



SESSION 3

SUSTAINABLE MANAGEMENT CRITERIA  
AND  
MONITORING NETWORK

## Sustainable Management Criteria (SMC)

- Sustainability indicators



- Significant & Unreasonable – defined using the following:

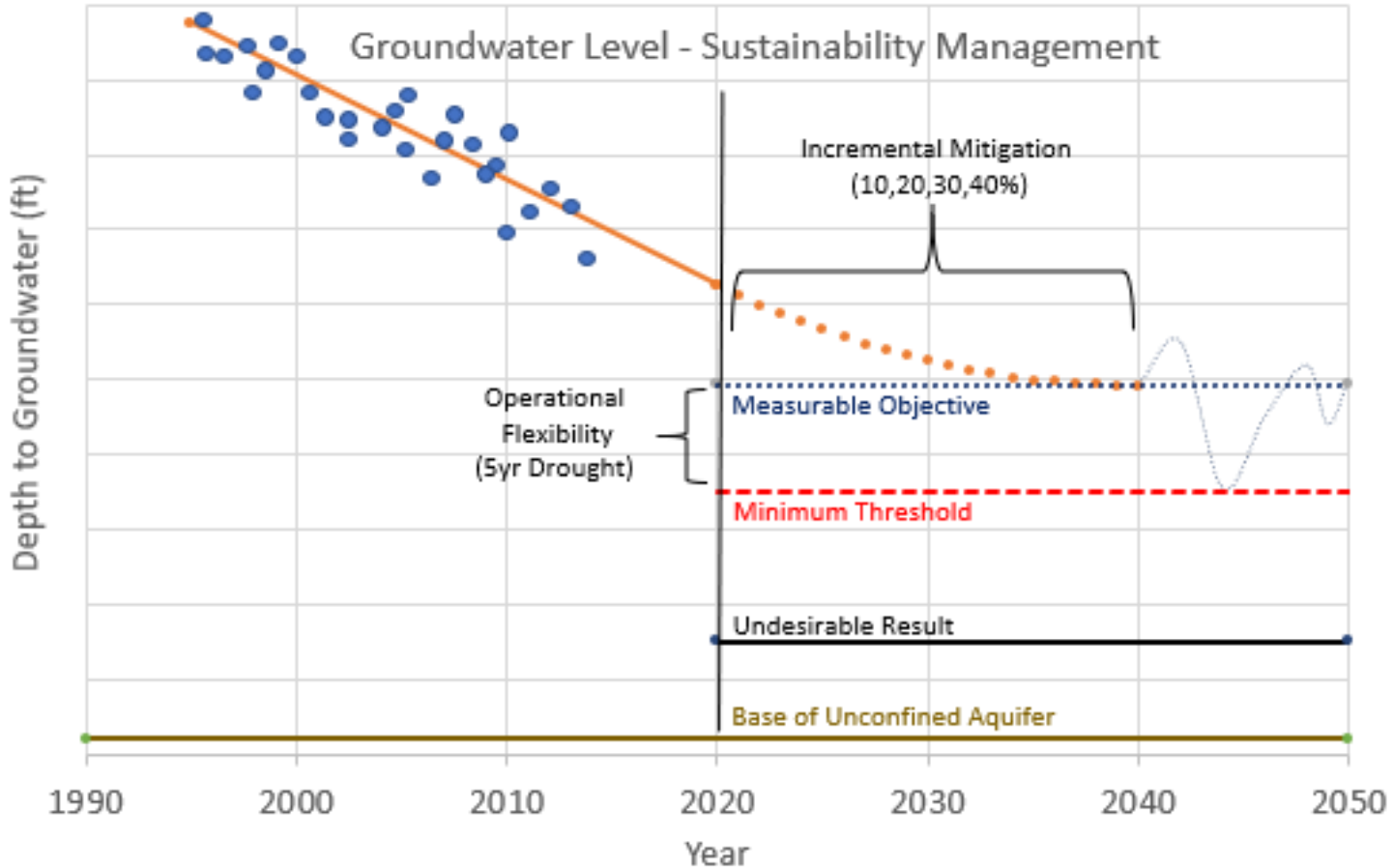
- Undesirable Results
- Minimum Thresholds
- Measurable Objectives
- Sustainability Goal

Must be agreed to, and  
be consistent in the  
GSPs of all GSAs  
within the subbasin

## Water Level SMC

- The GSAs within the Kings Subbasin have defined the Undesirable Result for groundwater levels to be significant and unreasonable when either:
  - the water level has declined to a depth that a new productive well cannot be constructed, or
  - the water level has declined to a depth that water quality cannot be treated for beneficial use.
- NFKGSA defined undesirable results when one of the indicator wells in the monitoring network has dropped below the Minimum Threshold.

# Water Level SMC





Well ID	Interim Milestones (Elevation in feet)				Measurable Objective	Minimum Threshold
	2020	2025	2030	2035	2040	2040
364002N1197624W001	63.1	42.2	24.90	13.7	9.8	-56.8
364591N1200135W001	-44.4	-61.3	-75.2	-84.5	-87.4	-141.1
364603N1197510W001	57.8	40.6	26.5	17.0	14.0	-55.3
364667N1197041W001	119.6	108.3	98.9	92.7	90.7	40.2
364668N1198257W001	19.1	2.1	-12.0	-21.4	-24.4	-78.6
364682N1198732W001	-3.3	-21.5	-36.6	-46.7	-49.8	-108.0
364739N1196227W001	158.5	147.1	137.7	131.4	129.4	81.2
364813N1198968W001	-10.9	-25.7	-38.0	-46.1	-48.7	-96.0
364816N1197785W001	72.6	51.5	34.1	22.5	18.8	-48.4
364893N1200127W001	-52.2	-71.0	-86.6	-96.9	-100.2	-160.2
364916N1198366W001	11.9	-5.4	-19.7	-29.2	-32.2	-87.3
364960N1197554W001	92.0	76.3	63.3	54.6	51.9	1.9
364967N1197193W001	115.6	102.3	91.2	83.8	81.5	38.9
365143N1198529W001	32.4	16.4	3.1	-5.7	-8.5	-59.7
365150N1197327W001	116.4	102.8	91.5	84.0	81.6	38.3
B06	-4.2	-14.3	-22.6	-28.1	-29.8	-61.8
B22	-11.2	-17.4	-22.5	-25.9	-26.9	-49.6
B31	3.5	-8.6	-19.1	-27.0	-30.9	-67.8
CID51	89.5	71.7	57.0	47.2	44.2	-12.5
LID14	58.6	40.2	22.4	14.8	11.6	-47.2
LID25	-20.7	-42.4	-60.4	-72.3	-76.1	-145.3
LID26	0.1	-14.4	-26.4	-34.4	-36.9	-83.2



## Storage Change SMC

- Estimated storage change for the Kings Subbasin -1.8 MAF, or avg. -122,000 AF/yr
- An Undesirable Result would occur if the total amount of water in storage was less than the estimated amount of groundwater in storage below the Minimum Thresholds established by the Water Level SMC.



## Water Quality SMC

- The determination of Undesirable Results will be based on the aggregated effect of:
  - 1) the degradation of water quality in excess of MCLs (i.e. California potable water standards) where concentrations of chemicals of concern were historically below MCLs; and
  - 2) a statistically significant increase in groundwater degradation where concentrations of chemicals of concern were historically above MCLs.
- The occurrence of an Undesirable Result will be defined as 15% of representative monitoring wells having reached either of these two criteria for two consecutive years at the same wells.









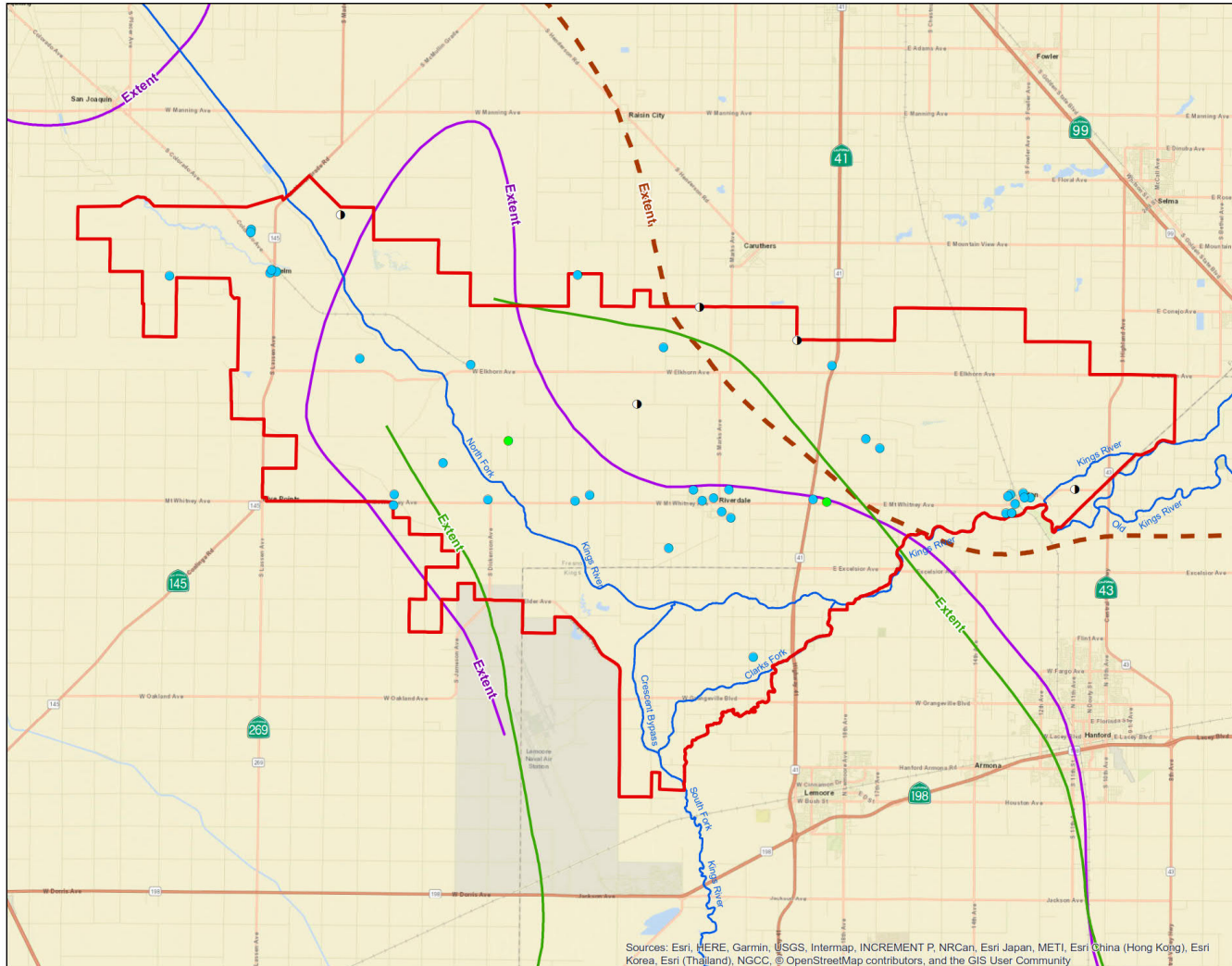
## Water Quality SMC

Chemical of Concern	California Primary MCL	California Secondary MCL	Lifetime Health Advisory Level
<b>Arsenic</b>	10 µg/L	-	-
<b>Chromium (Total)</b>	50 µg/L	-	-
<b>Fluoride</b>	2,000 µg/L	-	-
<b>Gross Alpha</b>	15 pCi/L	-	-
<b>Lead *</b>	15 µg/L	-	-
<b>Nitrate</b>	10 mg/L (as N)	-	-
<b>1,2,3-Trichloropropane</b>	0.005 µg/L	-	-
<b>Uranium</b>	20 pCi/L	-	-
<b>Aluminum</b>	1,000 µg/L	200 µg/L	-
<b>Iron</b>	-	300 µg/L	-
<b>Manganese</b>	-	50 µg/L	-
<b>Total Dissolved Solids</b>	-	500 mg/L to 1,000 mg/L	-

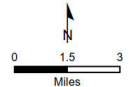
# DRAFT

### Legend

-  North Fork Kings GSA
-  A-Clay Extent (1999-H)
-  C-Clay Extent (1999-H)
-  E-Clay Eastern Extent (Page and LeBlanc 1969, modified by KDSA)
-  Waterways
- Well (Water Quality Monitoring Network)**
  -  Dedicated Monitoring
  -  Irrigation
  -  Public Supply



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

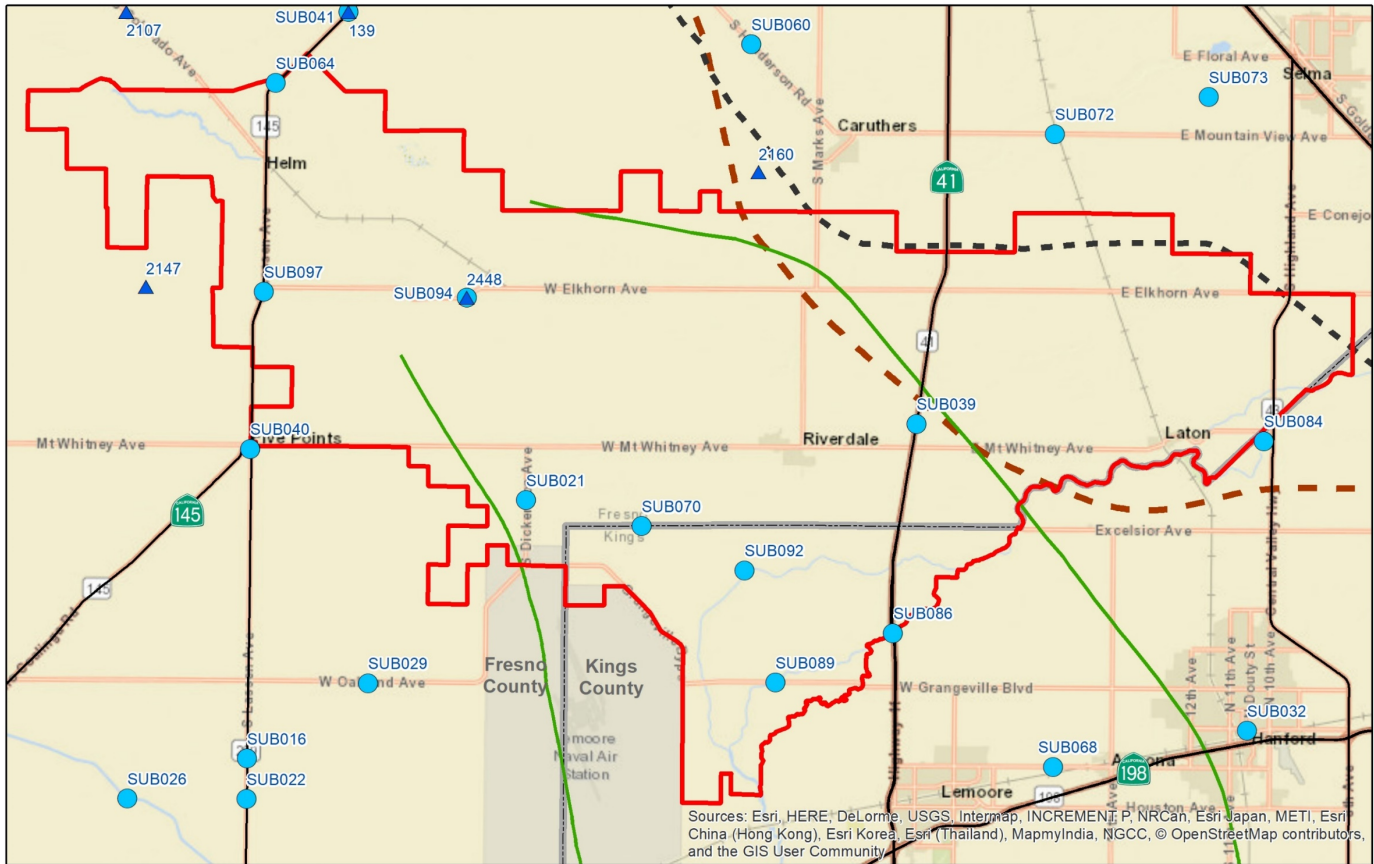


## Land Subsidence SMC

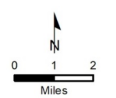
- An Undesirable Result would be the significant and unreasonable loss of functionality of levees, canals, structures, and other critical infrastructure such as bridges, roads or highways, wells, and pumps within the Kings Subbasin due to land subsidence.
- NFKGSA is not currently experiencing any known significant issues due to land subsidence along the major highways or levee infrastructure.
- The exceedance of the Minimum Threshold at just one monitoring site is significant.

Sustainability Indicator	Interim Milestones (Inches)				Measurable Objective	Minimum Threshold
	2020	2025	2030	2035	2040	2040
Annual Subsidence Rate	N/A	N/A	N/A	N/A	-10	-20
Cumulative Subsidence	0	-20	-40	-60	-80	-160





Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community



**Legend**

- ▭ North Fork Kings GSA
- County
- ▲ SJRRP Subsidence Monitoring Point
- KRCD Subsidence Monitoring Point
- C-Clay Extent (1999-H)
- Corcoran Clay Extent From CVHM
- E-Clay Eastern Extent (Page and LeBlanc1969, modified by KDSA)

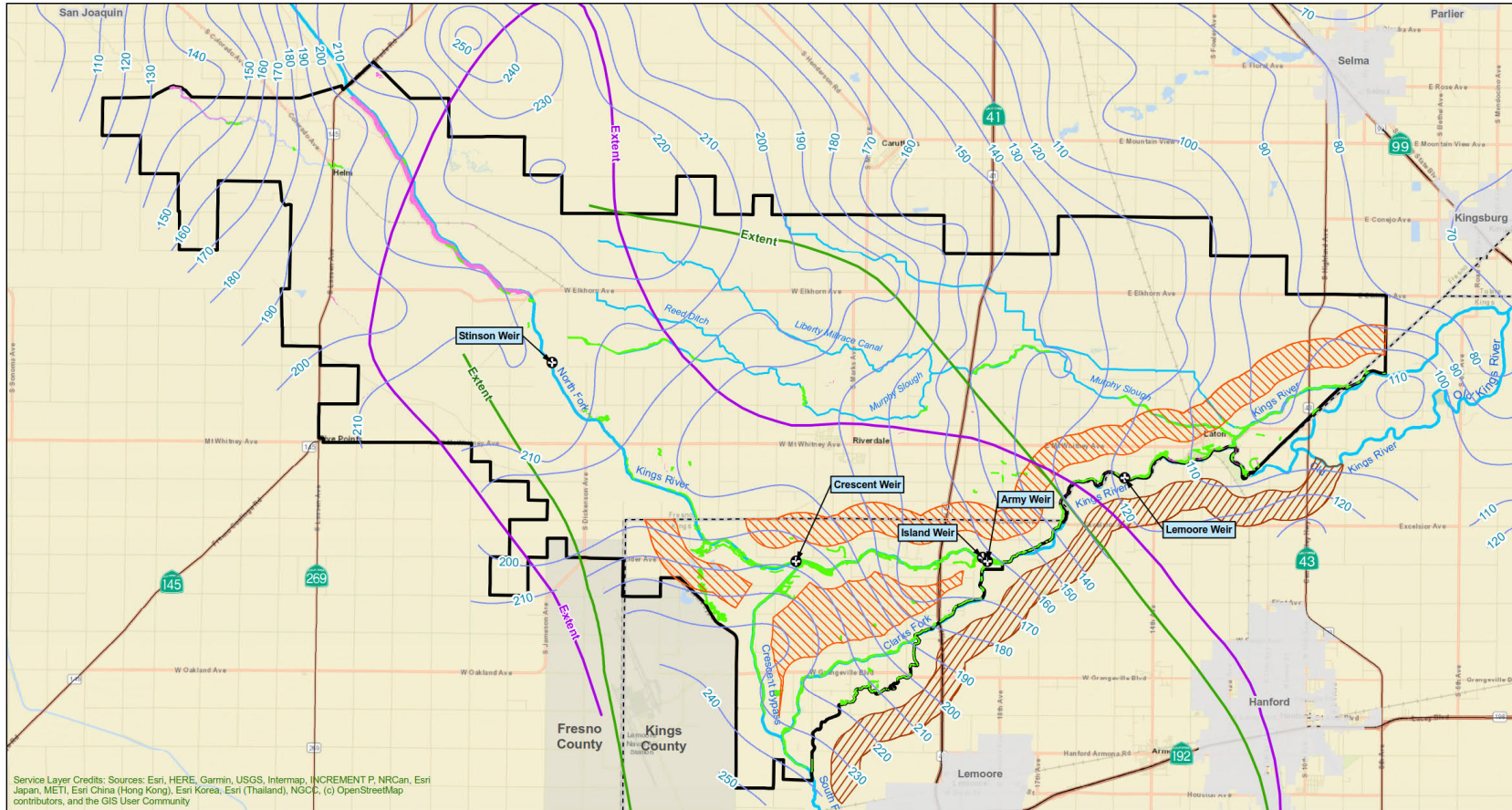
**North Fork Kings GSA**

Land Subsidence Monitoring Network

## **Interconnected Surface Water and Groundwater SMC**

- An Undesirable Result would be the significant and unreasonable reduction of surface waters within the Kings Subbasin due to groundwater pumping. The major surface waters in the Kings Subbasin include the Kings River and the San Joaquin River.
- Due to existing river management programs and/or the lack of continuous interconnected surface water within the Kings Subbasin, Undesirable Results to surface water related to groundwater pumping are not likely to occur.
- NFKGSA will pursue additional groundwater monitoring along the Kings River where the Nature Conservancy identified potential groundwater dependent vegetation.





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- Measurement Location
- Highway
- Vegetation (Nature Conservancy iGDE)
- Wetlands (Nature Conservancy iGDE)
- North Fork Kings GSA
- County Boundaries
- City
- Proposed Shallow Monitoring Well Area
- Proposed Shallow Monitoring Well Area Outside GSA
- A-Clay Extent (1999-H)
- C-Clay Extent (1999-H)
- Depth To Water, Kings Basin Coordinated Effort
- Line of Equal Depth (feet), Spring 2016

**Interconnected Surface Water Review**  
 North Fork Kings GSA