



# Supplemental Appendix D.2 Potential Accessibility Risk Indicator Evaluations

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## Unplanned Water Outages

There are numerous reasons why unplanned water outages can occur for a water system. Some are due to exogenous factors outside the system's control such as flooding, earthquakes, fire, or drought. Unplanned water outages are due to aging infrastructure, lack of necessary maintenance and investments, which might have been avoided by better system technical management.

### Step 1: Applicability: Excellent

This risk indicator was utilized in Risk Assessment 1.0 and identified as an applicable risk indicator through a stakeholder-driven process in 2019. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator. Water Outages is also used as a risk indicator by the OEHHA HR2W Tool.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

#### *Required Risk Indicator Data Points & Sources:*

- No. of Complaints Reported by Customers for Water Outages; eAR (annual, not required)
- No. of Complaints Investigated for Water Outages; eAR (annual, not required)
- No. of Complaints reported to the Division of Drinking Water or Local County Staff for Water Outages; eAR (annual, not required)
- No. of Complaints Reported by Customers for Service connection breaks and leaks; eAR (annual, not required)
- No. of Complaints Investigated for Service connection breaks and leaks; eAR (annual, not required)
- No. of Complaints reported to the Division of Drinking Water or Local County Staff for Service connection breaks and leaks; eAR (annual, not required)

### Data Coverage: Poor

The following analysis was completed using the average response rate between the 2017 and 2018 eAR reporting years for public water systems with 3,300 service connections or less:

- No. of Complaints Reported by Customers: **Poor**
  - 46% coverage.
- No. of Complaints Investigated: **Poor**
  - 35% coverage.
- No. of Complaints reported to the Division of Drinking Water or Local County Staff: **Poor**
  - 35% coverage.
- No. of Complaints Reported by Customers for Service connection breaks and leaks: **Poor**
  - 50% coverage.
- No. of Complaints Investigated for Service connection breaks and leaks: **Poor**

- 40% coverage.
- No. of Complaints reported to the Division of Drinking Water or Local County Staff for Service connection breaks and leaks: **Poor**
  - 35% coverage.

**Data Availability: Fair**

All three data points are collected annually through the eAR, but they are not required for reporting. Voluntary data reporting can result in data coverage issues. Therefore, risk indicators that rely on voluntary data reporting downgrades the data availability score by one criteria level.

**Data Accuracy/Quality: Poor**

Water systems self-report to the State Water Board the number of their water outages per year and the main reason for the outage; no duration data is provided. This data is provided in a narrative format rather than an easily accessible/sortable format. Manually analyzing the current data set is time-intensive to sort out unplanned water outages from planned outages.

**Step 3: Combined Evaluation: Future**

Combined evaluation suggests that the State Water Board should consider water outages as a risk indicator in the Future.

- STEP 1 APPLICABILITY: **Excellent**
- STEP 2: DATA FITNESS
  - Coverage: **Poor**
  - Availability: **Fair**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **Future**

**Location in a High Priority Groundwater Basin**

The Sustainable Groundwater Management Act (SGMA) basin prioritization is a requirement of Water Code Section 10933. The Department of Water Resources (DWR) utilizes the best available data and information to classify California’s 515 groundwater basins into one of four categories: High, Medium, Low, or Very Low Priority. SGMA applies to all California groundwater basins and requires that high and medium priority groundwater basins form Groundwater Sustainability Agencies and be managed in accordance with locally-developed Groundwater Sustainability Plans.

The groundwater basin evaluation process is based on the eight components identified in California Water Code Section 10933(b):

- (1) Population overlying the basin or subbasin.

- (2) Rate of current and projected growth of the population overlying the basin or subbasin.
- (3) Number of public supply wells that draw from the basin or subbasin.
- (4) Total number of wells that draw from the basin or subbasin.
- (5) Irrigated acreage overlying the basin or subbasin.
- (6) Degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water.
- (7) Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation.
- (8) Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows.

All basins were evaluated for all eight components. The total possible points for the SGMA 2019 Basin Prioritization range from zero to 40 in increments of 0.5 points. A high priority basin was determined to be a basin with cumulative priority points total of 21 to 40 points based on the criteria outlined in the [SGMA 2019 Basin Prioritization Process and Results Document](#).

NOTE: Some of the criteria outlined in component 7: *Any documented impacts on the groundwater within the basin or subbasin, including **overdraft, subsidence, saline intrusion**, and other water quality degradation* are evaluated as individual potential risk indicators, herein.

### **Step 1: Applicability: Fair**

DWR prioritizes groundwater basins based on the factors outlined in CWC §10933. Most of those factors are neutral as to groundwater management and instead focus on the importance of groundwater in a basin. As a result, a sustainably managed basin may still be designated as high priority based on which of these factors are present. The prioritization does not provide an assessment on local groundwater management practices or basin sustainability as defined in SGMA. Assessment of groundwater management practices and basin sustainability will be made based on an analysis of groundwater sustainability plans prepared by groundwater sustainability agencies or alternatives. Therefore, a water system in a high priority basin may not be considered at-risk, but it provides an indicator of the overall relative importance of groundwater in each basin.

This risk indicator was utilized in Risk Assessment 1.0 and identified as an applicable risk indicator through a stakeholder-driven process in 2019. A survey of State Water Board District Engineers in July 2020 indicated that this indicator may not be an accurate measure of water system risk. Components of the basin prioritization are being evaluated as individual risk indicators. Critically Overdrafted Groundwater Basins is one of the other SGMA Basin Prioritization components evaluated, and it is recommended for inclusion in Risk Assessment 2.0.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Points & Sources:*

- [Sigma Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
- Water System Boundaries; SABL (updated as needed, not required).
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW

### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries overlaid with high groundwater basins to identify water systems.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.

### **Data Coverage: Good**

- SGMA Basin Prioritization: **Good**
  - The basin prioritization project covers all 515 California groundwater basins. According to the most recent SGMA Basin Prioritization evaluation, 94 basins and/or sub-basins were identified as Medium or High priority, and those basins account for 98% of the pumping (20 million acre-feet), 83% of the population (25 million Californians), and 88% of all irrigated acres (6.7 million acres) within the state's groundwater basins.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

### **Data Availability: Good**

- SGMA Basin Prioritization: **Fair**
  - There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**

- Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

**Data Accuracy/Quality: Fair**

- SGMA Basin Prioritization: **Fair**
  - Each of the 515 groundwater basins are screened against a comprehensive list of criteria with defined thresholds as described in the [SGMA 2019 Basin Prioritization Process and Results Document](#). Some of the components are based on clear, quantitative data while some of the components may have variability to the quality of the data or it may be modeled.
- Water system service area boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

**Step 3: Combined Evaluation: No**

Location in a high priority groundwater basin does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**

**Single Groundwater Source**

Reliance on a single groundwater source.

**Step 1: Applicability: Good**

The reliance of a water system on a single source of supply makes it inherently more at risk of failure in the case of severe drought or contamination of that source. Single groundwater source was also utilized in Risk Assessment 1.0 and identified as an applicable risk indicator through a stakeholder-driven process in 2019. A survey of State Water Board District Engineers in July 2020 confirmed the applicability of this indicator.



## Step 2: Data Fitness (For public water systems with 3,300 connections or less)

### Required Risk Indicator Data Points & Source:

- Water source facility type: SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDWW) and in SDWIS, required reporting)
  - SP – Spring
  - WL– Well

### Data Coverage: Good

- Water Source Facility Type: **Good**
  - The data is required reporting and the overall coverage score is considered good. It is worth noting that some DDW survey respondents emphasized the importance of identifying emergency interconnections with neighboring public water systems - which may not be accounted for as a source in SDWIS. Not accounting for emergency interties may results in an under representation of number of sources a system has where an emergency source is available but not documented or accounted for.

### Data Availability: Good

- Water Source Facility Type: **Good**
  - This data is updated frequently by State Water Board staff.

### Data Accuracy/Quality: Good

- Water Source Facility Type: **Good**
  - This data is collected from water systems as part of the source permitting process and reviewed and maintained frequently by DDW staff.

## Step 3: Combined Evaluation: Yes

Single Groundwater source meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## Projected Temperature Shift

Projected Temperature Shift indicator measures projected percentage change in maximum temperature from historic range (1961-1990) to mid-century.

### **Step 1: Applicability: Fair**

The projected temperature shift under climate change is intended to assess the impact that rising temperatures could have on increased water supply demand from customers, evapotranspiration, and others thereby increasing the risk of drought and/or water shortage impacts for water systems.

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

#### *Required Risk Indicator Data Points & Sources:*

- Projected Changes in [Climate Conditions for 2030 and 2070 Future Conditions](#) (one-time assessment, not required)
  - This data was produced by the Climate Change Projections for the Water Storage Investment Program (WSIP) developed by the California Water Commission. The data is provided as an average temperature change in degrees Fahrenheit for 17 watersheds statewide for the years 2030 and 2070 with respect to the 1995 reference.
- Watershed (USGS HUC-6) Boundaries; USGS (updated as needed, not required)
- Water System Boundaries; SABL (updated as needed, not required).

#### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the watershed boundaries and correlated with the projected temperature shifts.

### **Data Coverage: Good**

- Projected Temperature Shifts: **Good**
  - Projections are available for all 17 USGS Hydrologic Unit Code (HUC) 6 Watershed Boundaries in California.
- Watershed (USGS HUC-6) Boundaries: **Good**
  - The USGS Watershed Boundary Dataset (WBD) is a seamless, national hydrologic unit dataset. WBD contains eight levels of progressive hydrologic units identified by unique 2- to 16-digit codes. The dataset is complete for the United States to the 12-digit hydrologic unit.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### **Data Availability: Fair**

- Projected Temperature Shifts: **Fair**

- The current set of projections were completed in November 2016. There is no legislation or guidance available outlining when an update may occur. DWR anticipates updated projections will be available in the coming months.
- Watershed (USGS HUC-6) Boundaries: **Good**
  - The [Watershed Boundary Dataset](#) is available through the USGS.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

**Data Accuracy/Quality: Good**

- Projected Temperature Shifts: **Good**
  - The climate projection datasets were developed by downscaling the 20 general circulation model projections to a 1/16th degree grid resolution across California using the localized constructed analog (LOCA) spatial downscaling method (Pierce et al., 2014). The 20-climate model and representative concentration pathways (RCP) combinations were composed of 10 general circulation models run with two RCPs: one optimistic (RCP 4.5) and one pessimistic (RCP 8.5). The results of the 20 spatially downscaled climate model and RCP combinations were used to create ensemble projections for 2030 and 2070.

The results have a small range for average temperature changes for the different watersheds of:

- 2.0 to 2.8 degrees Fahrenheit for 2030
- 4.6 to 6.2 degrees Fahrenheit for 2070

- Watershed (USGS HUC-6) Boundaries: **Good**
  - The USGS Watershed Boundary Dataset (WBD) is a seamless, national hydrologic unit dataset. WBD contains eight levels of progressive hydrologic units identified by unique 2- to 16-digit codes. The dataset is complete for the United States to the 12-digit hydrologic unit.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

**Step 3: Combined Evaluation: No**

Projected Temperature Shift does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS

- Coverage: **Good**
- Availability: **Fair**
- Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

## Projected Sea Level Rise as Salt Water Intrusion in Coastal Groundwater

This indicator measures the risk to coastal groundwater aquifers from salt water intrusion due to a one meter sea level rise, a mid-century projection.

### Step 1: Applicability: Good

The projected sea level rise as salt water intrusion risk in coastal groundwater is intended to assess the impact on unconfined coastal aquifers for potential impact on water system groundwater supplies and increased challenges of dealing with saline groundwater.

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder drive process for that tool.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

#### *Required Risk Indicator Data Points & Sources:*

- [California Saline Groundwater Wedge Footprint Model Results](#); Kevin Befus, University of Wyoming
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW
- Groundwater well locations; OSWCR (ongoing, required reporting [CWC §13751])
- Well depths and screening levels, OSWCR (ongoing, required reporting [CWC §13751])

#### *Risk Indicator Methodology:*

- Water System Source Water – SDWIS – Water systems screened for source water supply (groundwater/surface water)
- Water well locations – OSWCR – Well location data overlaid with the salt water intrusion areas

- Well depth and screening level – OSWCR – Depth of wells and screening levels evaluated for correlation with projected saline intrusion zones

#### **Data Coverage: Good**

- Projected Saline Intrusion: **Good**
  - [California Saline Groundwater Wedge Footprint Model Results](#) includes all coastal counties except for San Francisco and San Diego.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.
- Groundwater well locations: **Fair**
  - The data is required reporting and the overall coverage score is considered good, but the linkage between water systems and their associated water well may be difficult. The OSWCR database may not contain historic water wells.
- Well depth and screening level: **Fair**
  - The data is required reporting and the overall coverage score is considered good, but the linkage between water systems and their associated water well may be difficult. The OSWCR database may not contain historic water wells.

#### **Data Availability: Good**

- Projected Saline Intrusion: **Good**
  - The [California Saline Groundwater Wedge Footprint Model Results](#) were initially modeled in March 2020 and recently updated in August 2020.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - This data is updated frequently by State Water Board staff.
- Groundwater well locations: **Good**
  - This data is managed and updated frequently by DWR staff.
- Well depth screening: **Good**
  - This data is managed and updated frequently by DWR staff.

#### **Data Accuracy/Quality: Good**

- Projected Salt Water Intrusion: **Good**
  - The modeled area indicates a fresh-saline groundwater interface that is less than 50 meters deep. The shapefiles were modeled from present-day up until a sea level of 1 meter above present day. Mapping is based on steady-state groundwater flow modeled in three dimensions using the USGS MODFLOW program. The modeled data provides a more granular locational assessment of saline intrusion than the Documented Saline Intrusion evaluated herein.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - This data is submitted by water systems and reviewed and maintained frequently by DDW staff.
- Groundwater well locations: **Fair**

- This data is submitted by well construction contractors or water systems and reviewed and maintained frequently by DDW staff. The OSWCR database may not contain historic water wells.
- Well depth screening: **Fair**
  - This data is submitted by well construction contractors or water systems and reviewed and maintained frequently by DDW staff. The OSWCR database may not contain historic water wells.

**Step 3: Combined Evaluation: Yes**

**Projected** Sea Level Rise as Salt Water Intrusion in Coastal Groundwater meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## Projected Wildfire Risk under Climate Change

Projected area burned from wildfire, as influenced by climate change.

**Step 1: Applicability: Fair**

The projected wildfire risk is intended to indicate varying degrees of risk through annual acreage burned by mid-century due to climate change within the period of 2035-2064.

This indicator is used in DWR’s Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

**Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- [Wildfire Simulations for California’s Fourth Climate Change Assessment: Projecting Changes in Extreme Wildfire Events with a Warming Climate](#) (updated as needed, not required)
  - This data is produced by the University of California, Merced for the California Energy Commission
- Water System Boundaries; SABL (updated as needed, not required).

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the average acreage burned per Block Group.

**Data Coverage: Fair**

- Projected Wildfire Risk: **Fair**
  - Projections are focused on the Sierra Nevada Mountains with North, Middle, and South transects.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

**Data Availability: Good**

- Projected Wildfire Risk: **Good**
  - The current set of projections were completed in August 2018. There is no legislation or guidance available outlining when an update may occur.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

**Data Accuracy/Quality: Good**

- Projected Wildfire Risk: **Good**
  - Statistical models of large wildfire presence, number and size were developed and used to simulate individual large fire events under a range of future climate scenarios, as well as population and development footprint scenarios based on low, medium and high growth scenarios; and three fuels treatment scenarios (0%, 50% and 90%) for Sierra Nevada forests.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

**Step 3: Combined Evaluation: No**

Projected Wildfire Risk under Climate Change does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

## Current Wildfire Risk

Current modeled risk of wildfire for each Census Block Group.

### Step 1: Applicability: Fair

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Sources:*

- [Fire Hazard Severity Zones Maps](#) (updated as needed, not required)
  - This data is produced by the California Department of Forestry and Fire Protection (CAL FIRE) in compliance with Government Code §51179.
- Water System Boundaries; SABL (updated as needed, not required).

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the Fire Hazard Severity Zone Maps.

### Data Coverage: Good

- Fire Hazard Severity Zone Maps: **Good**
  - Maps are available statewide for State Responsibility Area lands and separate draft Very High Fire Hazard Severity Zone Maps for Local Responsibility Area land.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### Data Availability: Fair

- Fire Hazard Severity Zone Maps: **Fair**
  - The current set of State Responsibility Area maps for each county were last adopted in November 2007 and draft Local Responsibility Area maps for each county were developed between 2008-2010.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

### Data Accuracy/Quality: Fair

- Fire Hazard Severity Zone Maps: **Fair**
  - Mapping of the areas is based on data and models of potential fuels over a 30-50 year time horizon and associated expected fire behavior with



expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure. Updates to the maps are currently being developed by CAL FIRE.

- **Water System Boundaries: Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

### **Step 3: Combined Evaluation: No**

Current Wildfire Risk does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Fair**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**

## **Drought Early Warning Forecast**

Current year's early warning for risk of local drought.

The drought early warning forecast is intended to indicate annual drought risk as percent of average precipitation received by January 31st in that water year.

### **Step 1: Applicability: Fair**

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- [PRISM Climate Data](#) (updated regularly, not required)
- This data is produced by the PRISM Climate Group at Oregon State University.
- Water System Boundaries; SABL (updated as needed, not required).

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the PRISM precipitation ArcGIS raster data.

**Data Coverage: Good**

- Precipitation Data: **Good**
  - Precipitation data is from a wide range of monitoring networks.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

**Data Availability: Good**

- Precipitation Data: **Good**
  - The PRISM Climate Group updates precipitation on a regular schedule.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

**Data Accuracy/Quality: Good**

- Precipitation Data: **Good**
  - The precipitation data is considered accurate.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

**Step 3: Combined Evaluation: No**

Drought Early Warning Forecast does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

**Communities in Fractured Rock (Non-Basin) Areas**

Areas not in alluvial groundwater basins as determined by California’s Groundwater Update (Bulletin 118).

**Step 1: Applicability: Fair**

The identification of communities in fractured rock areas is intended to recognize that aquifers in those areas may have [limited storage and transport capabilities](#) resulting in reduced groundwater well production.

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Points & Sources:*

- [California's Groundwater Update](#) (Bulletin 118) (updated every 5 years beginning in 2020, CWC §12924)
- Water System Boundaries; SABL (updated as needed, not required)
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW

### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the fractured rock areas.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.

### **Data Coverage: Good**

- Fractured Rock Areas: **Good**
  - DWR is responsible for identifying and evaluating the geological and hydrological conditions of groundwater statewide.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

### **Data Availability: Fair**

- Fractured Rock Areas: **Fair**
  - A statewide characterization of fractured-rock aquifers in California was not developed as part of the 2013 Statewide Groundwater Update or the 2016 Interim Update, and [California's Groundwater Update 2020](#) is not

completed. DWR indicated that the fractured rock mapping data will be available in the coming months.

- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

#### **Data Accuracy/Quality: Poor**

- Fractured Rock Areas: **Poor**
  - The 2013 Statewide Groundwater Update states, “little or no information is known about California’s fractured bedrock aquifers and how they interact with regional alluvial aquifer systems.” There is not clear evidence that groundwater sources in fractured rock areas are more at-risk than systems in groundwater basins.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

#### **Step 3: Combined Evaluation: No**

Communities in Fractured Rock Areas does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Fair**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **No**

## **Projected Population Growth**

Increasing population growth rates in surrounding region could increase risk of water shortage.

### **Step 1: Applicability: Fair**

The near-term projected population growth rate is intended to recognize that an increasing population may result in unsustainable increase in water demand.

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

#### *Required Risk Indicator Data Points & Sources:*

- DWR/Private Vendor Census Data Estimates by [Service Area](#) (updated as needed, not required)
- Water System Boundaries; SABL (updated as needed, not required)

#### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the census data estimates by service area to verify boundaries/service area dataset consistency.

### **Data Coverage: Good**

- Population Growth Rate: **Good**
  - DWR generated the statewide population growth estimates for the Drought and Water Shortage Risk Scoring Tool.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### **Data Availability: Fair**

- Population Growth Rate: **Fair**
  - Available by request from DWR. Since the projection range only projects population change for one year and no information is available to confirm long-term availability of this data, a downgraded criteria score of "Fair" is assigned. DWR indicated that an update to the growth projections is pending.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

### **Data Accuracy/Quality: Fair**

- Population Growth Rate: **Fair**

- The population projections represent the growth between 2016-2021. The projections were completed by a private vendor and the methodology is not published.
- **Water System Boundaries: Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

**Step 3: Combined Evaluation: No**

Projected Population Growth does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- **STEP 1 APPLICABILITY: Fair**
- **STEP 2: DATA FITNESS**
  - Coverage: **Good**
  - Availability: **Fair**
  - Quality: **Fair**
- **STEP 3: COMBINED EVALUATION: No**

## Water Quality in Surrounding Basin

Potential risk of contaminants in surrounding groundwater from deep aquifer of region.

**Step 1: Applicability: Fair**

The water quality in surrounding basin is intended to assess the potential risk of contaminants in surrounding groundwater targeting the deeper groundwater in established alluvial basins typically accessed by municipal supply wells.

This indicator is used in DWR's Drought and Water Shortage Risk Scoring Tool and was identified as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

**Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- [GAMA USGS Priority Basin Project \(Deep Aquifer Assessment\)](#) (updated as needed, not required)
  - The USGS is the technical lead for the Priority Basin Project, one of components of the GAMA Program.
- Water System Boundaries; SABL (updated as needed, not required).

### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the census data estimates by service area to verify boundaries/service area dataset consistency.

### **Data Coverage: Good**

- Water Quality in Surrounding Basin: **Good**
  - The GAMA USGS Priority Basin Project performed shallow and deep aquifer well sampling for Study Units statewide.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### **Data Availability: Fair**

- Water Quality in Surrounding Basin: **Fair**
  - The water quality results are posted to the [Priority Basin Project Groundwater Quality Results: Assessment and Trends Webmap](#). The data was collected from the Study Units from approximately 2004 to 2012 with a varying number of wells from each. There is no schedule for updating water quality testing for older studies.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

### **Data Accuracy/Quality: Fair**

- Water Quality in Surrounding Basin: **Fair**
  - The data was collected from the Study Units from approximately 2004 to 2012 with a varying number of wells from each. There is no schedule for updating water quality testing for older studies. Without updates, the data accuracy may decline over time.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

### **Step 3: Combined Evaluation: No**

Water Quality in Surrounding Basin does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Fair**

- Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**

## Presence of Subsidence in Basin

Higher groundwater aquifer susceptibility to subsidence equates to a higher risk of aquifer impairment.

### Step 1: Applicability: **Fair**

This indicator is a component (Sub-component 7.b) of the SGMA Basin Prioritization. DWR's Drought and Water Shortage Risk Scoring Tool identified it as an appropriate risk indicator through a stakeholder driven process for that tool. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Sources:*

- [SGMA Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
- Water System Boundaries; SABL (updated as needed, not required)
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the groundwater basins with inelastic subsidence status.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.

### Data Coverage: **Good**

- Subsidence in Basin: **Good**
  - The SGMA Basin Prioritization evaluated subsidence for all 515 California groundwater basins. The existence of subsidence is usually very localized, so it may be inappropriate to apply it as a risk factor for an entire groundwater basin.
- Water System Boundaries: **Good**



- There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

**Data Availability: Good**

- Subsidence in Basin: **Good**
  - There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries).
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

**Data Accuracy/Quality: Fair**

- Subsidence in Basin: **Fair**
  - The inelastic subsidence data related to groundwater extractions were evaluated to determine if inelastic subsidence was current or historical. In many cases the time frames were six to ten years for current conditions, while historical analyses required going back 20 years or more.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

**Step 3: Combined Evaluation: No**

Subsidence in Basin does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**

- Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**

## Documented Saline Intrusion

Water systems in basins with documented saline intrusion may be faced with advanced treatment requirements.

### Step 1: Applicability: Fair

The documented saline intrusion in coastal and Sacramento-San Joaquin Delta groundwater basins is intended to assess the impact on water system groundwater supplies and increased challenges of dealing with saline groundwater.

This indicator is a component (Sub-component 7.c) of the SGMA Basin Prioritization and DWR's Drought and Water Shortage Risk Scoring Tool identified it as an appropriate risk indicator through a stakeholder driven process.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Sources:*

- [SGMA Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
- Water System Boundaries; SABL (updated as needed, not required)
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW
- Groundwater well locations; OSWCR (ongoing, required reporting [CWC §13751])
- Well depths and screening levels, OSWCR (ongoing, required reporting [CWC §13751])

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the groundwater basins with documented saline intrusion.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.
- Water well locations – OSWCR – Well location data overlaid with the salt water intrusion areas

- Well depth and screening level – OSWCR – Depth of wells and screening levels evaluated for correlation with projected saline intrusion zones

**Data Coverage: Good**

- Documented Saline Intrusion: **Good**
  - The SGMA Basin Prioritization evaluated saline intrusion for all 515 California groundwater basins. This risk indicator will only be applicable to coastal and Sacramento-San Joaquin Delta groundwater basins. The existence of saline intrusion is usually very localized near the coast, so it may be inappropriate to apply it as a risk factor for an entire groundwater basin.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.
- Groundwater well locations: **Fair**
  - The data is required reporting and the overall coverage score is considered good, but the linkage between water systems and their associated water well may be difficult. The OSWCR database may not contain historic water wells.
- Well depth and screening level: **Fair**
  - The data is required reporting and the overall coverage score is considered good, but the linkage between water systems and their associated water well may be difficult. The OSWCR database may not contain historic water wells.

**Data Availability: Good**

- Documented Saline Intrusion: **Good**
  - There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.
- Groundwater well locations: **Good**
  - This data is managed and updated frequently by DWR staff.
- Well depth screening: **Good**
  - This data is managed and updated frequently by DWR staff.

### **Data Accuracy/Quality: Fair**

- Documented Saline Intrusion: **Fair**
  - Saline intrusion in the coastal and Sacramento-San Joaquin Delta groundwater basins, as defined in Bulletin 118 – Interim Update 2016, was determined by researching available documents for references of past or current excess salinity problems. The saline intrusion designation is applied to the entire groundwater basin resulting in a loss of local-level evaluation.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.
- Groundwater well locations: **Fair**
  - This data is submitted by well construction contractors or water systems and reviewed and maintained frequently by DDW staff. The OSWCR database may not contain historic water wells.
- Well depth screening: **Fair**
  - This data is submitted by well construction contractors or water systems and reviewed and maintained frequently by DDW staff. The OSWCR database may not contain historic water wells.

### **Step 3: Combined Evaluation: No**

Documented Saline Intrusion does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**

## **Critically Overdrafted Groundwater Basin**

Water systems in basins considered to be in Critical Overdraft per DWR’s Bulletin 118.

### **Step 1: Applicability: Good**

A basin is subject to critical conditions of overdraft when continuation of current water

management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.

This indicator is a component (Sub-component 8.d.1) of the SGMA Basin Prioritization and DWR's Drought and Water Shortage Risk Scoring Tool identified it as an appropriate risk indicator through a stakeholder driven process. Furthermore, the State Water Board's groundwater experts highly support the applicability of this risk indicator.

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Points & Sources:*

- [SGMA Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
- Water System Boundaries; SABL (updated as needed, not required)
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW

### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the critically overdrafted groundwater basins.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.

### **Data Coverage: Good**

- Critically Overdrafted Groundwater Basins: **Good**
  - The SGMA Basin Prioritization evaluated critical overdraft for all 515 California groundwater basins. Critical conditions of overdraft have been identified in 21 groundwater basins as described in [Bulletin 118 – Interim Update 2016](#).
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

### **Data Availability: Good**

- Critically Overdrafted Groundwater Basins: **Good**
  - There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin

Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries.

- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

#### **Data Accuracy/Quality: Good**

- Critically Overdrafted Groundwater Basins: **Good**
  - Documented overdraft, as defined in Bulletin 118 – Interim Update 2016, was determined by researching available groundwater level data, hydrographs, or similar data for each basin.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

#### **Step 3: Combined Evaluation: Yes**

Critically Overdrafted Groundwater Basin meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## **Chronic Declining Water Levels**

Declining groundwater levels is associated with groundwater overdraft and an increased risk of water shortages, especially during a drought.

#### **Step 1: Applicability: Fair**

This indicator is a component (Sub-component 7.a – Documented Overdraft or

Groundwater Level Decline) of the SGMA Basin Prioritization. DWR's Drought and Water Shortage Risk Scoring Tool identified (separately) both Documented Overdraft and Chronic Declining Water Levels as appropriate risk indicators through a stakeholder driven process for that tool. The Chronic Declining Water Levels is included in the tool in addition to the overdraft indicator because it may offer more specific location data for water shortages during a drought. However, a survey of State Water Board District Engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Points & Sources:*

- [SGMA Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
  - Water System Boundaries; SABL (updated as needed, not required)
  - Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
    - GW - Groundwater
    - SW - Surface Water
    - Both – GW and SW

### *Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the groundwater basins identified with chronic declining water levels.
- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on groundwater.

### **Data Coverage: Good**

- Chronic Declining Water Levels: **Good**
  - The SGMA Basin Prioritization evaluated subsidence for all 515 California groundwater basins. Critical conditions of overdraft have been identified in 21 groundwater basins as described in [Bulletin 118 – Interim Update 2016](#).
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

### **Data Availability: Good**

- Chronic Declining Water Levels: **Good**

- There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

**Data Accuracy/Quality: Fair**

- Chronic Declining Water Levels: **Fair**
  - Documented overdraft, as defined in Bulletin 118 – Interim Update 2016, was determined by researching available groundwater level data, hydrographs, or similar data for each basin. The Chronic Declining Water Levels risk indicator is duplicative of the documented overdraft indicator that is recommended for Risk Assessment 2.0.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Water System Source Water Identification: **Good**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

**Step 3: Combined Evaluation: No**

Chronic Declining Water Levels does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **No**



## Surrounding Agricultural Land Use

Competing demand on groundwater supplies resulting in higher risk for small water systems during a drought or water shortage event.

### Step 1: Applicability: Fair

This indicator is a component (Component 5 – Irrigated Acreage) of the SGMA Basin Prioritization. DWR’s Drought and Water Shortage Risk Scoring Tool identified Surrounding Agricultural Use as an appropriate risk indicator through a stakeholder driven process. However, a survey of State Water Board engineers in July 2020 indicated that this indicator alone may not be an accurate measure of water system risk.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Sources:*

- [SGMA Basin Prioritization Statewide Summary Table](#); DWR (any time Bulletin 118 updates basin boundaries)
- Water System Boundaries; SABL (updated as needed, not required)

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the irrigated acreage land use dataset and an applicable sphere of influence is applied.

### Data Coverage: Good

- Agricultural Land Use: **Good**
  - The SGMA Basin Prioritization evaluated irrigated acreage overlying each basin for all 515 California groundwater basins.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### Data Availability: Good

- Agricultural Land Use: **Good**
  - There have been three basin prioritization projects: 2014 CASGEM Basin Prioritization, SGMA 2015 Basin Prioritization, and the SGMA 2019 Basin Prioritization was completed in December 2019. A defined update schedule is not provided; updates occur any time Bulletin 118 updates basin boundaries.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

### Data Accuracy/Quality: Good

- **Agricultural Land Use: Good**
  - Irrigated acreage uses DWR Land Use mapping data to determine irrigated acreage. All agriculture identified in the Statewide Crop Mapping 2014 dataset was identified as irrigated unless an agricultural field had been previously identified by DWR as dry-farmed.
- **Water System Boundaries: Fair**
  - Water system boundaries in SABL often do not reflect the water system’s “water service area,” instead it sometimes reflects the water system’s jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

**Step 3: Combined Evaluation: No**

Surrounding Agricultural Land Use does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

**Presence of Interties**

An intertie or interconnection is a connection between one or more public water systems where systems can either supply or receive water from each other.

**Step 1: Applicability: Good**

The metric is utilized by the DWR Drought and Water Shortage Risk Scoring Tool and is assumed to reduce the risk of a water outage by allowing water systems to switch sources if needed. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator.

**Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Source:*

In SDWIS, this type of data is stored as a water system facility with a consecutive connection designation. Additionally, these types of water systems facilities can be described in terms of their availability of use. According to internal SDWIS procedure documents, only the receiving facility should have a CC water system facility represented in SDWIS. The procedure document makes no mention about whether

emergency or seasonal CCs should be entered. The purpose of this metric is to capture the number of interties of all availabilities entered into SDWIS.

- Water source facility type and availability: SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - CC – Consecutive Connection

Availability:

- I – Interim
- E – Emergency
- O – Other
- P – Permanent
- S – Seasonal

#### **Data Coverage: Fair**

Several DDW staff indicated that active interties or interties that run all year round would be captured in SDWIS because they are permitted and counted as a source for the system. However, interties that are considered emergency or seasonal may not be entered in SDWIS. Additionally, other DDW staff indicated that instructions may not have been clear enough on how to enter interties in SDWIS and this may have impacted the total number of interties entered into SDIWS.

#### **Data Availability: Good**

Consecutive connections are maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

#### **Data Accuracy/Quality: Good**

Information on consecutive connections are submitted by water systems and reviewed and maintained frequently by DDW staff. While interties with certain availabilities are entered in to SDIWS less frequently the ones that are appeared to be accurate.

#### **Step 3: Combined Evaluation: Maybe**

Interties meets some of the combined criteria and may be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Maybe**

## Presence of Emergency Interties

An emergency intertie or interconnection is a connection between one or more public water systems where systems can either supply or receive water to each other and are used only during extreme circumstances.

### **Step 1: Applicability: Good**

The metric is utilized by the DWR Drought and Water Shortage Risk Scoring Tool and is assumed that the more emergency interties, the lower the risk of outage because the system can potentially switch sources if needed. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

#### *Required Risk Indicator Data Points & Source:*

In SDWIS, this type of data is stored as a water system facility with a consecutive connection designation. Additionally, these types of water systems facilities can be described in terms of their availability of use. According to internal SDWIS procedure documents, only the receiving facility should have a CC water system facility represented in SDWIS. The procedure document makes no mention about whether emergency or seasonal CCs should be entered. The purpose of this metric is to capture the number of emergency interties entered into SDWIS.

- Water source facility type: SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - CC – Consecutive Connection

#### Availability:

- E – Emergency

### **Data Coverage: Fair**

Several DDW staff indicated that emergency interties were not actively entered into SDIWS. Additionally, DDW staff indicated that many emergency interties may not have been used in several years and may not be readily available. Due to these facts, coverage is considered to be quite poor.

### **Data Availability: Good**

Emergency interties are maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

### **Data Accuracy/Quality: Fair**

Information on emergency consecutive connections are submitted by water systems and reviewed and maintained frequently by DDW staff. Given interties with emergency availability are entered in to SDIWS less frequently and may not work adequately in some cases the accuracy/quality is considered to be fair.

### **Step 3: Combined Evaluation: Maybe**

Emergency interties meets some of the combined criteria and may be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Maybe**

## **Number of Water Sources**

Total number of available water sources including surface water, wells, and imported water.

### **Step 1: Applicability: Good**

OEHHA's HR2W Tool and DWR's Drought and Water Shortage Risk Scoring Tool utilizes this metric to assess the impact of higher risk for having fewer water supply sources as well as to indicate the importance of diversity and flexibility of water supply.

An internal survey of State Water Board District Engineers indicated there is a strong relationship between the number of sources a water system has and their ability to provide adequate and safe drinking water. Most survey respondents identified it as applicable. However, some survey respondents suggested that the water source's status (active, inactive, standby) and its capacity may be more critical for compliance purposes.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- Water source facility type: SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting)
  - CC - Consecutive Connection<sup>25</sup>
  - IG - Infiltration Gallery
  - IN – Intake
  - NN - Non-Piped, Non-Purchased
  - NP - Non-Piped, Purchased
  - RS – Reservoir
  - RC - Roof Catchment
  - SP – Spring
  - WL – Well
  - ST - Storage Tank

**Data Coverage: Good**

Water source facility type is considered a physical infrastructure/ inventory that is housed and queried in SDWIS database and reviewed frequently by State Water Board staff through SDWIS and mDWW. The data is required reporting and the overall coverage score is considered good.

It is worth mentioning that data entry requirements for Consecutive Connections (CC) is interpreted differently across DDW District offices. When two water systems utilize a CC to convey water back and forth between the two systems (rather than one way); this source should be entered into SDWIS for both water systems. However, some District offices only enter CC as a single source for one of the two systems. This misinterpretation in CC data entry results in an under representation of number of source types for some systems where a CC source is available but not accounted for. Since “water source facility type” cannot be easily changed in SDWIS, a procedure document has been developed for District Offices and LPAs to change their “water source facility type” to enhance data quality.

**Data Availability: Good**

Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.

**Data Accuracy/Quality: Good**

Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate.

**Step 3: Combined Evaluation: Yes**

Number of Water Sources meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## Water Source Type

Total number of water source types.

**Step 1: Applicability: Good**

California Department of Water Resources (DWR) has used this metric for their Drought and Water Shortage Risk Scoring Tool to assess the impact of higher risk for having

fewer water source types as well as to indicate the importance of water source supply diversity for water systems.

An internal survey of State Water Board District Engineers indicated there is a strong relationship between the diverse types of sources a water system has and their ability to provide adequate and safe drinking water. Most survey respondents identified this indicator is applicable.

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Points & Sources:*

Both of the following data points for this indicator are required and collected through the initial water system permitting process and entered into SDWIS by DDW staff. This data is verified through Sanitary Surveys and necessary updates are made in SDWIS.

- Water Source Facility Type: SDWIS
  - NP - Non-Piped, Purchased
- Federal Primary Source Type (SDWIS = Water Type Code)
  - GW - Groundwater
  - SW - Surface Water
  - Both – GW and SW

### **Data Coverage: Good**

- Water Source Facility Type: **Good**
  - The data is required reporting and the overall coverage score is considered good.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.

### **Data Availability: Good**

- Water Source Facility Type: **Good**
  - This data is updated frequently by State Water Board staff.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - This data is updated frequently by State Water Board staff.

### **Data Accuracy/Quality: Good**

- Water Source Facility Type: **Good**
  - This data is submitted by water systems and reviewed and maintained frequently by DDW staff.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - This data is submitted by water systems and reviewed and maintained frequently by DDW staff.

## **Step 3: Combined Evaluation: Yes**

Water Source Type meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## Water Level Status

Water level status refers to water level trends for a water system's source(s) (recovering, declining or steady).

### Step 1: Applicability: **Good**

Declining levels of water supply indicate an elevated risk to drought and water shortage. This particular risk indicator was utilized in DWR Water Shortage Risk Tool. A survey of State Water Board District Engineers in July 2020 confirmed the applicability of this indicator.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Point & Source:*

- Water Level Status; eAR (annual, not required)
  - Recovering
  - Declining
  - Steady

### Data Coverage: **Poor**

- Water Level Status
  - 11% coverage for large water systems between 3,000 to 3,300 service connections.
  - 65% coverage for small water systems below 3,000 service connections or below.

### Data Availability: **Fair**

Water Level Status is collected annually through the eAR, but is not required for reporting. Voluntary data reporting can result in data coverage issues. Therefore, risk indicators that rely on voluntary data reporting downgrades the data availability score by one criteria level.



### **Data Accuracy/Quality: Poor**

Reporting to the State Water Board is dependent upon water systems themselves reporting such information. Considering the self-reported nature of the data, and that many water systems poorly track the level of water sources. State Water Board staff and UCLA suggest a data accuracy/quality score of “Poor.”

Furthermore, it is worth noting that the qualitative nature of the data collected through this particular eAR survey question. The answer options of “declining,” “recovering,” and “steady” for Water Level Status is not specific enough to indicate the degree in which water levels may be impacting a water system’s source supply.

### **Step 3: Combined Evaluation: Future**

Combined evaluation suggests that the State Water Board should consider Water Level Status as a risk indicator in the Future.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Poor**
  - Availability: **Fair**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **Future**

## **Projected Water Shortage**

Presence of any self-reported projected water shortage.

### **Step 1: Applicability: Fair**

Water systems that experienced recent past shortages may indicate those that may have additional shortage problems in the future. This indicator is used in DWR Water Shortage Risk Tool, however, a survey of State Water Board District engineers in July 2020 indicated that applicability of this indicator is “Fair.”

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Point & Source:*

- Projected water shortages in the current calendar year; eAR (annual, not required reporting)
  - eAR survey response options: Yes or No

### **Data Coverage: Fair**

The following analysis was completed using the average response rate between the

2017 and 2018 eAR reporting years for public water systems with 3,300 service connections or less.

- 77.5% coverage.

**Data Availability: Fair**

This data is collected annually through the eAR. It was not required reporting.

**Data Accuracy/Quality: Poor**

Reporting to the State Water Board is dependent upon water systems self-reporting this information. Considering the self-reported nature of the data, and limited validation, State Water Board staff and UCLA suggest a data accuracy/quality score of “Poor.”

Furthermore, it is worth noting that the qualitative nature of the data collected through this particular eAR survey question. The answer options of “Yes” and “No” for Projected Water Shortage is not specific enough to indicate the degree in which water shortage may be impacting a water system’s source supply.

**Step 3: Combined Evaluation: No**

Projected Water Shortage does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Fair**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **No**

## **Curtailment Compliance Order**

A compliance order is defined as an order issued by the State Water Board that requires a water system to comply with certain rules, regulations, or permits. Specifically, a curtailment compliance order is a restriction on withdrawing water from a waterbody imposed by the State Water Board to maintain minimum flows in the waterbody (usually imposed during times of drought). This metric is defined as water systems that have previously or currently have a curtailment compliance order.

**Step 1: Applicability: Good**

This indicator is utilized by DWR’s Drought and Water Shortage Risk Scoring Tool and indicates risk by assuming that water systems with past records of curtailment orders might be at risk of water shortages in future droughts. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator.

**Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

### *Required Risk Indicator Data Point & Sources:*

- [List of water systems with curtailment compliance orders from the State Water Board:](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/curtailment_compliance_orders.shtml)  
[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/curtailment\\_compliance\\_orders.shtml](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/curtailment_compliance_orders.shtml)

#### **Data Coverage: Good**

DDW staff constantly monitors for drought conditions and issues orders to water systems accordingly.

#### **Data Availability: Good**

Since drought conditions are monitored frequently, the availability of this data point is considered “Good.” It is important to highlight that this data currently only reflects curtailment orders in 2014. No additional curtailment compliance orders have been issued since 2014.

#### **Data Accuracy/Quality: Good**

Since drought conditions are monitored by the State Water Board, curtailment orders are considered to be accurate.

#### **Step 3: Combined Evaluation: Yes**

Curtailment Compliance Order meets the combined criteria and should be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## **Drought Assistance Record**

Water systems that received drought funding assistance may be at relatively higher risk of experiencing future drought issues.

#### **Step 1: Applicability: Fair**

Drought Assistance Record is a risk indicator utilized in DWR’s Drought and Water Shortage Risk Scoring Tool. A survey of State Water Board staff however noted that a system that has received drought assistance might have improved their system’s resiliency to future drought or water shortage risks. It may be difficult to rely on this individual metric alone to assess risk. Therefore, the applicability score has been downgraded to “Fair.”

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Point & Source:*

- Loans and Grants Tracking Systems (LGTS), State Water Board, Division of Financial Assistance (updated regularly, required funding tracking).

### **Data Coverage: Good**

There are a variety of funding programs that can address drought and water shortage issues through the State Water Board and other state and Federal agencies.

### **Data Availability: Good**

The LGTS database is readily accessible by State Water Board staff for accessing funded projects.

### **Data Accuracy/Quality: Good**

Screening projects funded through programs targeting drought and water shortage issues is accurate.

## **Step 3: Combined Evaluation: Yes**

Water Shortage: Drought Assistance Record does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

## **Water Production for 55 Gallon Per Capita Per Day (GPCD)**

This metric determines whether the monthly water production is sufficient utilizing "55 gallon per capita per day" as the main threshold based on AB 1668, where sets 55 GPCD as an indoor water use standard (effective until January 1, 2025).

### **Step 1: Applicability: Poor**

A survey of State Water Board engineers in July 2020 indicated an applicability score of "Fair" with "Poor" leading close behind. Respondents noted that water demand/usage may dramatically vary across water systems and areas, especially unmetered local areas. Furthermore, production may depend on proper storage capacity that is capable to hold sufficient water to supply 55 GPCD to all customers. Considering the substantial survey feedback, a downgraded applicability score of "Poor," was assigned.

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- Water Production Annual Total; eAR (annual, required reporting)
- Serving Population: SDWIS (as needed, required reporting)

*Risk Indicator Methodology:*

Water Production (GPCD) = [Water Production Annual Total / Serving Population] / 365

**Data Coverage: Good**

- Water Production Annual Total - eAR: **Good**
  - Based on coverage analysis using the average response rate between the 2017 and 2018 eAR reporting years for public water systems with 3,300 service connections or less, 96% coverage.
- Serving Population - SDWIS: **Good**
  - 100% coverage

**Data Availability: Good**

- Water Production Annual Total: **Good**
  - This data is collected annually through eAR.
- Serving Population: **Good**
  - This data is collected and updated as needed.

**Data Accuracy/Quality: Good**

- Water Production Annual Total: **Fair**
  - A survey of State Water Board engineers in July 2020 indicated an accuracy/quality score of "Fair."
- Serving Population: **Good**
  - This data is submitted by water systems through SDWIS and maintained DDW staff.

**Step 3: Combined Evaluation**

Water Production for 55 Gallon Per Capita Per Day (GPCD) does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Poor**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **No**

## Household-Level History of Past Water Shortages

Historical water shortages can be an indicator for future water shortages.

### Step 1: Applicability: Good

A survey of State Water Board District Engineers in July 2020 indicated that this indicator may be a good measure of water system risk.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Sources:*

- [Household Water Supply Shortage Reporting System](#); DWR (updated as needed, not required)
- Water System Boundaries; SABL (updated as needed, not required)

*Risk Indicator Methodology:*

- Water System Boundaries – SABL – Water systems boundaries are overlaid with the individual households reporting water shortages.

### Data Coverage: Fair

- Household Water Supply Shortage: **Fair**
  - The data is self-reported to DWR via a website by individual homeowners.
- Water System Boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.

### Data Availability: Fair

- Household Water Supply Shortage: **Fair**
  - The collected data may be more representative of heavy outreach conducted by local and state entities that occurred in the San Joaquin Valley during the 2012-2016 drought resulting in less current data.
- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.

### Data Accuracy/Quality: Fair

- Household Water Supply Shortage: **Fair**
  - DWR acknowledges that due to the volunteer nature of the reporting and limitations on reporting agencies, data may be under-representative of all shortages that have occurred.
- Water System Boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems

to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.

### **Step 3: Combined Evaluation: Future**

Household-Level History of Past Water Shortages does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage, availability, and accuracy/quality can be improved.

- STEP 1 APPLICABILITY: **Yes**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Fair**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Future**

## **Backup Power Supply**

To ensure reliable water service, water systems have backup power available during power outages.

### **Step 1: Applicability: Fair**

A survey of State Water Board District engineers in July 2020 indicated that applicability of this indicator is “Fair.” While backup power supply may be critical during power outages, State Water Board staff indicated it may not be strongly correlated to a systems ability to remain in compliance.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Point & Source:*

- Alternative or Backup Energy Supply; eAR (annual, required)

### **Data Coverage: Fair**

Data coverage for Alternative or Backup Energy Supply is 66% between 2017 (48%) and 2018 (87%) reporting years. It is worth noting that this survey question is required, and the State Water Board anticipates data coverage for this indicator to improve.

### **Data Availability: Good**

Alternative or Backup Energy Supply is collected annually through the eAR, and is required for reporting.

### **Data Accuracy/Quality: Fair**

Reporting to the State Water Board is dependent upon water systems themselves reporting such information. Considering the self-reported nature of the data, and that

many water systems can miss the nuance of backup power availability. State Water Board staff and UCLA suggest a data accuracy/quality score of “Fair.”

### **Step 3: Combined Evaluation: No**

Backup Power Supply does not meet the combined criteria and should not be considered for inclusion in Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Fair**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Good**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **No**

## **Distribution System Pressure**

This proposed indicator assesses whether the water system maintains adequate pressure throughout the distribution system. California Waterworks standards require water systems to maintain minimum operating pressure of 20 pounds per square inch (psi) at all times throughout the distribution system at the user connection. New distribution systems that represent more than 20% of service connection expansion must be designed to provide 40 psi at all times (CCR §64602). Recommended maximum pressure is 60-80 psi.

### **Step 1: Applicability: Excellent**

Distribution system pressure is one of the main components of distribution system evaluation in Sanitary Survey. Pressure loss may be a big concern because it may lead to bacterial contamination drawn into the drinking water system. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- No. of Complaints Reported by Customers; eAR (annual, not required)
- No. of Complaints Investigated; eAR (annual, not required)
- No. of Complaints Reported to the Division of Drinking Water or Local County Staff; eAR (annual, not required)
- Distribution System Pressure for each pressure zone; Sanitary Survey (every 3-year for community water systems; 5-year for non-community water systems, generally required)

### **Data Coverage: Poor**

For those three data points relying on the eAR, the following analysis was completed



using the average response rate between the 2017 and 2018 eAR reporting years for public water systems with 3,300 service connections or less:

- No. of Complaints Reported by Customers: **Poor**
  - 56% coverage.
- No. of Complaints Investigated: **Poor**
  - 45% coverage.
- No. of Complaints Reported to the Division of Drinking Water or Local County Staff: **Poor**
  - 43% coverage.
- Distribution system pressure for each pressure zone: **Fair**
  - Many Sanitary Surveys capture this information, but an analysis of data converge was not possible because the data is stored in PDF files that is not machine-readable.

#### **Data Availability: Fair**

- No. of Complaints Reported by Customers: Fair
  - This data is collected annually through the eAR, and is not required reporting.
- No. of Complaints Investigated: Fair
  - This data is collected annually through the eAR, and is not required reporting.
- No. of Complaints Reported to the Division of Drinking Water or Local County Staff: Fair
  - This data is collected annually through the eAR, and is not required reporting.
- Distribution system pressure for each pressure zone: **Poor**
  - The State Water Board's DDW is responsible for conducting Sanitary Surveys every three years for community water systems and every five years for non-community water systems. While a data availability score of "Fair" may perhaps be liberally applied here based on the evaluation criteria, a downgraded score of "Poor" is assigned due to the fact that data collected through Sanitary Surveys (PDF) is not machine-readable or readily extractable without significant effort.

#### **Data Accuracy/Quality: Poor**

A survey of State Water Board engineers in July 2020 indicated an accuracy/quality score of "Poor". It was noted that eAR customer complaints data may not properly capture the distribution system pressure issues because they occur in one part of the distribution system but not others due to elevation of the home and the eAR questions are often misunderstood by the water system, which might result in under-reporting. It was also noted that, for small water systems, distribution system pressure measurement data may not be reliable.

### Step 3: Combined Evaluation

Distribution System Pressure does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage, availability, and accuracy/quality can be improved.

- STEP 1 APPLICABILITY: **Excellent**
- STEP 2: DATA FITNESS
  - Coverage: **Poor**
  - Availability: **Fair**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **Future**

## Water Rights Allocations

Water rights are required for any diversion from a river, lake, stream, or creek, and the defined allocation must be utilized for a beneficial use. Some water systems may be diverting up to their current water right limit and could be at-risk of water shortages or face penalties if they exceed their allocation. Adjudicated groundwater basins are typically managed by a watermaster with separate reporting requirements.

### Step 1: Applicability: Good

A survey of State Water Board District Engineers in July 2020 indicated that this indicator may be a good measure of water system risk.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

#### *Required Risk Indicator Data Points & Sources:*

- [Electronic Water Rights Management System \(eWRIMS\)](#); State Water Board (annual reporting required for water right permit holders).
- [Adjudicated Basins Annual Reporting System](#); DWR (updated annually, required reporting).
- Federal Primary Source Type (Water Type Code); SDWIS (Reviewed frequently in Modified Drinking Water Watch (mDDW) and in SDWIS, required reporting).
  - GW – Groundwater
  - SW - Surface Water
  - Both – GW and SW
- Water Production Annual Total; eAR (annual, required reporting).

#### *Risk Indicator Methodology:*

- Water System Source Water Identification – SDWIS – Water systems screened for source water (groundwater/surface water) to determine reliance on surface water.

- Water Production Annual Total – eAR – Screened for water production from surface water sources.
- Water Rights Allocations – eWRIMS/Adjudicated Basin Reporting – Water rights allocations compared to water production annual total from surface water sources or adjudicated groundwater sources.

**Data Coverage: Good**

- Water Rights Allocations: **Good**
  - Water right permits are required statewide. Although, adjudicated groundwater basins have separate permitting and/or reporting requirements making it difficult to fully understand individual water system sources and requirements.
- Federal Primary Source Type (SDWIS = Water Type Code): **Good**
  - The data is required reporting and the overall coverage score is considered good.
- Water Production Annual Total - eAR: **Good**
  - Based on coverage analysis using the average response rate between the 2017 and 2018 eAR reporting years for public water systems with 3,300 service connections or less, 100% coverage.

**Data Availability: Good**

- Water Rights Allocations: **Good**
  - All surface water and adjudicated groundwater basin water right permit holders are required to submit annual reports on the amount of water diverted.
- Water System Source Water Identification: **Good**
  - Water source facility type is maintained and updated frequently by State Water Board staff through mDWW and SDWIS.
- Water Production Annual Total: **Good**
  - This data is collected annually through eAR.

**Data Accuracy/Quality: Fair**

- Water Rights Allocations: **Fair**
  - Water rights reporting accuracy is generally considered good. Some water systems may have a combination of water sources making it difficult to understand how surface water and/or groundwater sources are utilized.
- Water System Source Water Identification: **Fair**
  - Water source facility type is submitted by water systems and reviewed and maintained frequently by DDW staff. The vast majority of “water source facility type” inventory is accurate. Understanding
- Water Production Annual Total: **Good**
  - This data is required reporting in the eAR and required data fields are often verified by State Water Board staff.

### **Step 3: Combined Evaluation: Maybe**

Water Rights Allocations meets some of the combined criteria and may be considered for Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Maybe**

## **Urban Water Loss**

Water loss resulting from seepage, leaks, pipe failures due to aging infrastructure, or water theft can be an indicator of water system failures, and water systems can increase water supplies and recover revenue by identifying the scale and cost of these losses.

### **Step 1: Applicability: Good**

A survey of State Water Board District Engineers in July 2020 indicated that this indicator may be a good measure of water system risk.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Point & Source:*

- [Urban Water Loss](#); DWR (updated annually, required in Water Code §10608.34)

### **Data Coverage: Poor**

The urban water loss audits are only required for urban water retail suppliers that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

### **Data Availability: Good**

The water loss audit reports are posted on the [Water Use Efficiency](#) data portal. It currently includes a mix of water loss audit reports for 2016-2018.

### **Data Accuracy/Quality: Good**

All water loss audit reports are validated by the American Water Works Association.

### **Step 3: Combined Evaluation: Future**

Urban Water Loss does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage can be improved.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Poor**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Future**

## Adequate Water Storage Capacity

This indicator determines compliance with the storage capacity standards specified in CCR Section 64554(a)(1) through (3), as a whole and for each pressure zone within the system (i.e., systems with 1,000 or more service connections - storage capacity must be able to meet four hours of peak hourly demand (PHD), systems with less than 1,000 service connections - storage capacity must be equal to or greater than maximum day demand (MDD)).

### Step 1: Applicability: **Good**

Each water system must have adequate water storage capacity as a whole and for each pressure zone. A survey of State Water Board engineers in July 2020 confirmed the applicability of this indicator.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Points & Source:*

- Storage capacity as a whole and for each pressure zone; Sanitary Survey (every 3-year for community water systems; 5-year for non-community water systems, generally required).
- MDD and PHD calculated pursuant to CCR subsection 64554(b); Sanitary Survey (every 3-year for community water systems; 5-year for non-community water systems, generally required).

### Data Coverage: **Fair**

Coverage of the data point across public water systems with 3,300 service connections or less can vary because (1) Sanitary Surveys may not include the same survey questions for all water systems or water systems types state-wide and (2) Survey questions may not be consistently asked to each system from one Sanitary Survey to the next, thus coverage for individual data points for one system over time can vary.

### Data Availability: **Poor**

The State Water Board's DDW is responsible for conducting Sanitary Surveys every three years for community water systems and every five years for non-community water systems. While a data availability score of "Fair" may perhaps be liberally applied here based on the evaluation criteria, a downgraded score of "Poor" is assigned due to the

fact that data collected through Sanitary Surveys (PDF) is not machine-readable or readily extractable without significant effort.

### **Data Accuracy/Quality: Fair**

A survey of State Water Board engineers in July 2020 indicated an accuracy/quality score of “Fair”. It was noted that overall data accuracy/quality may depend on the accuracy of water PHD/MDD that is calculated based on estimation (if meters are not available) or based on a monthly meter reading that may not reflect true peak demands.

### **Step 3: Combined Evaluation**

Adequate Water Storage Capacity does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage, availability, and accuracy/quality can be improved.

- STEP 1 APPLICABILITY: **Excellent**
- STEP 2: DATA FITNESS
  - Coverage: **Fair**
  - Availability: **Poor**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Future**

## **DWR - Drought and Water Shortage Risk Assessment Results**

This indicator utilizes DWR’s Drought and Water Shortage Risk Scoring Tool results which identifies small water systems and rural communities that are potentially at-risk of drought and vulnerable to water shortages.<sup>1</sup> This tool creates an aggregated, comparative risk score for each water system and community derived from a set of indicators that capture different dimensions of exposure to hazards, physical/social vulnerability, and observed supply shortages (29 indicators for small water suppliers and 31 indicators for self-supplied communities).

### **Step 1: Applicability: Good**

This indicator is utilizing the comparative risk score calculated by DWR using a set of indicators developed from a stakeholder driven process. The State Water Board and UCLA analyzed:

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<sup>1</sup> [DWR's Drought and Water Shortage Vulnerability Risk Assessment](https://water.ca.gov/Programs/Water-Use-And-Efficiency/Making-Conservation-a-California-Way-of-Life/County-Drought-Planning)

<https://water.ca.gov/Programs/Water-Use-And-Efficiency/Making-Conservation-a-California-Way-of-Life/County-Drought-Planning>

(1) 32 of the 39 individual indicators used in DWR's Drought and Water Shortage Risk Scoring Tool; and

(2) The result of DWR's combined indicators.

The evaluation of the 32 individual indicators revealed that when analyzed separately the criticality of most of the individual indicators was not as applicable when compared to the combined results of DWR's assessment for the purposes of the State Water Board's Risk Assessment.

Although, there are several individual indicators that were evaluated and determined to be applicable on their own for the purposes of the State Water Board's Risk Assessment:

Recommended for consideration for Risk Assessment 2.0:

- Critically Overdrafted Groundwater Basins
- Number of Water Sources
- Water Source Type
- Curtailment Compliance Order

Recommended for potential consideration for Risk Assessment 2.0, but the indicator may have some data fitness issues:

- Presence of Interties
- Presence of Emergency Interties

Recommended for future consideration for inclusion in the Risk Assessment if data fitness can be improved:

- Water Level Status

## **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- Small Water Supplier Drought and Water Shortage Risk Score<sup>2</sup>; California Natural Resources Agency Open Data (anticipated annually, required reporting by AB 1668-California Water Code 10609.42(a)).

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<sup>2</sup> [Small Water Supplier Drought and Water Shortage Risk Score](https://data.cnra.ca.gov/dataset/drought-risk-small-suppliers-and-communities)

<https://data.cnra.ca.gov/dataset/drought-risk-small-suppliers-and-communities>

### *Risk Indicator Methodology:*

Each water system received a numeric risk score, ranging from 0 to 100 with the higher number representing greater risk. This is a percentile risk score, which means that all numeric scores are relative to the other water systems examined.

#### **Data Coverage: Fair**

In total, 4,100 small water suppliers (community and non-community water systems) with fewer than 3,000 service connections and using fewer than 3,000 acre-feet of water per year were examined for their relative risk of drought and water shortage. State small systems with fewer than 15 service connections were considered under the rural community analysis. Although, water systems between 3,000 to 3,300 service connections were excluded from this assessment. This dataset contains the final risk score for each water system examined.

#### **Data Availability: Good**

The dataset containing the final risk score for each supplier is submitted by DWR pursuant to CWC Section 10609.42 and made available on California Natural Resources Agency Open Data portal for download. DWR anticipates updating the statewide drought and water shortage risk assessment for small water suppliers and self-supplied communities by April 15th of each year to enable local suppliers to plan for a projected dry year prior to summer months.

#### **Data Accuracy/Quality: Good**

This risk assessment data set can generally be considered reliable, however, some of underlying data drawn from multiple data sources may not be accurate.

#### **Step 3: Combined Evaluation: Good**

DWR - Drought and Water Shortage Risk Assessment Results meets the required criteria and should be considered for Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Good**
- STEP 3: COMBINED EVALUATION: **Yes**

## **Source Capacity and Demand Ratio**

This indicator determines whether a public water system's source capacity meet or exceed the system's maximum day demand for the past ten years as required in the CCR subsection 64554(a).



### **Step 1: Applicability: Good**

A public water system's water source(s) must have the adequate capacity to meet or exceed the system's maximum day demand. Maximum day demand is determined pursuant to CCR subsection 64554(b). This indicator was proposed through the survey of State Water Board engineers in July 2020, and a DDW internal workgroup confirmed the applicability.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

#### *Required Risk Indicator Data Points & Sources:*

- Source Capacity; Sanitary Survey (every 3-year for community water systems; 5-year for non-community water systems, generally required).
- Maximum Day Demand (MDD); Sanitary Survey (every 3-year for community water systems; 5-year for non-community water systems, generally required).

#### *Risk Indicator Methodology:*

- Source Capacity & Demand Ratio = [Maximum Day Demand determined per CCR subsection 64554(b)] / [Source Capacity]

### **Data Coverage: Fair**

- Source Capacity: **Fair**
  - Source capacity is typically discussed in a Sanitary Survey. However, coverage of this data may vary because survey questions may not be consistently asked across public water systems with 3,300 service connections or less.
- MDD: **Fair**
  - It is a regulatory requirement for water systems to estimate their MDD. Accordingly, MDD data can be collected through Sanitary Surveys. However, coverage of this data also may vary because this survey question may not be consistently asked across public water systems with 3,300 service connections or less.

### **Data Availability: Poor**

- Source Capacity and MDD: **Poor**
  - The State Water Board's DDW is responsible for conducting Sanitary Surveys every three years for community water systems and every five years for non-community water systems. While a data availability score of "Fair" may perhaps be liberally applied here based on the evaluation criteria, a downgraded score of "Poor" is assigned due to the fact that data collected through Sanitary Surveys (PDF) is not machine-readable or readily extractable without significant effort.

### **Data Accuracy/Quality: Good**

- Source Capacity: **Good**

- Source capacity can be confirmed during a Sanitary Survey by reviewing the engineering report that was submitted as a requirement of public water system's domestic water supply permit.
- **MDD: Fair**
  - Accuracy/quality of this data may depend on the water usage data collected by water systems.

### **Step 3: Combined Evaluation**

Source Capacity and Demand Ratio does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage, availability, and accuracy/quality can be improved.

- **STEP 1 APPLICABILITY: Good**
- **STEP 2: DATA FITNESS**
  - Coverage: **Fair**
  - Availability: **Poor**
  - Quality: **Good**
- **STEP 3: COMBINED EVALUATION: Future**

## **Proximity to Earthquake Fault**

Water system that are in/ near an earthquake fault plane is considered at risk for a future, high-magnitude, earthquake.

### **Step 1: Applicability: Good**

This indicator was suggested by State Water Board District Engineers in a survey in July 2020.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- Water system service area boundaries (ongoing, not required reporting).
- Proximity to active earthquake faults in California; California Earthquake Authority™ (CEA™)<sup>3</sup> – California Earthquake Risk Map & Faults by County (ongoing, required)

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<sup>3</sup> [California Earthquake Authority™](https://www.earthquakeauthority.com/California-Earthquake-Risk/Faults-By-County)

<https://www.earthquakeauthority.com/California-Earthquake-Risk/Faults-By-County>

### *Risk Indicator Methodology:*

Water systems boundaries are overlaid with the California active faults dataset.

#### **Data Coverage: Good**

- Water system service area boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- Proximity to active earthquake faults in California: **Fair**
  - CEA™ website provides information about proximity to a major active fault (in mile) and probability of earthquake ( $\geq$  M7.0) for each County in California. However, this information and associated risk map is only searchable by each County and consolidated State-wide dataset or risk map is not provided.

#### **Data Availability: Good**

- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- Proximity to active earthquake faults in California: **Good**
  - CEA™ is a not-for-profit organization that was established by the California legislature where participating insurance companies sell California earthquake insurance policies. Historical and current earthquake information for each County is provided on its website on an ongoing basis.

#### **Data Accuracy/Quality: Fair**

- Water system service area boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- Proximity to active earthquake faults in California: **Good**
  - CEA™ is a not-for-profit organization that was established by the California legislature for purposes of educating homeowners about earthquake risk in their area and selling earthquake insurance policies.

#### **Step 3: Combined Evaluation: Maybe**

Proximity to Earthquake Fault meets some of the combined criteria and may be considered for Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**

- Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Maybe**

## Location in or Near a Flood Zone

Water systems that are in/near Flood Zone.

### Step 1: Applicability: **Good**

This Risk Indicator was suggested by State Water Board District engineers in a survey in July 2020.

### Step 2: Data Fitness (For public water systems with 3,300 connections or less)

*Required Risk Indicator Data Point & Source:*

- Water system service area boundaries (ongoing, not required reporting)
- [FEMA National Flood Hazard Layer](#) (updated twice a month, required reporting)

### Data Coverage: **Good**

- Water system service area boundaries: **Good**
  - There is no required reporting of water system service areas, however; current data coverage is 96.78%.
- FEMA National Flood Hazard Layer: **Good**
  - 100% coverage

### Data Availability: **Good**

- Water system service area boundaries: **Good**
  - The State Water Board updates water service area boundaries on an ongoing basis.
- FEMA National Flood Hazard Layer: **Good**
  - Maps are available on FEMA website.

### Data Accuracy/Quality: **Fair**

- Water system service area boundaries: **Fair**
  - Water system boundaries in SABL often do not reflect the water system's "water service area," instead it sometimes reflects the water system's jurisdictional area. The State Water Board is working with water systems to verify their water system boundaries and is building a new tool to allow water systems to edit their boundaries in real time.
- FEMA National Flood Hazard Layer: **Good**
  - This data is assumed to be accurate.

### **Step 3: Combined Evaluation: Maybe**

Location in or Near a Flood Zone meets some of the combined criteria and may be considered for Risk Assessment 2.0.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Good**
  - Availability: **Good**
  - Quality: **Fair**
- STEP 3: COMBINED EVALUATION: **Maybe**

## **Use or Dependence on Constructed Conveyance**

Water supply transferred in a conduit such as ditches, culverts, waterways, etc. Typically associated with untreated surface water delivered to customers that may or may not be treated by the resident.

### **Step 1: Applicability: Good**

Identifying if water systems have constructed conveyance is important for identifying systems that may be delivering compromised water.

### **Step 2: Data Fitness (For public water systems with 3,300 connections or less)**

*Required Risk Indicator Data Points & Sources:*

- It is currently unknown if specific point data source exists other than local knowledge within each State Water Board District.

### **Data Coverage: Poor**

In most cases, the data is not well documented and is often discovered during drought or other types of shut offs. Given this, the coverage is assumed "Poor."

### **Data Availability: Poor**

This data is not available in a machine-readable, easily accessible format. It is also not required reporting in any existing State database system.

### **Data Accuracy/Quality: Poor**

Given the difficult of tracking down information on constructed conveyances it is assumed to have "Poor" data quality.

### **Step 3: Combined Evaluation: Future**

The Use or Dependence on Constructed Conveyance does not meet necessary Step 2 criteria for data fitness, but is considered a good potential risk indicator for future iterations of the Risk Assessment if data coverage, availability, and accuracy/quality can be improved.

- STEP 1 APPLICABILITY: **Good**
- STEP 2: DATA FITNESS
  - Coverage: **Poor**
  - Availability: **Poor**
  - Quality: **Poor**
- STEP 3: COMBINED EVALUATION: **Future**