Editing the Downloaded Water Supply Report (WSR) Senior Diverters Table

The Water Availability Tool (WAT) extracts and assembles State Water Resources Control Board (SWRCB) digitally available data describing existing water rights in California. **Additional information is needed that is not contained within the digital datasets** to complete a Water Supply Report. Users must review the water rights data relevant to their project, to confirm it to be correct and complete about aspects of the water rights relevant to this analysis, and must augment information contained in the spreadsheet with information collected from the review of legal documents associated with individual water rights. This document provides a guide to assist the user with this process.

Introduction

The downloaded table, senior_diverters_unedited.csv, contains a list of senior water rights that are within the watershed upstream of the most downstream segment of the downstream flow path (i.e. those in the drainage area of the most downstream point of analysis). These water rights are specifically relevant to the point of diversion (POD) being evaluated for a proposed project. The WAT has added the proposed POD as a row into the table and ordered and labeled all records in a specific way described and illustrated below. The contents of the table are generated from data sources that are imported nightly from the California Open Data Portal: https://data.ca.gov/dataset/water-rights. For a detailed description of how the table was generated, see the Data Origin section below.

For the tool to estimate calculations including senior demand, and upstream demand, senior_diverters_unedited.csv must be reviewed for accuracy and edited where needed, including adding missing data and removing unneeded data. Once the .csv table has been reviewed and edited, upload it to the tool by clicking ‘Upload within the Senior Diverters Section, choosing the edited .csv table on your computer, and then selecting ‘Submit’. The file will then be validated to ensure all requirements are met, and messages will appear below the submit button indicating any necessary changes.

Most columns in the table were populated with information copied directly or calculated/derived from data acquired from the California Open Data Portal. Two additional columns were created by the tool, analysis_label, and order_upstream_to_downstream.

The table below describes each column in the table and gives a brief description of the editing requirements. This document provides guidelines on how to edit the senior_diverters_unedited.csv.

Determining senior diverter seasonal demand overview

The water availability tool will use the columns within the uploaded table to determine the seasonal water demand volume from all senior diverters. The tool determines seasonal demand inside and outside the policy season differently.

When the proposed season is within the date range of Dec 15 - Mar 31 (in the policy season)

The water availability tool determines senior diverter seasonal demand by using the guidelines provided in Policy section B.2.1.4:

1. Only senior water rights diverters with an authorized season of diversion during the proposed project's season of diversion are considered.
2. Senior water rights authorizing direct diversion for irrigation before March 31 are not considered part of the seasonal demand for the analysis period December 15 through March 31, as irrigation does not typically occur during the winter.
3. Because a typical frost season starts around March 15, for water rights authorizing direct diversion for frost protection, frost demand is calculated as the authorized maximum diversion rate times 10 hours a day for 8 days between March 15 and March 31.
4. Demand is prorated by multiplying the face value or maximum annual use by the ratio of the months within the policy diversion season to the number of months authorized by the senior diverter, for water rights with a direct diversion season.
5. Storage reservoirs are assumed empty at the beginning of the diversion season. Therefore, the demand for the storage right is assigned the capacity of the reservoir.
6. For water rights with an authorized collection season for storage reservoirs extending beyond March 31, the reservoir(s) are assumed to be full by March 31 and assigned the full storage volume as the seasonal water demand for the diversion period from December 15 through March 31.

When the proposed season is outside the date range of Dec 15 - Mar 31 (outside the policy season)

The water availability tool uses the columns within the uploaded table to determine the seasonal water demand volume of all senior diverters by taking direction from the guidelines provided in Policy section B.2.1.4:

1. If the storage season is exclusively outside of the Policy season, distribute the storage volume equally within the storage season. Include the portion of the equally distributed demand that overlaps with the proposed season in the seasonal demand for senior diverters.
2. Include all direct diversion (not to storage) for irrigation and distribute equally over the direct diversion season. Include the portion of the equally distributed demand that overlaps with the proposed season in the seasonal demand for senior diverters.
3. Don’t include diversion volumes for frost protection, as these occur during the period Mar 15 - Mar 31.

Additional assumptions

The above guidelines leave some room for interpretation. As such, the tool makes the following assumptions when calculating senior diverter seasonal demand related to the above guidelines:

- The tool determines if a senior diverter is authorized for storage if the following entries are filled out:
    - storage_season_start_month
    - storage_season_start_day
    - storage_season_end_day
    - storage_season_end_month
    - max_storage_af
- The tool determines if a senior diverter is authorized for direct diversion if the following entries are filled in:
    - direct_div_season_start_month
    - direct_div_season_start_day
    - direct_div_season_end_day
    - direct_div_season_end_month
- The tool differentiates further between seasons and volumes associated with direct diversion and diversion to storage in the following ways:
    - Direct diversion season columns are separate from storage season columns
    - Face value (acre-feet) is assumed to include maximum storage volume (acre-feet), thus direct diversion volume is assumed to be the difference between the face value (acre-feet) and maximum storage volume (acre-feet).
- If the senior diverter authorized season of direct diversion or storage season does not overlap with the proposed season, the senior diverter's seasonal demand is set to 0.
- The tool uses the use_codes column to determine if the senior diverters are authorized for the following cases:
    - Only Irrigation
    - Irrigation and other beneficial uses
    - Only Frost Protection

- Frost Protection and other beneficial uses
- Only Irrigation, Frost Protection
- Irrigation, Frost Protection, and other beneficial uses

More detailed documentation on the calculation of seasonal demand is provided in the output package, which is available for download after completion of a water supply report.

Removing irrelevant senior diverters

The tool excludes rows from the 'senior_diverters_unedited.csv' file where the 'water_right_status' is no longer active. Refer to the table below for guidance on the recommended statuses retained and those omitted. The “Inactive” water right status will be included in the tool, but users are directed to perform further investigation to see whether this water right causes impacts to flows at the proposed project and document. See the Order Description and Scenarios for Editing WSR Senior Diverters sections for guidance.

water_right_status	**Include?**
Active	Yes
Adjudicated	Yes
Cancelled	No
Certified	Yes
Claimed	Yes
Claimed - Local Oversight	Yes
Closed	No
Completed	No
Inactive	Yes

Licensed	Yes
No status available	Yes
Pending	Yes
Permitted	Yes
Registered	Yes
Rejected	No
Revoked	No
Withdrawn	No

What do I need to edit in the table?

The values and upstream/downstream order/position of all senior diverters will need to be reviewed. Many of those can be found by clicking on Water Rights Records Search at the following site: https://ciwqs.waterboards.ca.gov/ciwqs/ewrims/EWMenuPublic.jsp and entering in search criteria. To check the upstream/downstream order/position of the senior diverters, it is suggested to import senior_diverters_unedited.csv into GIS software and convert it to a point using the latitude and longitude columns.

Table Column Description and Editing Requirements

Column Name	Column Type	Description	Editing Requirements
analysis_label	Text E.g. Upstream of POD	This is a tool-generated column described in Order Description. This column is used by the tool to identify the relative location of senior diverters upstream of the proposed POD, senior diverters which are along the downstream flow path, and senior diverters which are upstream of the senior diverters along the flow path. You can also think of the column as a way to describe the position of a point of diversion relative to the proposed POD and the senior diverters along the flow path. The field supports the water supply report requirement to perform analysis at the Proposed POD as well as at senior diverters along the downstream flow path. There are 5 possible 'analysis_label' values: ● Upstream of POD ○ Label assigned for senior diverters upstream of the Proposed Point of Diversion (POD). ● Proposed POD ○ Label assigned and populated with the Proposed POD. ● Downstream Flow Path ○ This label is assigned if the tool considers the senior diverter to be on the downstream flow path (therefore a WSR Point of Analysis). The tool automatically considers senior diverters on the downstream flow path if the senior diverter is either within 1 mile of the downstream flow path	This column is not populated with any information from the Water Rights Records Search and users should populate cells after inspecting location information. See the reference graphic below for guidance. Must be populated with one of the following: ● Upstream of POD ● Proposed POD ● Downstream Flow Path ● Upstream of Downstream Flow Path ● Inside Project Extent **Only one** of the rows can be populated with "Proposed POD", the others must be a different entry of the above list. If you have identified that the tool has provided an incorrect 'analysis_label', change it to the correct 'analysis_label'. See this section for examples of when that is appropriate. If the senior_diverters_unedited.csv has only one record where 'analysis_label' is 'Proposed POD', that means the tool has not found any senior diverters in the project extent

Column Name	Column Type	Description	Editing Requirements
		and the senior diverter 'source_name' is similar to the downstream flow path stream name, or, the downstream flow path is the nearest stream to the senior diverter. ● Upstream of Downstream Flow Path ○ The label is assigned if the tool determines that the senior diverter is upstream of another senior diverter with the 'analysis_label' of 'Downstream Flow Path'. ● Inside Project Extent ○ Label assigned if the senior diverter is within the watershed upstream of the most downstream segment of the downstream flow path but not upstream of any identified senior diverter with an 'analysis_label' of 'Downstream Flow Path'. Senior diverters with this label will not be used in any subsequent senior seasonal demand calculations. Water rights with this 'analysis_label' have been included in this table for completeness. For example, in case the tool has assigned an 'analysis_label' incorrectly, they are included and it is up to the	

Column Name	Column Type	Description	Editing Requirements
		user to relabel them appropriately so they are used in the calculations correctly.	
order_upstream_to_downstream	Integer E.g. 1	This is a tool-generated column described in Order Description. This column is auto-populated with an ordered, unique integer representing the order of the senior diverter from furthest upstream to furthest downstream. This field is required to calculate upstream demand accurately at the Proposed POD and all senior diverters along the flow path (also known as the Points of Analysis). The tool prioritizes the ordering of senior diverters as follows: those with an 'analysis_label' of 'Upstream of POD' first, followed by 'Proposed POD', and then the remaining senior diverters with 'analysis_label's of 'Upstream of Downstream Flow Path', 'Downstream Flow Path', and 'Inside Project Extent' are appended in their respective order.	This column is not populated with any information from the Water Rights Records Search and the user should populate cells after inspecting location information. See the reference graphic below for guidance. The order is used to determine upstream senior demand. See Order Description for further details on how to edit. ● Must be populated with a unique integer. ● Must be populated correctly from upstream to downstream for the upstream demand calculations to be accurate. ● For example, consider a row where application_number = A00001 and order_upstream_to_downstream = 17. You are required to confirm that all rows where order_upstream_to_downstream < 17 are upstream of application_number = A00001. ● See Figure 1 for further illustration.
application_number	Text E.g. A000016	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	Must be populated except when 'analysis_label' is 'Proposed POD'
appl_pod	Text E.g. A000016_01	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.

Column Name	Column Type	Description	Editing Requirements
wr_water_right_id	Integer E.g. 100	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.
water_right_type	Text E.g. Appropriative E.g. Statement of Div and Use	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.
water_right_status	Text E.g. Licensed E.g. Inactive	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations. Omit records using this field; refer to the Removing irrelevant senior diverters section for guidance.
application_primary_owner	Text E.g. EAGLE CREEK PACIFIC, LLC	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.
pod_type	Text E.g. Point of Direct Diversion E.g. Point of Onstream Storage	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. The column is used in CDA senior demand calculations.
pod_count	Text E.g. 1	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.
source_name	Text E.g. UNNAMED STREAM	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	No editing requirements. The column is for reference and not used in calculations.

Column Name	Column Type	Description	Editing Requirements
latitude	Numeric E.g. 38.8295	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	The latitude must be filled out and be within the project watershed.
longitude	Numeric E.g. -123.2383	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights.	The longitude must be filled out and within the project watershed. Longitude must be negative.
drainage_area_sqmi	Number E.g. 0.24533	Automatically populated by the tool. It reflects the area of the upstream watershed associated with the stream to which the senior diverter location was snapped. For detailed information on the snapping logic applied to senior diverters and their association with streams, refer to the Data Origin Documentation.	No editing requirements. The drainage area will be used in calculations. If a user must add a new record, leave this field blank, the tool will populate it once the senior diverter csv is uploaded.
annual_precip_in	Number E.g. 46.125008	Automatically populated by the tool. It reflects the mean annual precipitation (1991-2020) of the upstream watershed associated with the stream to which the senior diverter location was snapped. The data source of the precipitation data set is PRISM (https://prism.oregonstate.edu/).	No editing requirements. The drainage area is used to calculate the precipitation. If a user must add a new record, leave this field blank, the tool will populate it once the senior diverter csv is uploaded.
use_codes	Text E.g. 'Domestic' It is permissible to include multiple use codes within a single cell. For example, 'Domestic, Stockwatering'	Automatically populated by the tool using the data from https://data.ca.gov/dataset/california-water-rights-uses-and-seasons and https://data.ca.gov/dataset/water-rights related together using 'application_number'.	Verify entry accuracy by cross-referencing with the water rights records. Format guidelines: Provide a comma-separated list of beneficial uses. When indicating more than one beneficial use, separate them with a comma. Allowed example: Domestic, Heat

Column Name	Column Type	Description	Editing Requirements
priority_date	Date of the form yyyy-mm-dd E.g. 1965-01-01	Automatically populated by the tool using data from https://data.ca.gov/dataset/water-rights. Data is pulled from the field priority_date, if it's empty then receipt_date, then finally application_acceptance_date is used to populate this field.	Verify entry accuracy by cross-referencing with the water rights records.
direct_div_ season_start_ month	Integer (1-12) E.g. 6	Direct Diversion Season Start Month Automatically populated by the tool using data by extracting **month** from 'direct_div_season_start' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for direct diversion. It can be left blank if the senior diverter is not authorized for direct diversion, such as when only authorized for storage. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
direct_div_ season_start_ day	Integer (1-31) E.g. 30	Direct Diversion Season Start Day Automatically populated by the tool using data by extracting **day** from 'direct_div_season_start' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for direct diversion. It can be left blank if the senior diverter is not authorized for direct diversion, such as when only authorized for storage. A season is required for calculations.

Column Name	Column Type	Description	Editing Requirements
			Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
direct_div_ season_end_ month	Integer (1-12) E.g. 1	Direct Diversion Season End Month Automatically populated by the tool using data by extracting **month** from 'direct_div_season_end' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for direct diversion. It can be left blank if the senior diverter is not authorized for direct diversion, such as when only authorized for storage. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
direct_div_ season_end_ day	Integer (1-31) E.g. 20	Direct Diversion Season End Day Automatically populated by the tool using data by extracting **day** from 'direct_div_season_end' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for direct diversion. It can be left blank if the senior diverter is not authorized for direct diversion, such as when only authorized for storage. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight

Column Name	Column Type	Description	Editing Requirements
			storage_season and direct_div_season columns.
storage_season_start_month	Integer (1-12) E.g. 1	Storage Season Start Month Automatically populated by the tool using data by extracting **month** from 'storage_season_start' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for diversion to storage. It can be left blank if the senior diverter is not authorized for storage diversion. Additionally, if the senior diverter authorizes storage, max_storage_af must be a non-zero number. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
storage_season_start_day	Integer (1-31) E.g. 1	Storage Season Start Day Automatically populated by the tool using data by extracting **day** from 'storage_season_start' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water right records. This field must be populated if the senior diverter's records indicate authorization for diversion to storage. It can be left blank or set to 0 if the senior diverter is not authorized for storage diversion. Additionally, if the senior diverter authorizes storage, max_storage_af must be a non-zero number. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4

Column Name	Column Type	Description	Editing Requirements
			direct_div_season columns, or all eight storage_season and direct_div_season columns.
storage_season_end_month	Integer (1-12) E.g. 1	Storage Season End Month Automatically populated by the tool using data by extracting **month** from 'storage_season_end' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for diversion to storage. It can be left blank or set to 0 if the senior diverter is not authorized for storage diversion. Additionally, if the senior diverter authorizes storage, max_storage_af must be a non-zero number. A season is required for calculations. Therefore, it is required to fill out either all four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
storage_season_end_day	Integer (1-31) E.g. 1	Storage Season End Day Automatically populated by the tool using data by extracting **day** from 'storage_season_end' from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. This field must be populated if the senior diverter's records indicate authorization for diversion to storage. It can be left blank or set to 0 if the senior diverter is not authorized for storage diversion. Additionally, if the senior diverter authorizes storage, max_storage_af must be a non-zero number. A season is required for calculations. Therefore, it is required to fill out either all

Column Name	Column Type	Description	Editing Requirements
			four storage_season columns, all 4 direct_div_season columns, or all eight storage_season and direct_div_season columns.
max_storage_af	Numeric E.g. 100.1	Storage Amount (Acre-feet) Automatically populated by the tool using max_storage from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. For appropriative water rights, this should represent the maximum annual amount of water required to be placed into storage in any given year in Acre-feet. When a water right does not authorize storage (e.g., all riparian statements and some appropriative rights), set the cell to 0. If this entry is set to a non-zero number, the tool requires the following four fields to be filled out: storage_season_start_day,storage_season_start_month, storage_season_end_day, storage_season_end_month. Note: The tool anticipates that the 'face_amount_af' volume should encompass the 'max_storage_af' volume within it. Therefore, 'max_storage_af' should not exceed 'face_amount_af'.
face_amount_af	Numeric E.g. 100.1	Automatically populated by the tool using multiple fields from https://data.ca.gov/dataset/water-rights. The tool automatically calculates this number by first determining 'face_value_af,' which involves converting 'face_value_amount' to acre-feet using 'face_value_units.' Subsequently, the tool populates this entry with 'max_dd_ann' when it is not zero and is less than 'face_value_af'; otherwise, 'face_value_af' is used.	Verify entry accuracy by cross-referencing with the water rights records. Generally, the entry will be set to zero for riparian statements. When an entry is zero and the water right is a riparian statement (i.e., where water_right_type = ‘Statement of Div and Use’), the guidance is to inspect available water right reports in eWRIMS to identify the maximum annual report amount diverted in Acre-feet across all reporting

Column Name	Column Type	Description	Editing Requirements
		This calculation follows the policy guidelines which state that the following information is required for each POD associated with each senior diverter: (B.1.2.4) “Maximum annual use limitation when it is less than the face value of the permit of license”	years, as well as the maximum annual reported diversion rate in cubic feet per second (you’ll need this next). Enter the maximum annual reported diversion amount in Acre-feet as the face value. For appropriative water rights, in some cases, there may be a maximum annual use limitation that is less than the face value of the permit or license. The tool will automatically enter this value if available. The tool anticipates that the 'face_amount_af' volume should encompass the 'max_storage_af' volume within it. Therefore, 'max_storage_af' should not exceed 'face_amount_af'. Please see https://data.ca.gov/dataset/water-rights for more information, or refer to https://data.ca.gov/dataset/california-water-rights-water-use-reported as a secondary data source for riparian statements. As another resource the initial water rights application may be found at EWRIMS: https://ciwqs.waterboards.ca.gov/ciwqs/ewrims/EWMenuPublic.jsp.
max_rate_of_ diversion_cfs	Numeric E.g. 0.0164872666	Maximum Rate of Diversion (cubic feet per second) Automatically populated by the tool using multiple fields from https://data.ca.gov/dataset/water-rights.	Verify entry accuracy by cross-referencing with the water rights records. When filling out, please follow the policy guidelines: “Direct diversion rate, unless a maximum rate of diversion is imposed as a term on the permit or license, in which case the maximum rate of diversion should be

Column Name	Column Type	Description	Editing Requirements
		The tool automatically calculates this number by first determining 'direct_diversion_rate_cfs' and ‘max_rate_of_diversion_cfs’ which involves converting ‘direct_diversion_rate’ to cubic feet per second using ‘direct_div_rate_unit' and converting ‘max_rate_of_diversion` to cubic feet per second using ‘max_rate_of_div_unit`. Subsequently, the tool populates this entry with ‘max_rate_of_diversion_cfs’ when it is not zero; otherwise, 'direct_diversion_rate_cfs' is used.	used.” (B.1.2.2). Generally this entry is blank for riparian statements (i.e., where water_right_type = ‘Statement of Div and Use’). When this entry is blank and water_right_type = ‘Statement of Div and Use’, the guidance is to inspect available water rights reports in eWRIMS and identify the maximum reported diversion rate across all annual reports (in cubic feet per second) and enter this value. As some water rights do not have a direct diversion rate or maximum rate of diversion, this entry can be left blank or set to zero.
minimum_ bypass_flow_cfs	Numeric E.g. 0.01	Minimum Bypass Flow (cubic feet per second) if imposed or specified in the water right permit or license for a senior diverter. This field is not populated for any senior water rights, as data on bypass flows is not distributed by eWRIMS. Column is required for CDA calculations.	The minimum bypass term is not needed for the Water Supply Report but is needed, if available, for the subsequent cumulative diversion analysis (CDA). When “Yes” is selected within the “Do you require CDA?” form, this column is used. When a senior diverter does not have a minimum bypass flow specified in their permit or license, set the cell to 0 or leave it empty. Conversely, when “No” is selected within the “Do you require CDA” form, population of this column is not required. Many water rights do not have a minimum bypass specified in the permit or license. As it is expected that the user will be reviewing licenses and permits at this point,

Column Name	Column Type	Description	Editing Requirements
			please add now if available. It is recommended to populate the field using the State Water Board Division of Water Rights files and records. This does not apply to bypass requirements applied on the CDFW Lake and Streambed Alteration Agreement (LSAA/1600) that are not also included in the water right permit or license (i.e. if an LSAA includes a bypass requirement that is not also included in a water right permit or license, do not include in the LSAA bypass here).
seasonal_ demand_af	Numeric E.g. 230.4	Senior Diverter Seasonal Demand (Acre-feet) within the proposed project's season of diversion.	The population of this field is optional. It is intended to provide a way for expert users to provide a senior diverter's seasonal demand (Acre-feet) rather than use the tool-generated seasonal demand. If this entry is populated, the tool will not calculate a senior diverter's seasonal demand and instead, utilize the value provided in this field. If this field is populated, it is required to populate 'overwrite_seasonal_demand_af_justification'. The populated value must follow guidelines on determining the demand volume stated in B.2.1.4 of the Policy.
overwrite_ seasonal_ demand_af_ justification	Text E.g. 'Adjusted seasonal demand to reflect correspondence with state water board engineer.'	Overwrite Seasonal Demand (Acre-feet) justification. This field is provided for the user to justify, detailing the method used to populate the field and the rationale behind choosing to override the tool's seasonal demand calculation. If you override this value, please ensure that the stated	If the 'seasonal_demand_af' field is populated, it is mandatory to fill in this accompanying field.

Column Name	Column Type	Description	Editing Requirements
		seasonal demand is for the dates that correspond to the proposed season of diversion being evaluated.	
comments		This column is designated for users' record-keeping purposes.	Not required. We recommend using this column if you have made modifications to any fields in the row. Providing comments may aid in Division review of a prepared WAA.

Tell me more about this table…

Order Description

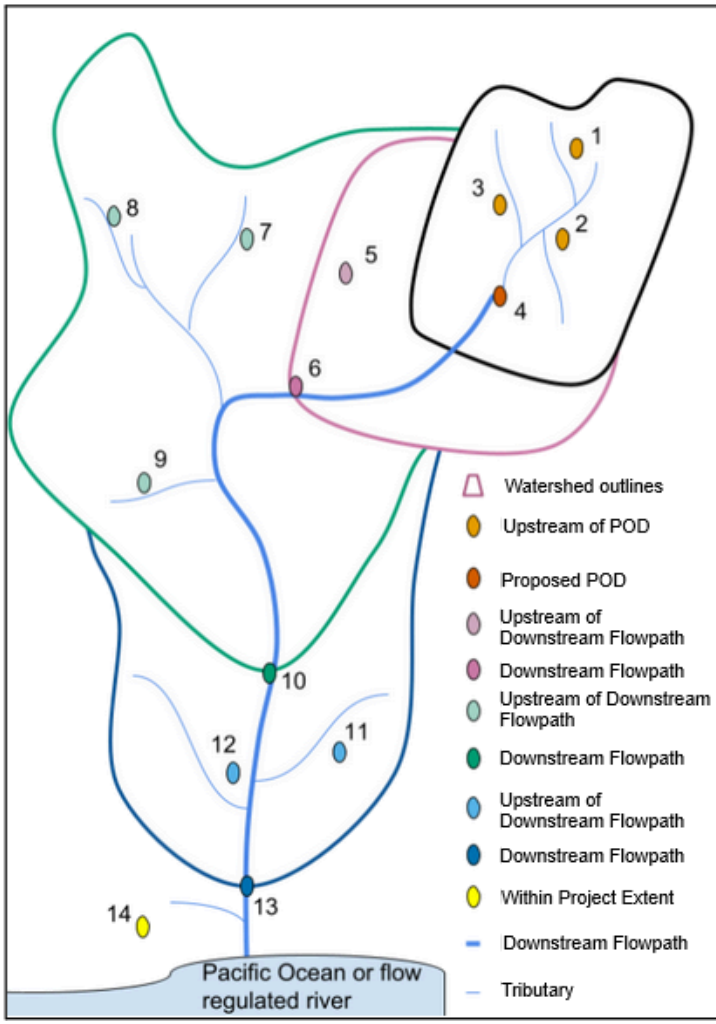
The table needs to be ordered in a very specific way. The ordering and labeling are captured in two tool-created columns, 'analysis_label' and 'order_upstream_to_downstream'. The tool automatically orders senior diverters using the methods described below, though ordering and labeling need to be checked and edited as necessary by the user.

analysis_label: This column is primarily used by the tool to identify relative locations of senior diverters upstream of the proposed POD, senior diverters which are along the downstream flow path, and senior diverters which are upstream of the senior diverters along the flow path. You can also think of the column as a way to describe the position of the point of diversion relative to the proposed POD and the senior diverters along the flow path. The field supports the water supply report requirement to perform analysis at the Proposed POD as well as at senior diverters along the downstream flow path. There are 5 possible values for analysis_label:

- Upstream of POD
    - Label assigned for senior diverters upstream of the Proposed Point of Diversion (POD). For an example, see Figure 1 where ‘order_upstream_to_downstream’ are 1, 2, or 3.
- Proposed POD
    - Label assigned and populated with the selected Proposed POD. For an example, see Figure 1 where ‘order_upstream_to_downstream’ is 4.

- Downstream Flow Path
    - This label is assigned if the tool considers the senior diverter to be on the downstream flow path (therefore a WSR Point of Analysis). The tool automatically considers senior diverters on the downstream flow path if the senior diverter is either within 1 mile of the downstream flow path and the senior diverter ‘source_name’ is similar to the downstream flow path stream name, or, the downstream flow path is the nearest stream to the senior diverter. For an example, see Figure 1 where ‘order_upstream_to_downstream’ are 6, 10, or 13.
- Upstream of Downstream Flow Path
    - The label is assigned if the tool determines that the senior diverter is upstream of another senior diverter with the 'analysis_label' of 'Downstream Flow Path'. For an example, see Figure 1 where ‘order_upstream_to_downstream’ are 5, 7, 8, 9, 11, or 12.
- Inside Project Extent
    - Label assigned if the senior diverter is within the watershed upstream of the most downstream segment of the downstream flow path but not upstream of any identified senior diverter with an ‘analysis_label’ of ‘Downstream Flow Path’. Senior diverters with this label will not be used in any subsequent senior seasonal demand calculations. Water rights with this ‘analysis_label’ have been included in this table for completeness. For example, in case the tool has assigned an ‘analysis_label’ incorrectly, they are included and it is up to the user to relabel them appropriately so they are used in the calculations correctly. For an example, see Figure 1 where ‘order_upstream_to_downstream’ = 14.

order_upstream_to_downstream: This column is auto-populated with an ordered, unique integer representing the order of the senior diverter from furthest upstream to furthest downstream. This field is required to calculate upstream demand accurately at the Proposed POD and all senior diverters along the flow path (also known as the Points of Analysis). The tool prioritizes the ordering of senior diverters as follows: those with an 'analysis_label' of 'Upstream of POD' first, followed by 'Proposed POD', and then the remaining senior diverters with 'analysis_label's of 'Upstream of Downstream Flow Path', 'Downstream Flow Path', and 'Inside Project Extent' are appended in their respective order.
To further illustrate ‘analysis_label’ and ‘order_upstream_to_downstream’, please see the reference graphic below. Figure 1 illustrates an example of the first three columns of the senior_diverters_unedited.csv table along with a map of their position on the stream network.
The tool uses the outlined logic to make its best guess when assigning 'analysis_label' and 'order_upstream_to_downstream.' However, due to incomplete or inaccurate senior diverter data (e.g., incorrect latitude and longitude coordinates) and potential errors in label assignment by the tool, the created columns may not always be accurate and should be reviewed for correctness.



order _upstream _to _downstream	analysis_label	application _number
1	Upstream of POD	XXXX
2	Upstream of POD	XXXX
3	Upstream of POD	XXXX
4	Proposed POD	XXXX
5	Upstream of Downstream Flowpath	XXXX
6	Downstream Flowpath	XXXX
7	Upstream of Downstream Flowpath	XXXX
8	Upstream of Downstream Flowpath	XXXX
9	Upstream of Downstream Flowpath	XXXX
10	Downstream Flowpath	XXXX
11	Upstream of Downstream Flowpath	XXXX
12	Upstream of Downstream Flowpath	XXXX
13	Downstream Flowpath	XXXX
14	Within Project Extent	XXXX

Figure 1. Left panel: map with senior diverter points and proposed POD labeled by 'order_upstream_to_downstream' with legend that displays 'analysis_label' of points. Right panel: examplecolumns of the senior_diverters_unedited.csv which displays how the senior_diverters_unedited.csv would be labeled and ordered for the map example in the left panel.

Scenarios for Editing WSR Senior Diverters

1. What if the senior_diverters_unedited.csv is missing a senior diverter?

Add the missing senior diverter row to the spreadsheet. The senior diverters have been ordered based on the principles outlined in this document. Please ensure correct placement so it exists in its appropriate stream network position. In the table, the missing senior diverter should be added between the adjacent senior diverters immediately upstream or downstream of the missing senior diverter that is being added. Update the ‘analysis_label’ appropriately.

Below is an example downloaded senior_diverters_unedited.csv showing a subset of columns. The table is missing a senior diverter, A123456, which is on the downstream flow path downstream of the Proposed POD but upstream of the Downstream Flow Path where ‘application_number’ = A024884.

Sample senior_diverters_unedited.csv:

analysis_label	**order_upstream_to_downstream**	**application_number**	**water_right_type**	**water_right_status**	**.. remaining columns..**	**Comments**
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		
Upstream of Downstream Flow Path	3	S011111	Statement of Div and Use	Claimed		
Upstream of Downstream Flow Path	4	H111111	Registration Cannabis	Rejected		

Upstream of Downstream Flow Path	5	S011112	Statement of Div and Use	Claimed		

See below on how to edit the sample senior_diverters_unedited.csv to add a missing senior diverter. Highlighted cells have been added or modified.

Edited sample senior_diverters_unedited.csv:

analysis_label	**order_upstream_to_downstream**	**application_number**	**water_right_type**	**water_right_status**	**.. remaining columns..**	**Comments**
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		
Downstream Flow Path	3	A123456	Statement of Div and Use	Claimed	.. fill out all remaining columns appropriated	Added missing permit.
Upstream of Downstream Flow Path	4	S011111	Statement of Div and Use	Claimed		
Upstream of Downstream Flow Path	5	H111111	Registration Cannabis	Rejected		
Upstream of Downstrea	6	S011112	Statement of Div and	Claimed		

m Flow Path			Use			

2. What if the senior_diverters_unedited.csv has an incorrect analysis_label?

Adjust the 'analysis_label' to the correct label and verify the accuracy of all other analysis labels.
In the given example from senior_diverters_unedited.csv, which includes seven senior diverters (not a truncated list), note that upon reviewing location information, 'application_number' = A011112 is observed not to be on the downstream flow path, indicating it is not a Downstream Flow Path.

Sample senior_diverters_unedited.csv:

analysis_label	**order_upstream_to_downstream**	**application_number**	**water_right_type**	**water_right_status**	**.. remaining columns..**	**Comments**
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		
Upstream of Downstream Flow Path	3	S011111	Statement of Div and Use	Claimed		
Upstream of Downstream Flow Path	4	H111111	Registration Cannabis	Rejected		
Upstream of Downstream Flow Path	5	S011112	Statement of Div and Use	Claimed		
Downstream Flow Path	6	A011112	Appropriative	Licensed		

Outside Project Extent	7	A011113	Appropriative	Licensed		

Edited sample senior_diverters_unedited.csv:

analysis_label	**order_upstream_to_downstream**	**application_number**	**water_right_type**	**water_right_status**	**.. remaining columns..**	**Comments**
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		
Outside Project Extent	3	S011111	Statement of Div and Use	Claimed		Altered analysis_label to Outside Project Extent as A011112 is not on the downstream flow path. This record is no longer upstream of any Downstream Flow Path's.
Outside Project Extent	4	H111111	Registration Cannabis	Rejected		Altered analysis_label to Outside Project Extent as A011112 is not on the downstream flow path. This record is no longer upstream of any Downstream Flow Path's.

Outside Project Extent	5	S011112	Statement of Div and Use	Claimed		Altered analysis_label to Outside Project Extent as A011112 is not on the downstream flow path. This record is no longer upstream of any Downstream Flow Path's.
Outside Project Extent	6	A011112	Appropriative	Licensed		Altered analysis_label to Outside Project Extent as A011112 is not on the downstream flow path. This record is no longer upstream of any Downstream Flow Path's.
Outside Project Extent	7	A011113	Appropriative	Licensed		

3. What if the senior diverters are out of order?

Consider that the senior diverter where 'application_number' = A011111 is actually upstream of the Proposed POD, not a Downstream Flow Path. In this case, move the records to reflect the correct position and update 'analysis_label' and 'order_upstream_to_downstream'.

Sample senior_diverters_unedited.csv:

analysis_label	order_upstream_to_downstream	application_number	water_right_type	water_right_status	.. remaining columns..	Comments
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		
Upstream of Downstream Flow Path	3	S011111	Statement of Div and Use	Claimed		
Upstream of Downstream Flow Path	4	H111111	Registration Cannabis	Rejected		
Upstream of Downstream Flow Path	5	S011112	Statement of Div and Use	Claimed		
Downstream Flow Path	6	A011112	Appropriative	Licensed		
Outside Project Extent	7	A011113	Appropriative	Licensed		

Edited sample senior_diverters_unedited.csv:

analysis_label	order_upstream_to_downstream	application_number	water_right_type	water_right_status	.. remaining columns..	Comments
Upstream of POD	1	A011111	Appropriative	Licensed		Altered position and analysis_label upon review of …
Proposed POD	2					
Upstream of	3	S011111	Statement	Claimed		

Downstream Flow Path			of Div and Use			
Upstream of Downstream Flow Path	4	H111111	Registration Cannabis	Rejected		
Upstream of Downstream Flow Path	5	S011112	Statement of Div and Use	Claimed		
Downstream Flow Path	6	A011112	Appropriative	Licensed		
Outside Project Extent	7	A011113	Appropriative	Licensed		

4. What if I need to remove a row?

This is a common use case as the user should be removing records with certain water_right_status entries. See the Removing irrelevant senior diverters section for guidance.

Delete the row from the table and adjust the 'analysis_label'. If the row removed affects the previous 'analysis_label', adjust labels as necessary. For example: if you needed to remove 'application_number' = A011111, then no other changes are necessary. If you needed to remove 'application_number' = A011112, then the 'analysis_label' for 'application_number' = S011112 would need to change to' Outside Project Extent' as it is no longer upstream of a Downstream Flow Path.

Original table:

analysis_label	**order_upstream_to_downstream**	**application_number**	**water_right_type**	**water_right_status**	**.. remaining columns..**	**Comments**
Proposed POD	1					
Downstream Flow Path	2	A011111	Appropriative	Licensed		

Upstream of Downstream Flow Path	3	S011111	Statement of Div and Use	Claimed		
Upstream of Downstream Flow Path	4	H111111	Registration Cannabis	Rejected		
Downstream Flow Path	5	S011113	Appropriative	Licensed		
Upstream of Downstream Flow Path	6	S011112	Statement of Div and Use	Claimed		
Downstream Flow Path	7	A011112	Appropriative	Licensed		
Outside Project Extent	8	A011113	Appropriative	Licensed		

5. What if a water right has multiple points of diversion?

At present, senior_diverters_unedited.csv is populated with a data source that provides only one point of diversion per water right. The intentional choice of this dataset is due to infrequent updates of the following data source:

https://data.ca.gov/dataset/california-water-rights-points-of-diversion and the absence of quantity fields specific to individual points of diversion. For instance, parameters such as face value, storage, and rate of diversion are applicable solely at the water right level, not tied to a particular point of diversion. However, there are many cases when a water right contains more than one point of diversion (e.g. where 'pod_count' > 1). In these cases, it is advised that the user downloads the https://data.ca.gov/dataset/california-water-rights-points-of-diversion dataset and checks to see if the additional points of diversions are within the project extent (i.e. the watershed upstream of the most downstream POD associated with the senior water right that is located the farthest downstream on the identified flow path). If a POD is within the project extent, the user can duplicate the row of the water right that has multiple PODs and paste it in the correct order in the table. The user must then adjust the following fields:

- adjust ‘analysis_label’ and ‘order_upstream_to_downstream’ appropriately to reflect the new POD’s placement in the stream network
- adjust ‘application_number’ to be different from the row it was duplicated from as `application_number` must be unique per row.
    - For example, if the duplicate row contained the ‘application_number’ = ‘A12345’, change it to ‘A12345-POD2’.
- Adjust ‘pod_type’ to reflect the new POD’s ‘pod_type’
- Adjust the following quantity fields to reflect the inclusion of multiple PODs.
    - face_amount_af
    - storage_amount_af
    - max_rate_of_diversion_cfs
    - minimum_bypass_flow_cfs
    - seasonal_demand_af (if using)
        - Overwrite_seasonal_demand_af_justification

6. Additional Guidance for Pending Applications

Pending applications are senior to the proposed project, as the submission of these pending applications is before the proposed projects submission. However, there are cases where pending applications may be duplicative of demands for associated statements. The state water board recommends that in this case, the applicant also should file a riparian statement for use on the pending application. Therefore, the pending application’s demand may be duplicative of the riparian statement’s usage. Users are advised to do the following in this case:

- Inspect the Riparian statement from EWRIMS and fill out necessary information for its diversion
    - Adjust the following quantity fields to reflect the EWRIMS information
        - face_amount_af
        - storage_amount_af
        - max_rate_of_diversion_cfs
        - minimum_bypass_flow_cfs
- Set the field seasonal_demand_af to an appropriate value for the Pending statement
    - If all of the demand is overlapping the Riparian statement in this case, the seasonal_demand_af value can be set to 0
    - Enter the overwrite_seasonal_demand_af_justification field with the justification for the seasonal demand value:

- In lieu of more in-depth comments, users may state “Pending Application duplicates Riparian statement <application_number> demand. Seasonal demand has been altered to reflect the overlapping demand”

7. Additional Guidance for Junior Water Rights

The *priority_date* field can be used to give an indication of whether a water right is junior to the project being proposed. Further analysis may be required to ensure that this is a valid assumption; however, if a user identifies a water right as junior to their proposed project, the following steps should be taken:

1. Set the *seasonal_demand_af* column to 0 (indicating no diversions from this water right should be taken into consideration.
2. Add a comment to the *overwrite_seasonal_demand_af_justification* column
    a. In lieu of more in-depth comments, users may state “Junior water right to proposed project. Seasonal_demand_af is set to 0 to ensure the junior water right has no impact on analysis. Determination of junior water right completed by analysing priority_date field”.

Data Origin Documentation

The senior_diverters_unedited.csv table was created as follows:

1. Every evening, the tool imports data from two primary sources: https://data.ca.gov/dataset/water-rights and https://data.ca.gov/dataset/california-water-rights-uses-and-seasons. The linkage between the datasets is established through the 'application_number' column. The resulting combined table is referred to as 'senior diverters,' serving as the primary source for the majority of fields in the table.
2. All “senior diverters” within the watershed upstream of the most downstream segment of the downstream flow path of the selected proposed POD are selected using a spatial intersect GIS function.
3. All stream segments on the downstream flow path are identified and given the ‘analysis_label’ = ‘Downstream Flow Path’ and all stream segments that branch off the downstream flow path are given the ‘analysis_label’ = ‘Upstream of Downstream Flow Path’. All stream segments are given incrementing integers from upstream to downstream in the ‘order_upstream_to_downstream’ column.
4. All clipped “senior diverters” are then associated with a stream segment from step 3 by the following rules; if the senior diverter is within 1 mile of a stream segment and the senior diverter “source_name” is similar to the stream segment

"gnis_name", then it is associated with the matching stream segment, otherwise, the "senior diverter" is snapped to the nearest stream segment.

5. All clipped "senior diverters" from step 2 that are only within the upstream watershed of the proposed POD are identified and appended to a temporary table and given the 'analysis_label' = 'Upstream of POD' and a new incrementing integer starting at 1 overwrites the 'order_upstream_to_downstream' column.
6. The proposed POD is then appended to the temporary table from step 5 and given the 'analysis_label' = 'Proposed POD' and the next incrementing integer in the 'order_upstream_to_downstream' column.
7. All remaining clipped "senior diverters" not in step 5 or 6 are appended to the temporary table with the 'analysis_label' and 'order_upstream_to_downstream' given in step 3.
8. The column "order_upstream_to_downstream" is overwritten with a new serialized incrementing 'order_upstream_to_downstream' column starting from 1 in the temporary table order to remove gaps.
9. As a post-processing step, water rights with water_right_status as one of "Cancelled", "Closed", "Completed", "Rejected", "Revoked" or "Withdrawn" are filtered out of the table, and the "order_upstream_to_downstream" is re-indexed
10. Comments are added addressing edge cases with Riparian, Frost Protection, Irrigation, and Inactive water rights. See "comments" column below.
11. The table is outputted as senior_diverters_unedited.csv