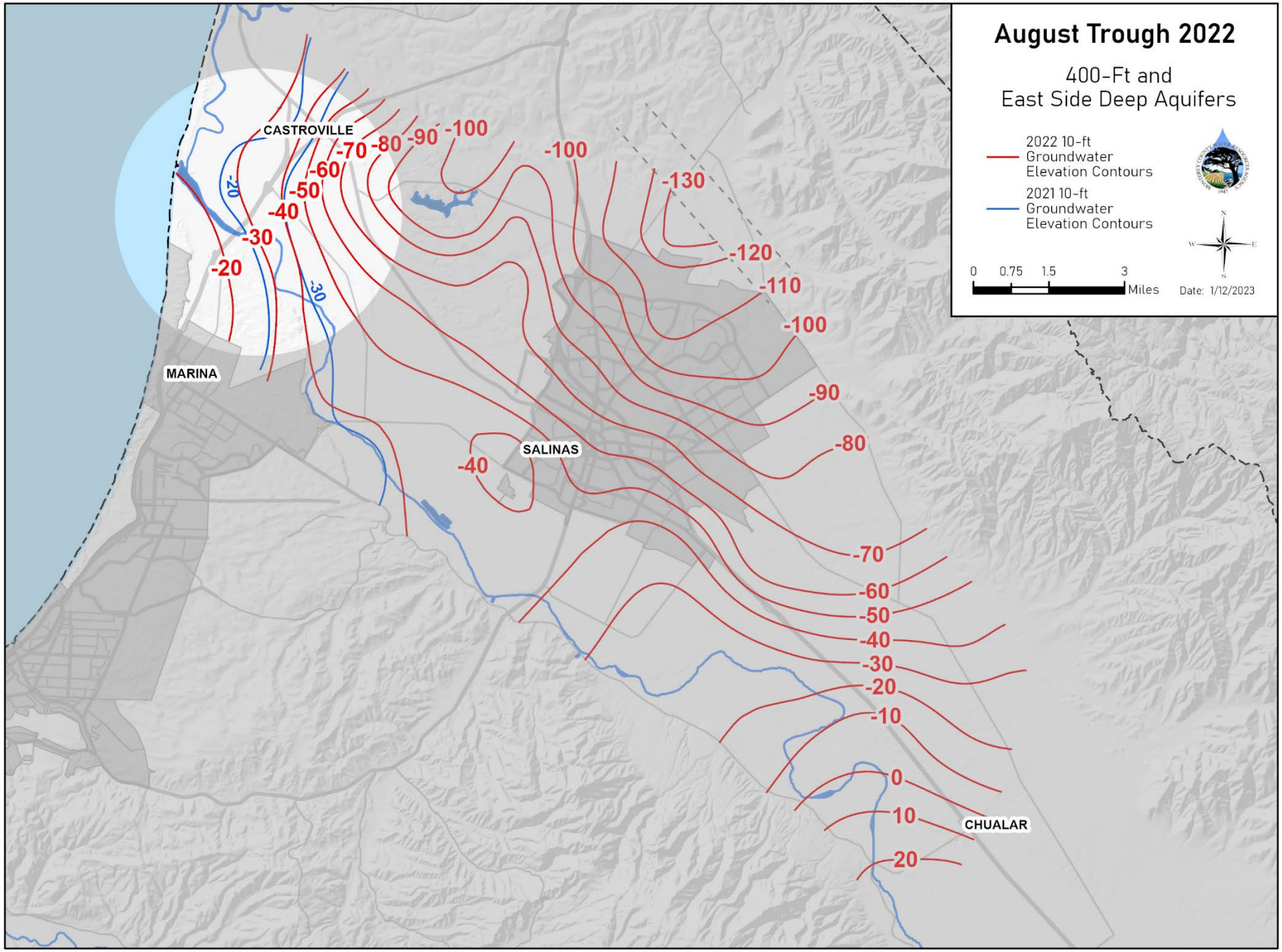

August Trough 2022
180-Ft and
East Side Shallow Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
10
20

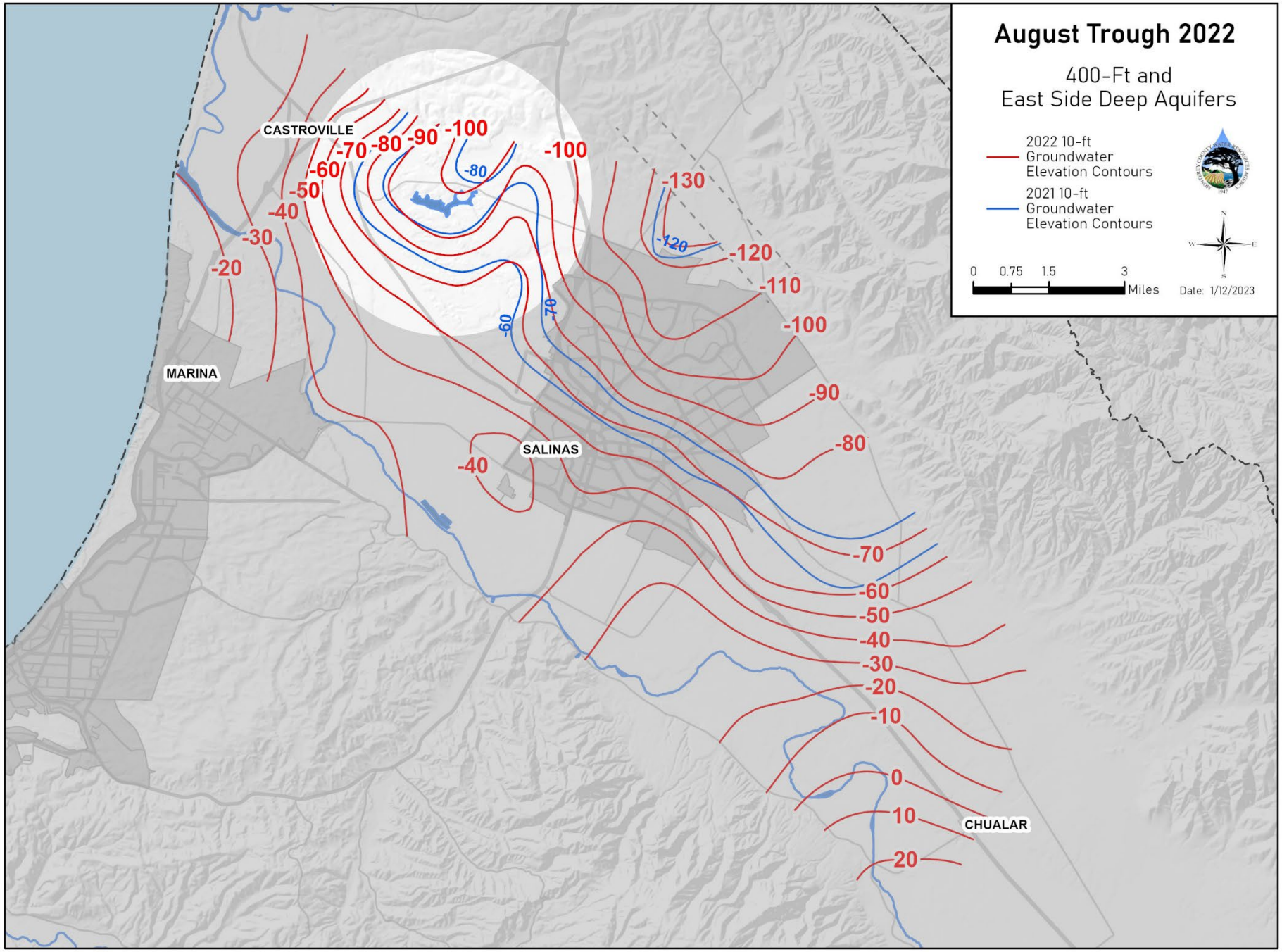

August Trough 2022
180-Ft and
East Side Shallow Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-90
-100
-110
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20

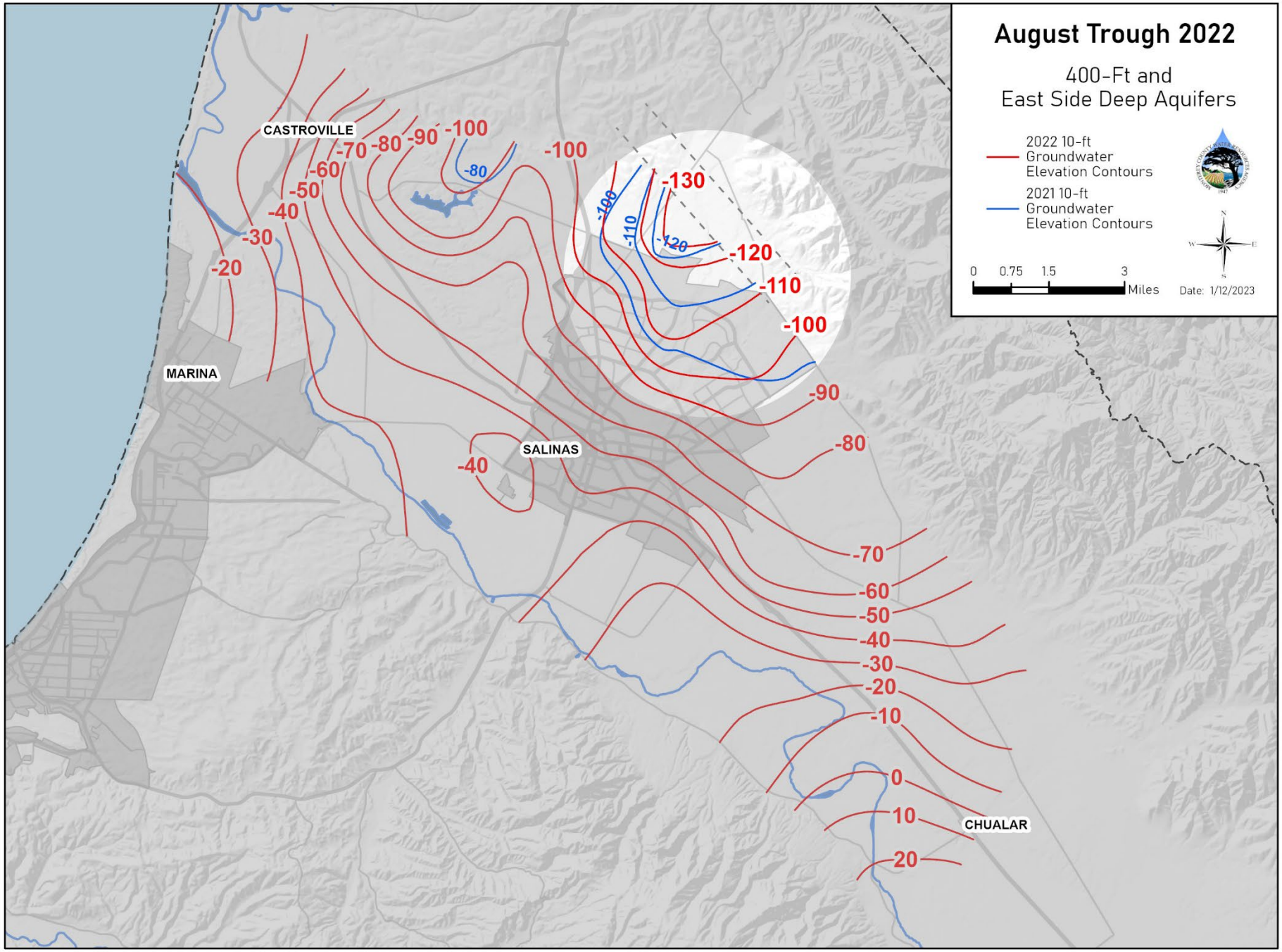

August Trough 2022
180-Ft and
East Side Shallow Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
0
10
20

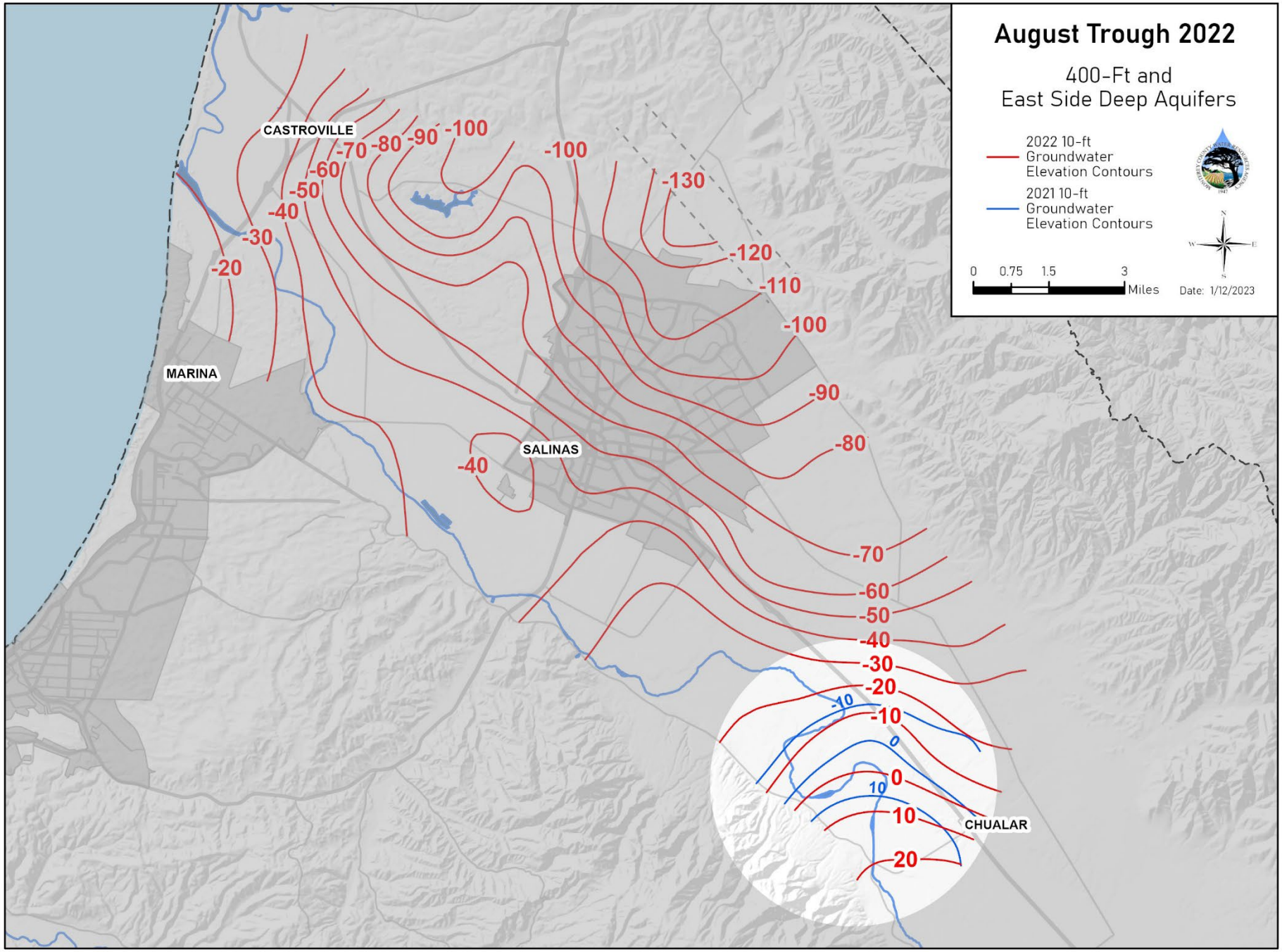

August Trough 2022
180-Ft and
East Side Shallow Aquifers
2022 10-ft
Groundwater
Elevation Contours
Direction of
Groundwater Flow
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20

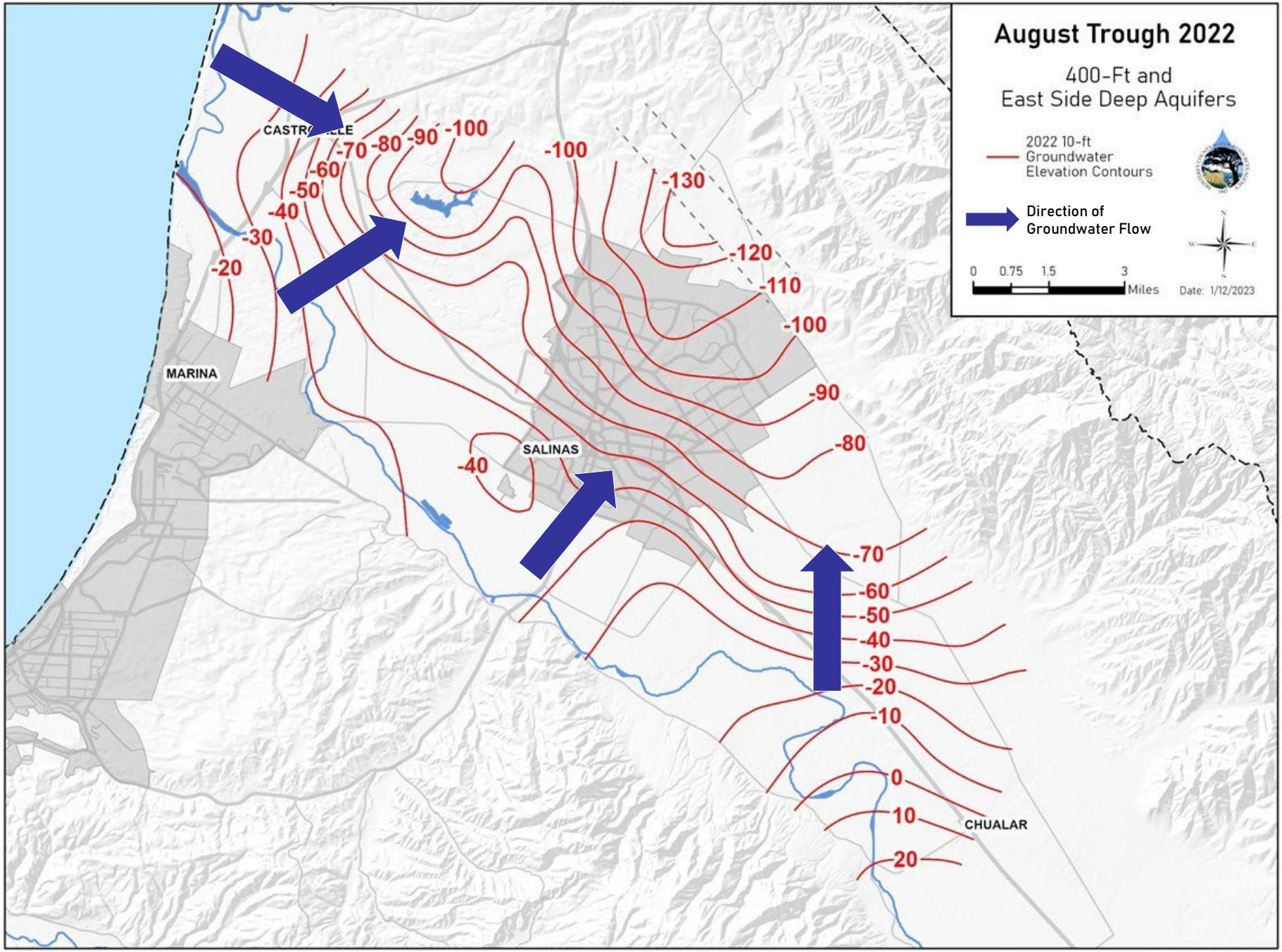

August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-100
-130
-120
-110
-100
-90
-80
-40
-70
-60
-50
-40
-30
-20
-10
0
10
20


August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-130
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30
-20
-10
0
10
20


August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-10
0
10
20


August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-80
-100
-130
-110
-120
-100
-90
-80
-40
-70
-60
-50
-40
-30
-20
-10
0
10
20


August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
2021 10-ft
Groundwater
Elevation Contours
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-40
-70
-60
-50
-40
-30
-20
-10
0
10
10
0
10
20


August Trough 2022
400-Ft and
East Side Deep Aquifers
2022 10-ft
Groundwater
Elevation Contours
Direction of
Groundwater Flow
0 0.75 1.5 3
Miles
Date: 1/12/2023
CASTROVILLE
MARINA
SALINAS
CHUALAR
-20
-30
-40
-50
-60
-70
-80
-90
-100
-100
-130
-120
-110
-100
-90
-80
-40
-70
-60
-50
-40
-30
-20
-10
0
10
20

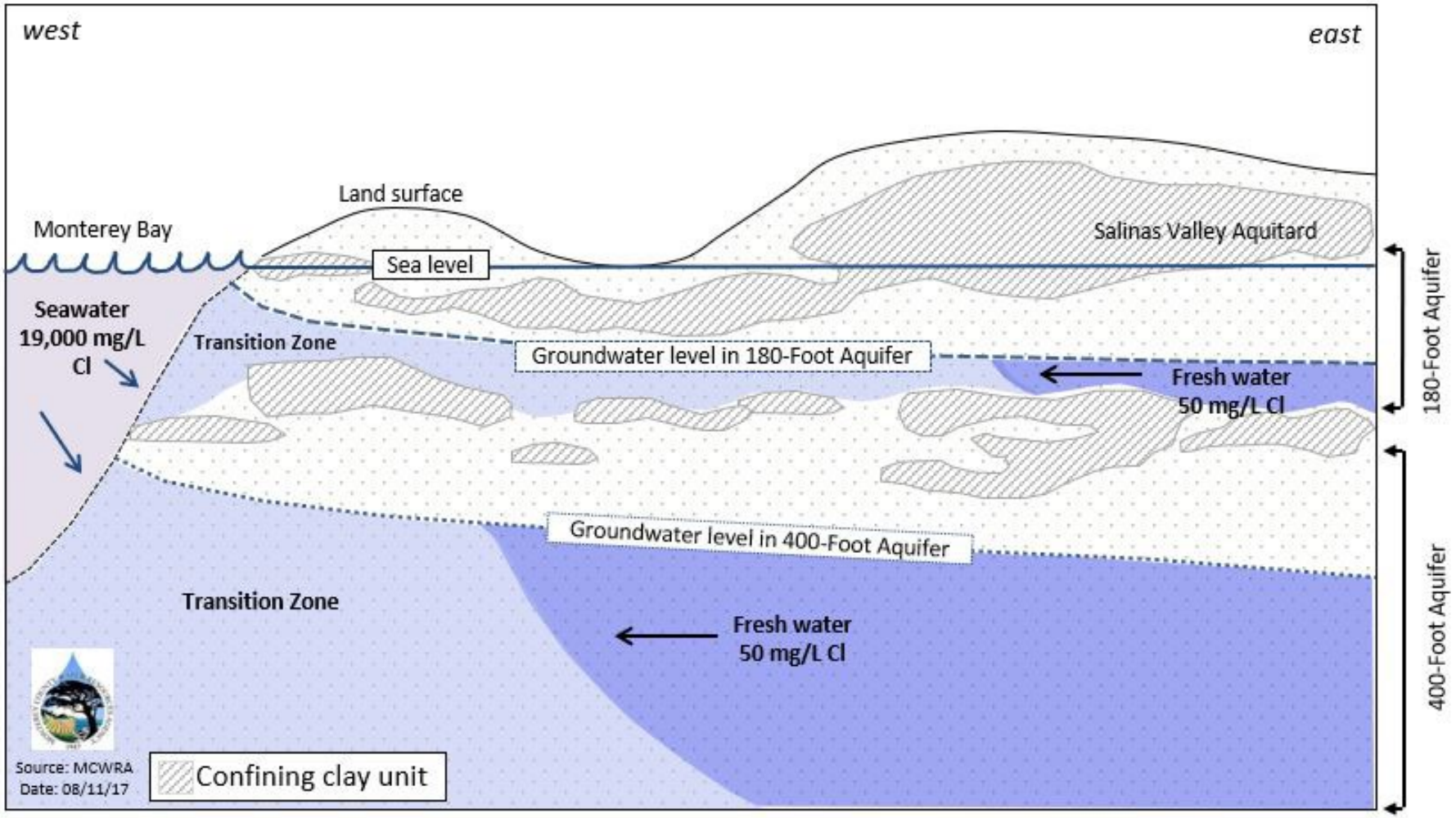
# August 2022 Summary: Changes Since 2021

- 180-Ft Aquifer, East Side Shallow
  - Decline near coast of 2-4’
  - Deepening of East Side trough, and area north of Salinas by 10’
  - Decline in levels up valley of 4-12’

- 400-Ft Aquifer, East Side Deep
  - Declines at coast, ranging from 3-6’ near river, -10 towards Castroville, and -25’ north of Espinosa Lake
  - Deeping of East Side trough by 10’
  - Decline in levels up valley of 5-12’

# 2022
# Seawater Intrusion Contours

# Seawater Intrusion – Transition Zone

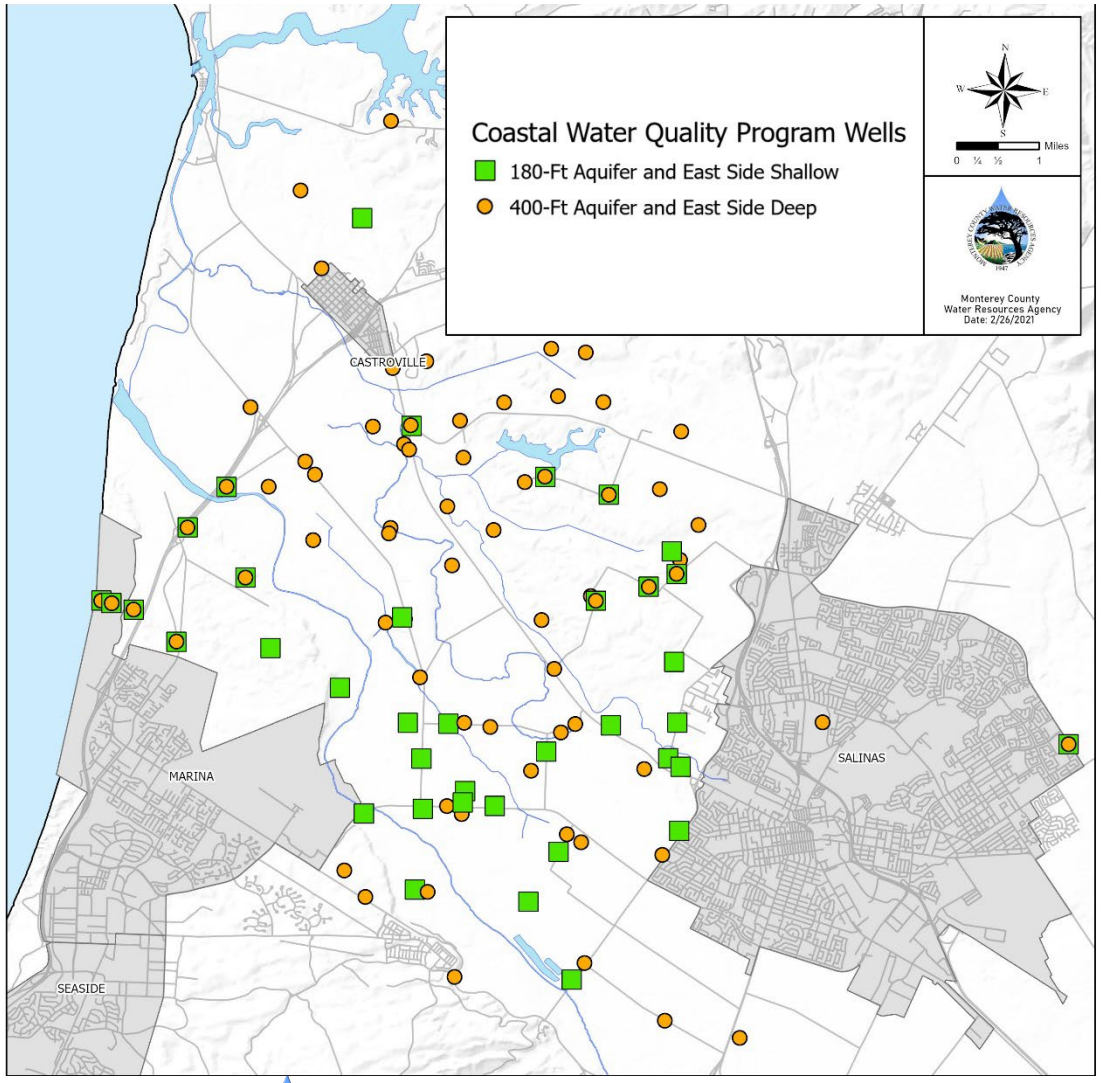


# Seawater Intrusion – Monitoring Program

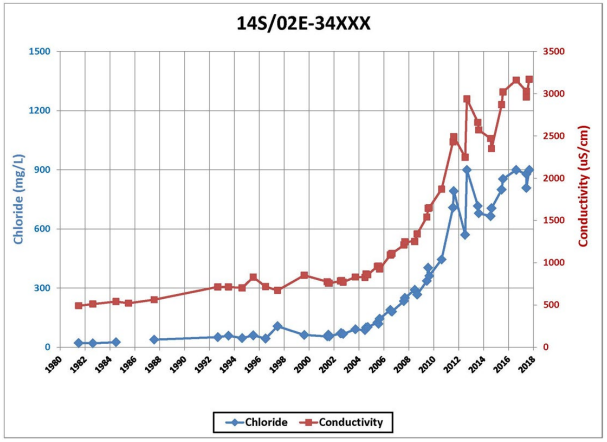
Groundwater Wells

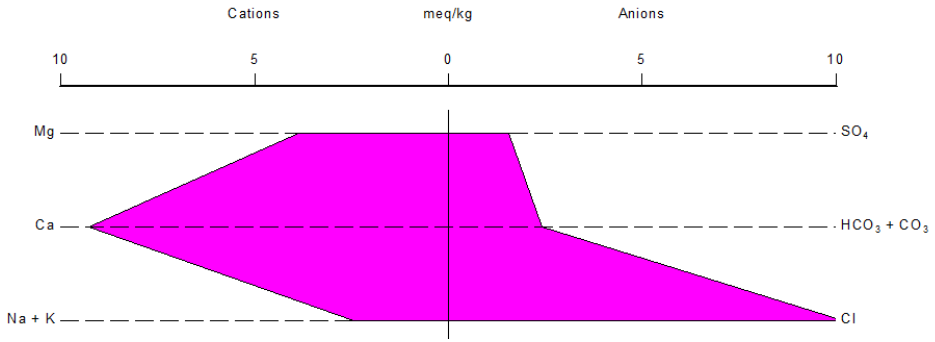
- Ag & Urban wells
- Dedicated monitoring wells
- Analyzed for Ag Waiver Panel

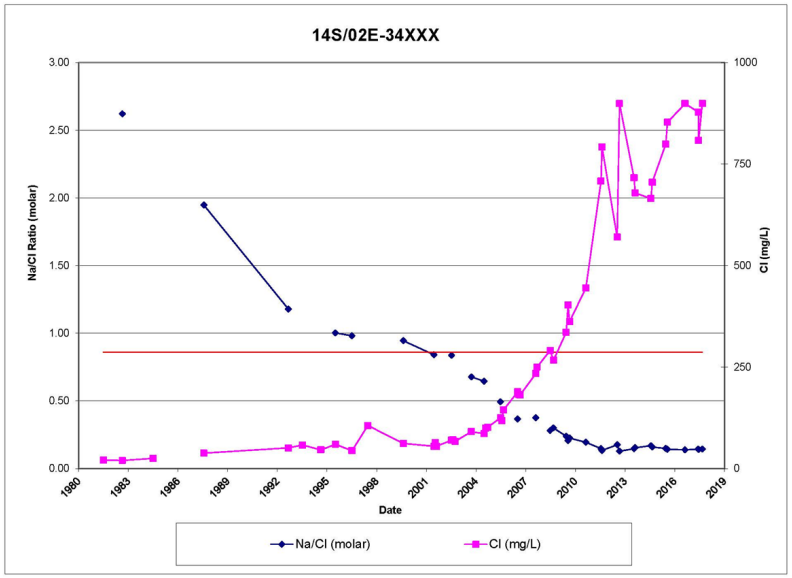
(ELAP #1395)

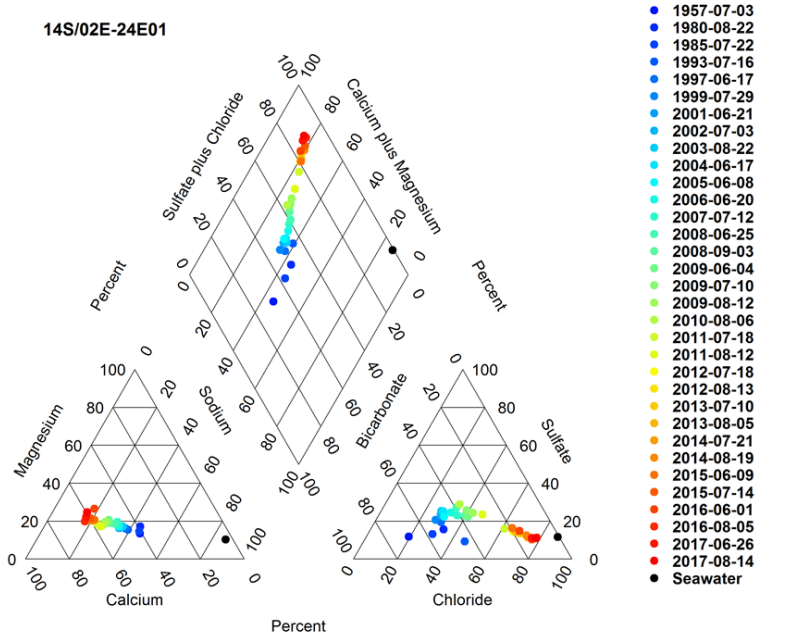


# Seawater Intrusion – Data Analysis

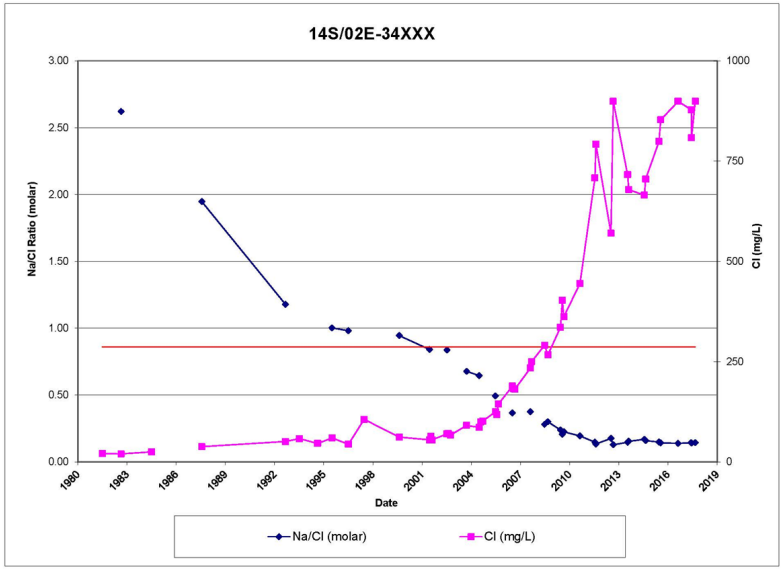


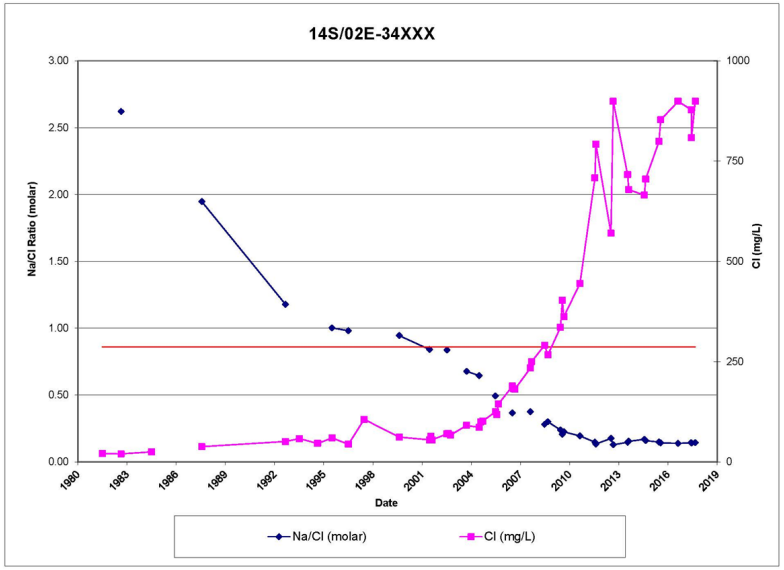



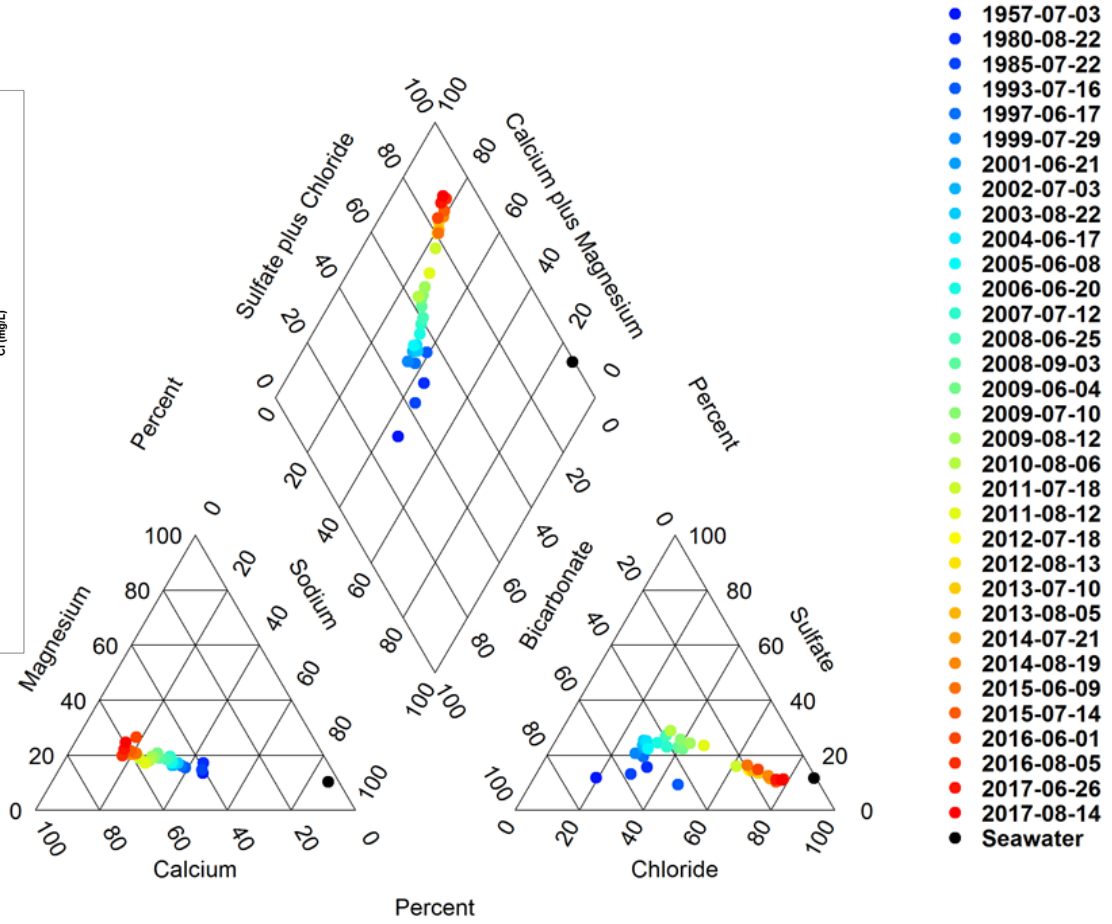



# Geochemical Tools – Example of SWI

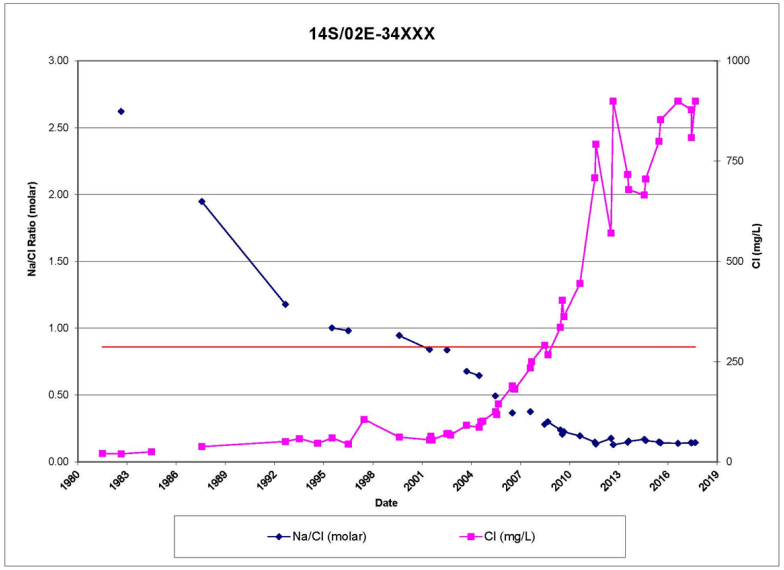


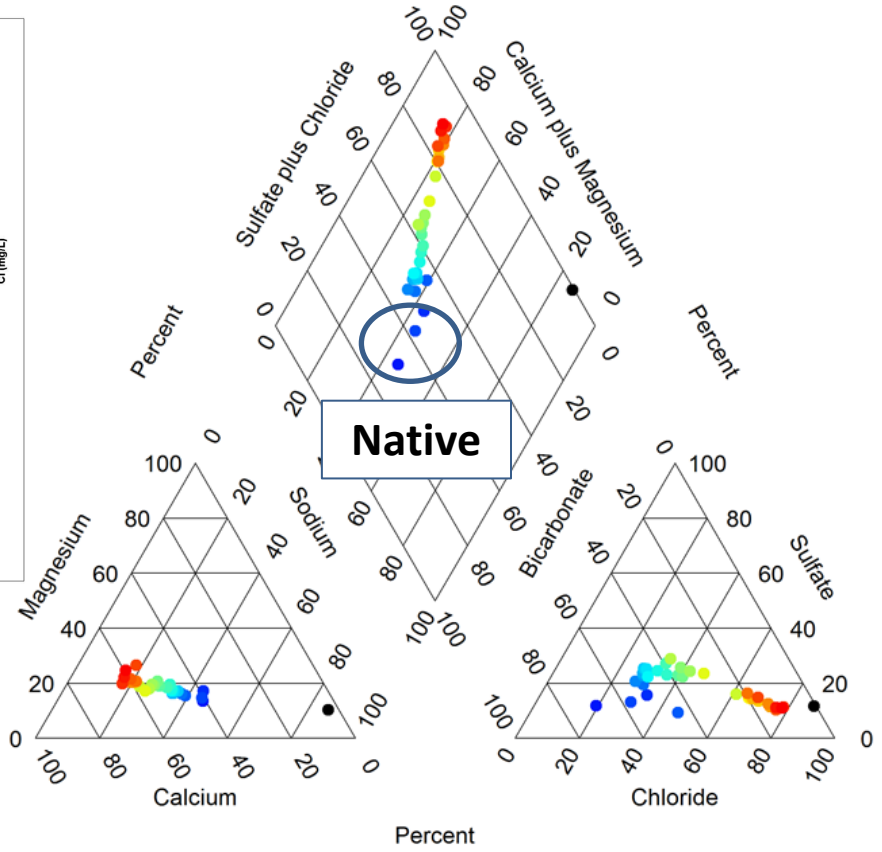
# Geochemical Tools – Example of SWI



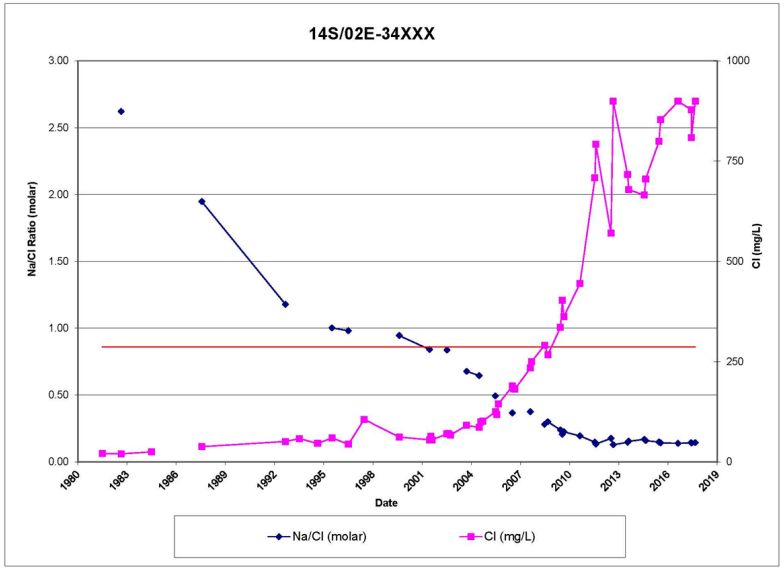



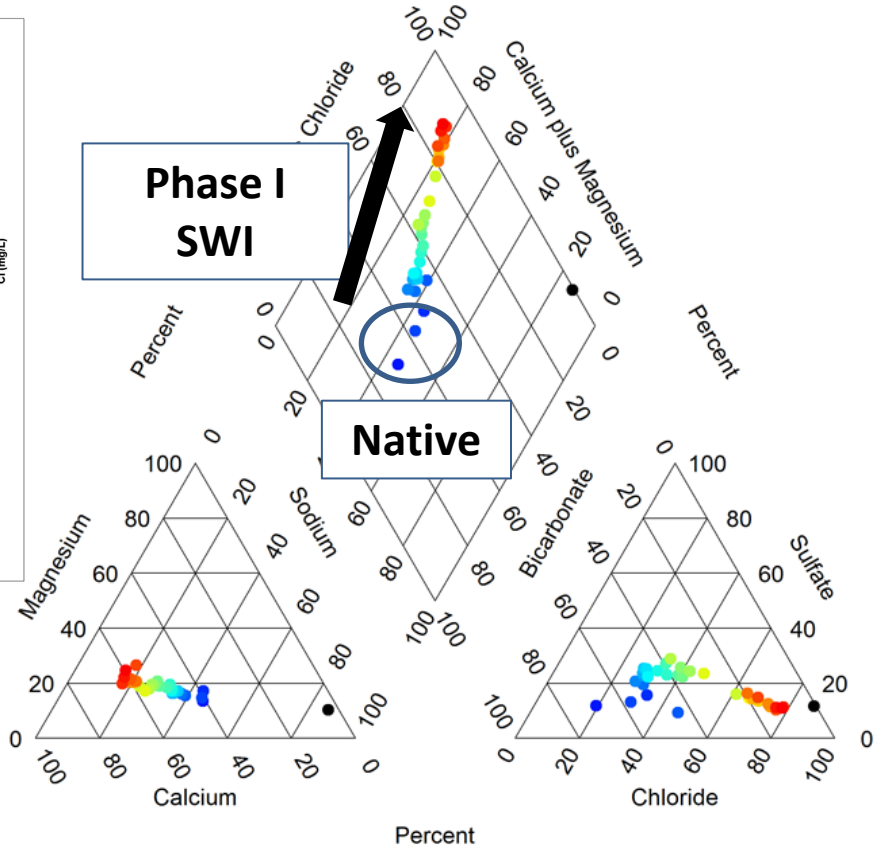
# Geochemical Tools – Example of SWI



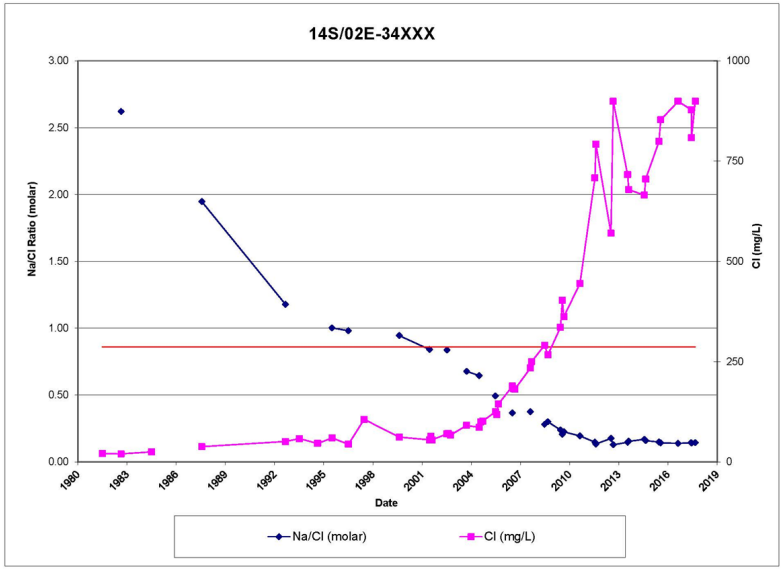
# Geochemical Tools – Example of SWI

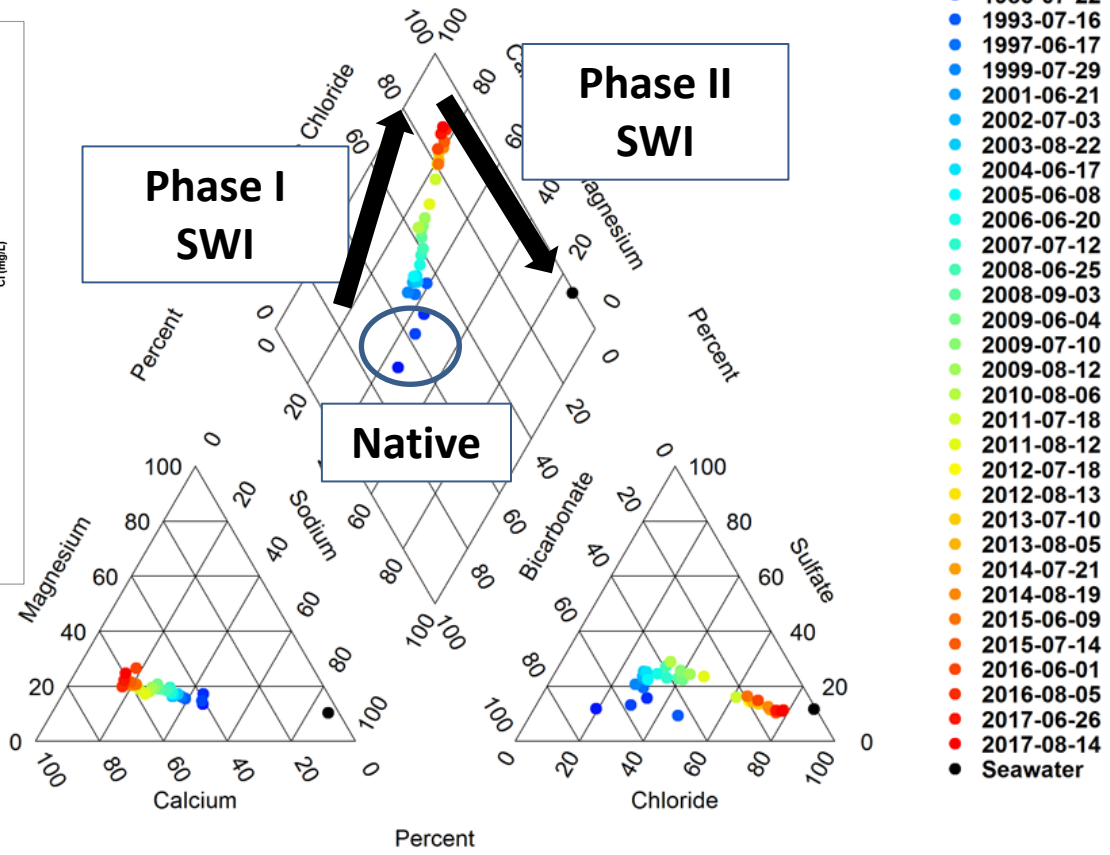



- 1957-07-03
- 1980-08-22
- 1985-07-22
- 1993-07-16
- 1997-06-17
- 1999-07-29
- 2001-06-21
- 2002-07-03
- 2003-08-22
- 2004-06-17
- 2005-06-08
- 2006-06-20
- 2007-07-12
- 2008-06-25
- 2008-09-03
- 2009-06-04
- 2009-07-10
- 2009-08-12
- 2010-08-06
- 2011-07-18
- 2011-08-12
- 2012-07-18
- 2012-08-13
- 2013-07-10
- 2013-08-05
- 2014-07-21
- 2014-08-19
- 2015-06-09
- 2015-07-14
- 2016-06-01
- 2016-08-05
- 2017-06-26
- 2017-08-14
- Seawater

# Geochemical Tools – Example of SWI

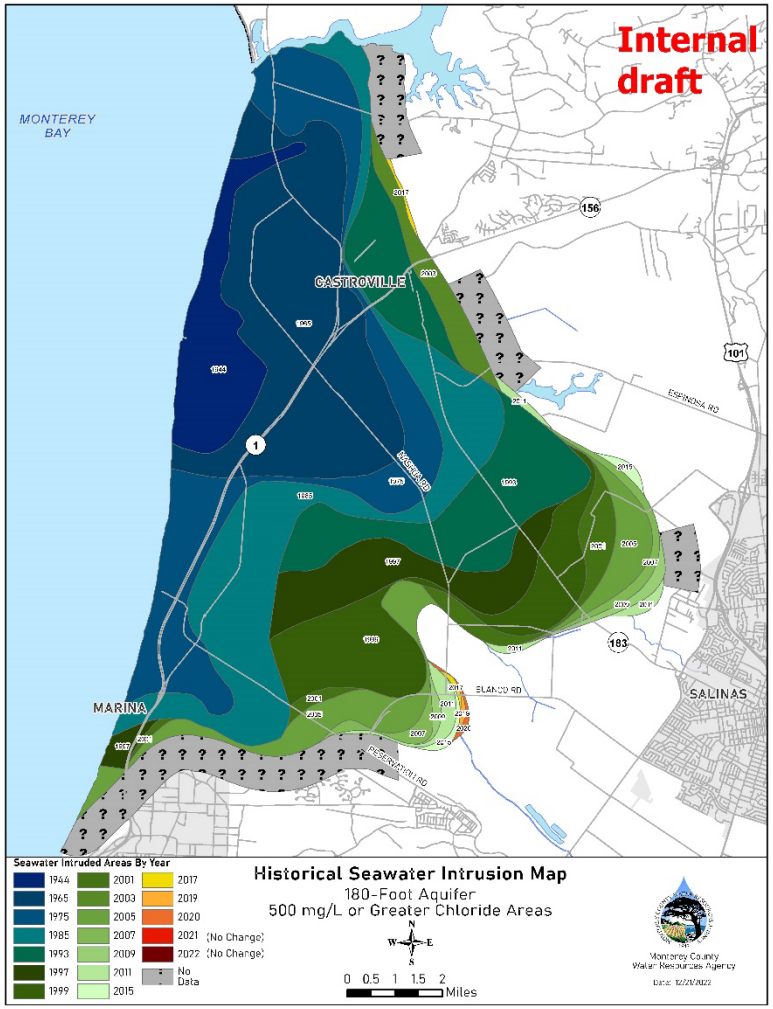


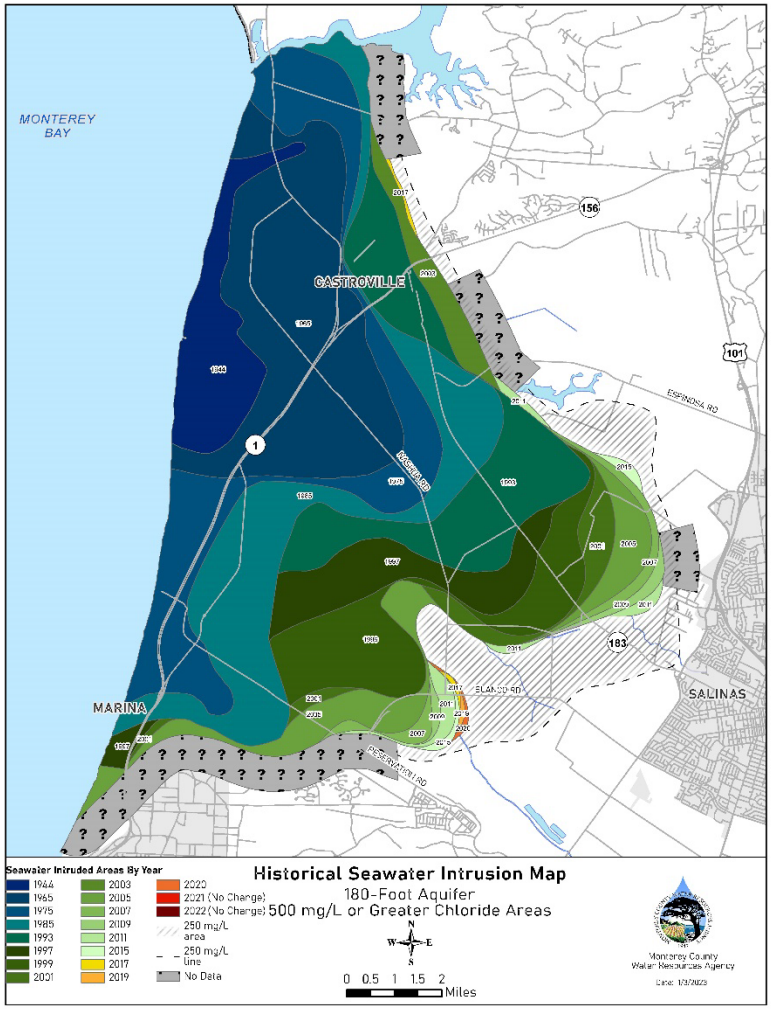
# Seawater Intrusion – Data Analysis

- Data Development Process
  - Water Quality
  - Well Construction
  - Well Pumping Data
  - Groundwater Level Contours

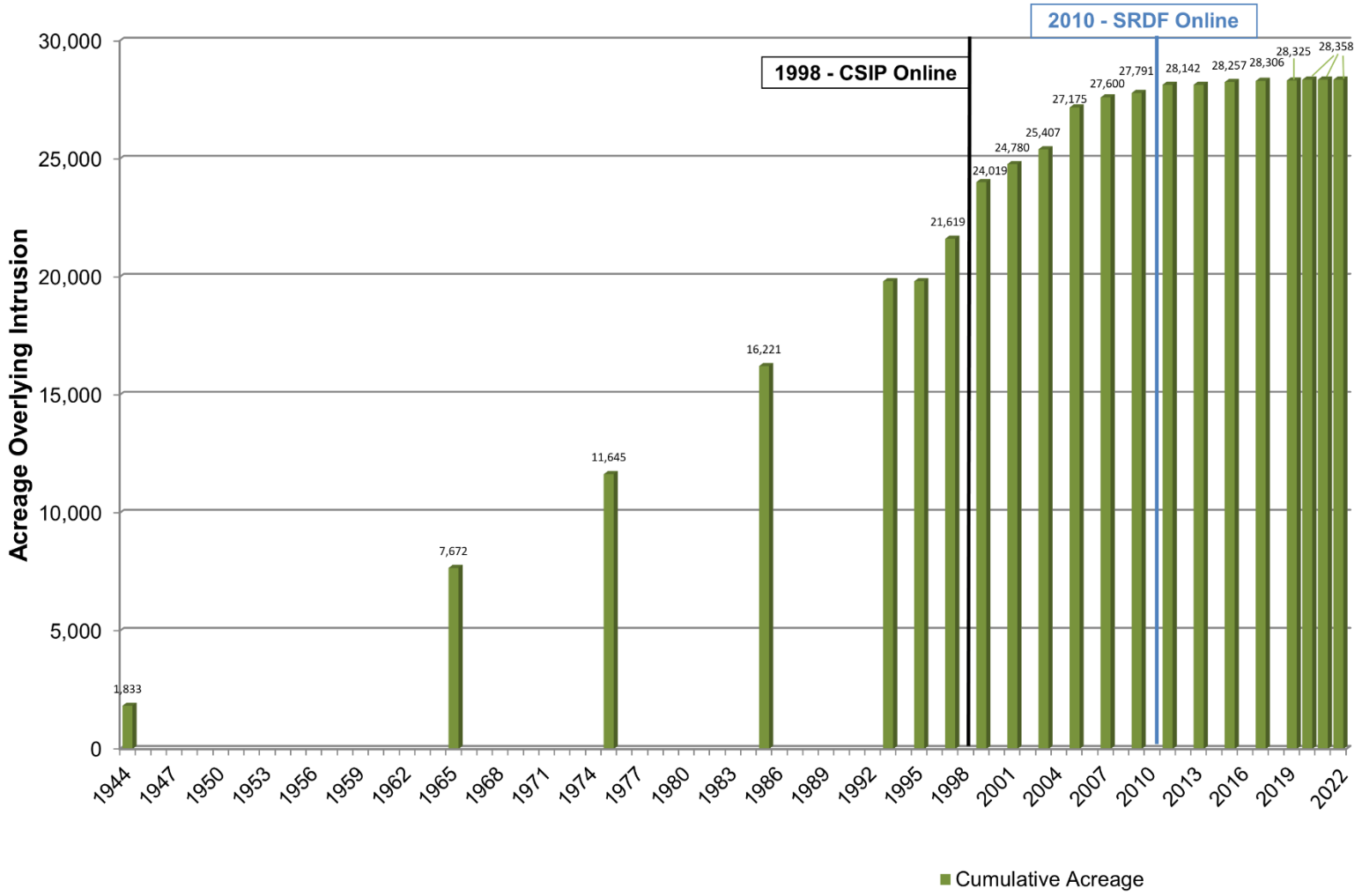
# 2022 180-Foot Aquifer 500 mg/L Chloride Areas



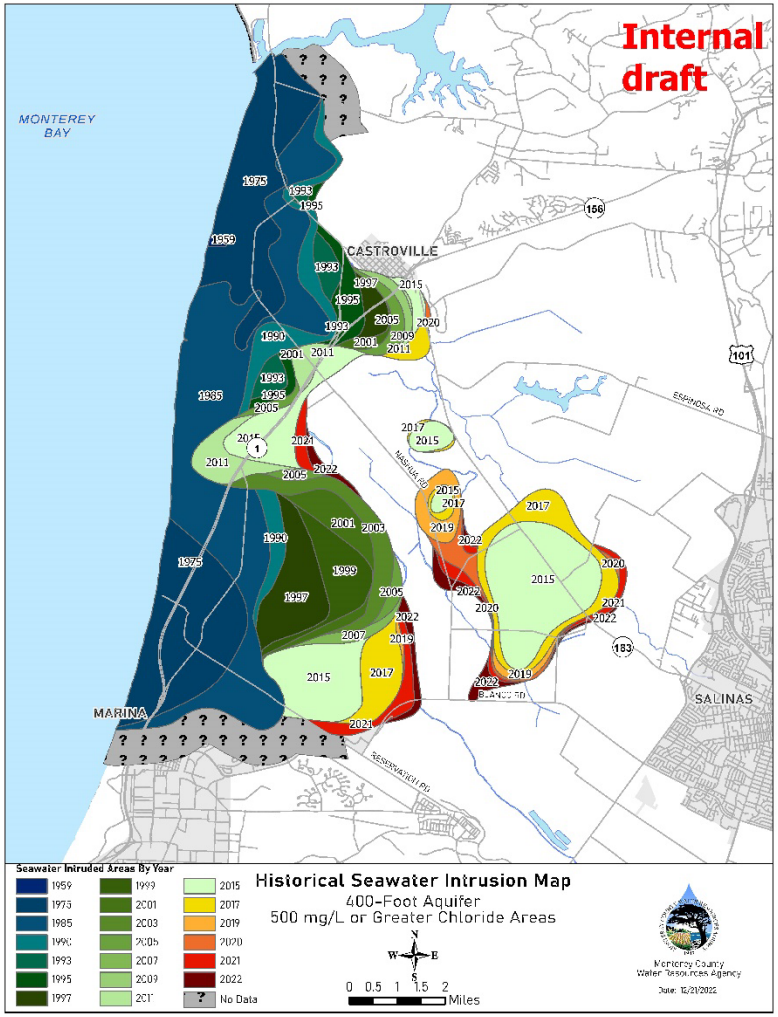
# 2022 180-Foot Aquifer
# 250 mg/L & 500 mg/L Chloride Areas



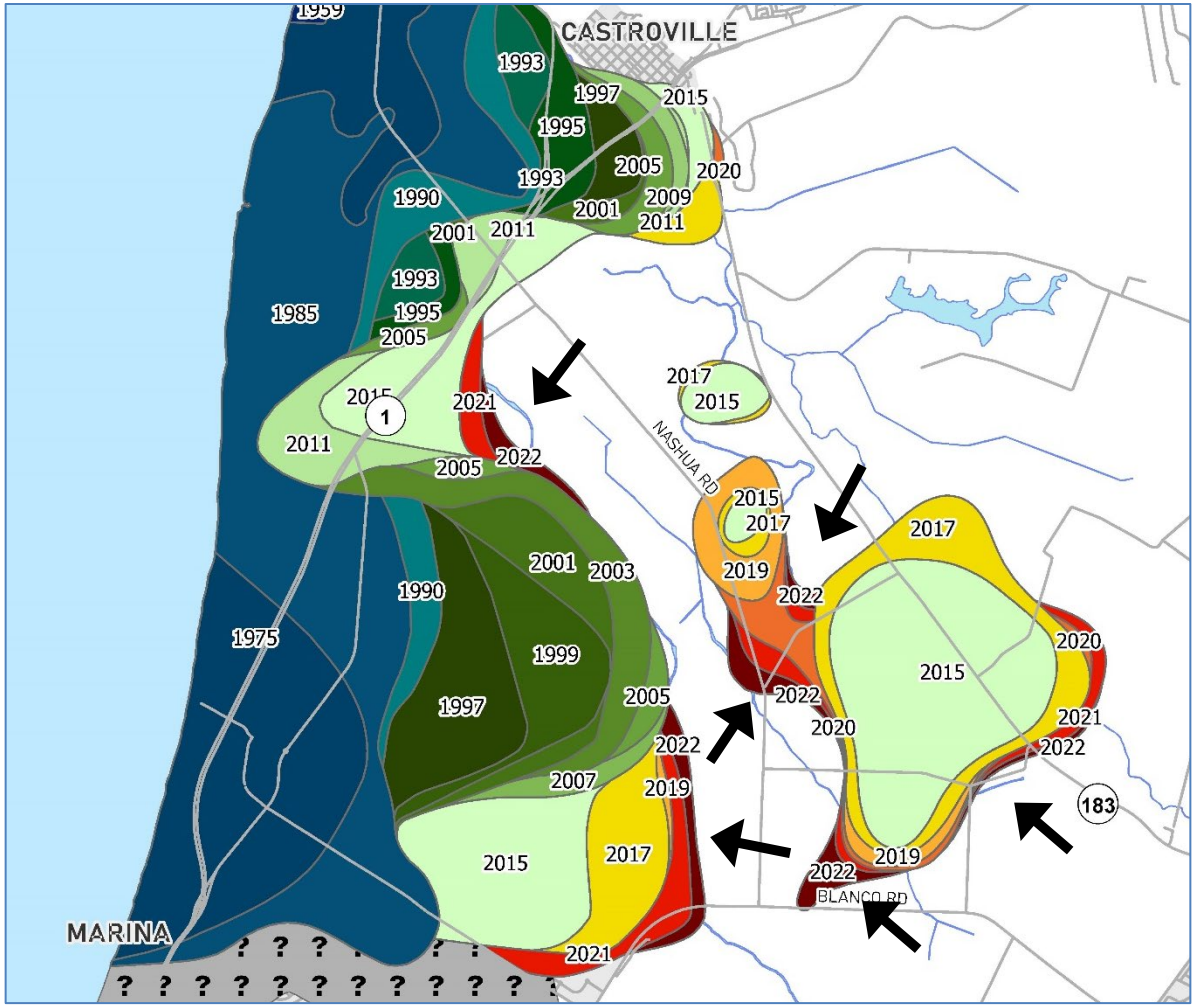
# Acreage Overlying the 500 mg/L Chloride Contour
# 180-Foot Aquifer



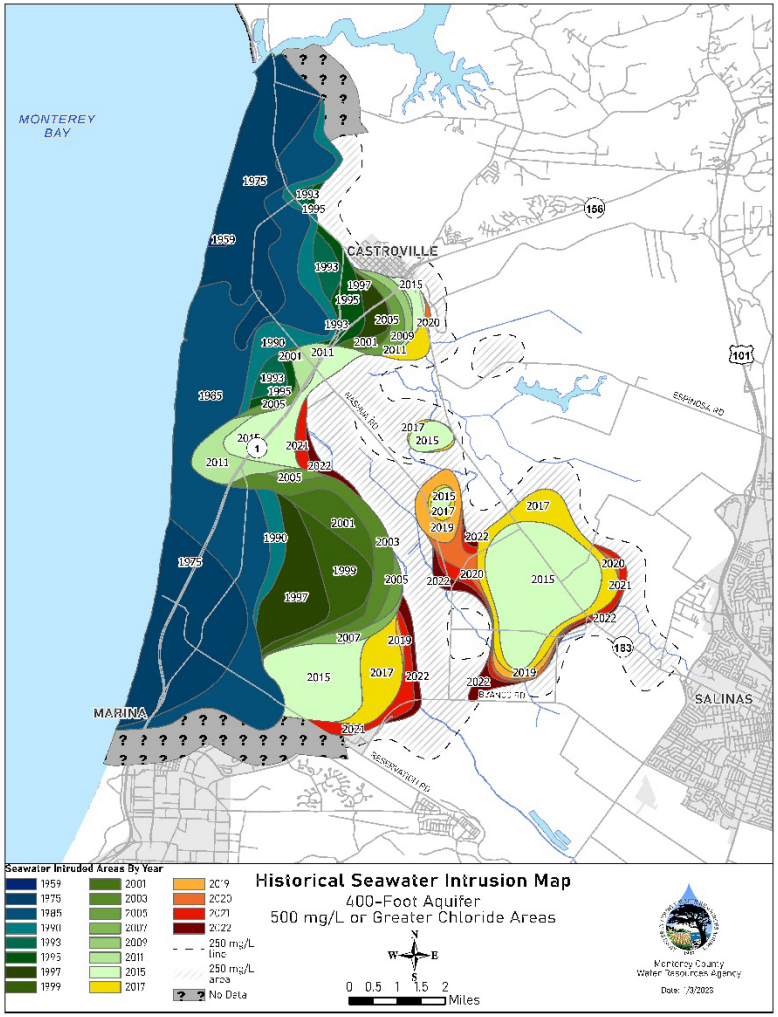
# 2022 400-Foot Aquifer 500 mg/L Chloride Areas



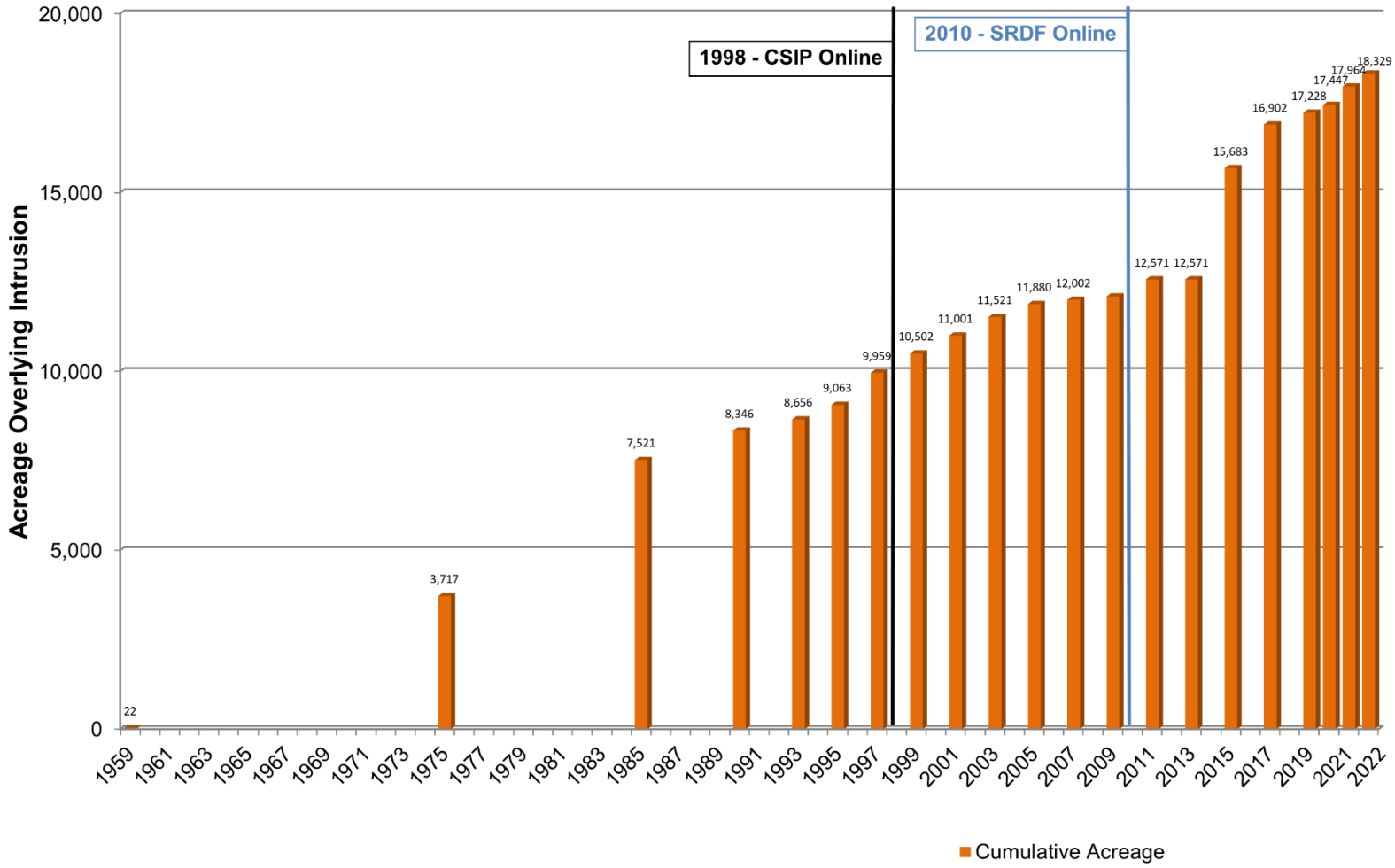
# 2022 400-Foot Aquifer
# 500 mg/L Chloride Areas



# 2022 400-Foot Aquifer
# 250 mg/L & 500 mg/L Chloride Areas



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



# Conclusion

## 180-Ft Aquifer Contours

- No Advancement from 2021 Contours

## 400-Ft Aquifer Contours

- Some Lateral Advancement – Middle and Southern Lobe
- Expansion of the Large Cl “Island” Continues
- Expansion at the “Arm” connecting Middle and Large Islands

# Conclusion

## Program Constraints

- Limitation of the Existing Monitoring Network
- Need for Additional Monitoring Techniques
- Need for More Data
- Lack of Data Behind the Front

# Today's Action

Consider receiving the
2022 August Trough
Groundwater Level and
Seawater Intrusion Contour Maps


MONTEREY COUNTY WATER RESOURCES AGENCY
1947