



Memorandum

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COPY TO: CV-SALTS ICM and GIS Project
Committee

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SUBJECT: **Initial Conceptual Model - Task 3.2: Data Source List**

This memorandum is being submitted on behalf of the LWA Team¹ and fulfills the requirement of Task 3.2 of the Initial Conceptual Model (ICM) Technical Services Workplan (Workplan) to submit a data source list².

The primary purpose of Task 3 of the ICM (Data Development) is to assemble information to be used in the preparation of the ICM. In addition, future work and data needs will be borne in mind during the development of the ICM, to the extent practicable. This will be done, for example, by retaining field- or grid-level land cover data and water/salt/nitrate balances (where available in CVHM or existing WARMF simulations), and then summing them to coarser-level elements for the Initial Analysis Zone (IAZ) evaluations. This sets the stage for future, more detailed analyses while performing the necessary aggregation as part of the ICM.

DATA SOURCE LIST (TASK 3.2)

The data source list (**Table 1**) identifies the data categories, sub-categories, and sources that will be utilized to execute the ICM simulations and analysis as explained in the ICM Workplan. This data source list is consistent with the Primary Land and Water Data Requirements as outlined in the Workplan.

¹ The LWA Team consists of the following firms: Larry Walker Associates, Luhdorff and Scalmanini Consulting Engineers, Kennedy/Jenks Consultants, PlanTierra, Systech Water Resources, and Carollo Engineers.

² Table 1, Deliverables Summary and Schedule

WARMF and CVHM model inputs and outputs will meet the majority of the data needs and have already been through an extensive QA/QC process. In IAZs that lack WARMF coverage, the data source list provides a description of additional resources that will be utilized to compile the necessary water quality inputs to compute water, salt, and nitrate balances.

Once the draft data source list has been approved, data will be compiled into a database framework, along with source and quality metadata. Newly compiled data (that has been QA/QC'd) will be converted to formats and data structures required for model inputs.

Data gaps will be documented along with recommendations identifying how to work around them and/or how they may be addressed in later phases of the CV-SNMP. This information will be documented as a part of Task 3.3.

Table 1. Draft Data Source List^{3,4}

Data Category	Data Sub-Category	Data Source	Online Data Source Location (if applicable)⁵
Water Supply	Surface Water Deliveries - Location	CVHM Data	http://ca.water.usgs.gov/project/central-valley/central-valley-hydrologic-model.html
	Surface Water Deliveries - Volume	CVHM Data	http://ca.water.usgs.gov/project/central-valley/central-valley-hydrologic-model.html
	Surface Water Deliveries - Quality	WARMF Database	N/A
		<i>For areas not covered by WARMF - Data will be screened from USGS, CDEC, SWAMP, DWR, and CDPH for water quality associated with surface water deliveries</i>	http://waterdata.usgs.gov/ca/nwis/qw http://www.ceden.us/AdvancedQueryTool http://swamp.mpsl.mlml.calstate.edu/swamp-comparability/database-comparability http://www.water.ca.gov/waterdatalibrary/waterquality/index.cfm http://www.cdph.ca.gov/certlic/dinkingwater/Pages/EDTlibrary.aspx
		WARMF Database	N/A
		<i>For areas not covered by WARMF - Data will be screened from USGS, CDEC, SWAMP, DWR, and CDPH for areas where surface water is used for irrigation; Data will be</i>	http://waterdata.usgs.gov/ca/nwis/qw http://www.ceden.us/AdvancedQueryTool

³ Water quality data to be collected includes: Nitrate as N (mg/L), TDS (mg/L), and Chloride (mg/L)

⁴ Groundwater data will include well completion depths when available

⁵ N/A – Indicates that the data is not readily available online and will be obtained through another source

Data Category	Data Sub-Category	Data Source	Online Data Source Location (if applicable) ⁵
		screened from Viers et al., 2012 ⁶ , as well as from DWR, USGS, GAMA Domestic, and CDPH data in Geotracker GAMA for areas where groundwater is used for irrigation	http://swamp.mpsl.mlml.calstate.edu/swamp-comparability/database-comparability http://www.water.ca.gov/waterdatalibrary/waterquality/index.cfm http://www.cdph.ca.gov/certlic/drinkingwater/Pages/EDTlibrary.aspx http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf http://www.waterboards.ca.gov/gama/geotracker_gama.shtml
	Groundwater Pumping - Location	CVHM Data	http://ca.water.usgs.gov/project/central-valley/central-valley-hydrologic-model.html
	Groundwater Pumping - Volume	CVHM Data	http://ca.water.usgs.gov/project/central-valley/central-valley-hydrologic-model.html
	Groundwater Pumping - Quality	Data will be screened from USGS, GAMA Domestic, DWR, and CDPH data in Geotracker GAMA. Additional data may be obtained from dairy data and the WARMF Database	http://www.waterboards.ca.gov/gama/geotracker_gama.shtml
	Irrigation Methods and Rates	CVHM Data	http://ca.water.usgs.gov/project/central-valley/central-valley-hydrologic-model.html

⁶ Viers, J.H., Liptzin, D., Rosenstock, T.S., Jensen, V.B., Hollander, A.D., McNally, A., King, A.M., Kourakos, G., Lopez, E.M., De La Mora, N., Fryjoff-Hung, A., Dzarella, K.N., Canada, H.E., Laybourne, S., McKenney, C., Darby, J., Quinn, J.F. & Harter, T. (2012) Nitrogen Sources and Loading to Groundwater. Technical Report 2 in: Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. Report for the State Water Resources Control Board Report to the Legislature. Center for Watershed Sciences, University of California, Davis.

Data Category	Data Sub-Category	Data Source	Online Data Source Location (if applicable) ⁵
Climate and Hydrology	Climate and Hydrology	CVHM Data	http://ca.water.usgs.gov/projects/central-valley/central-valley-hydrologic-model.html
Land Cover and Hydrography	Land Cover Classes	CVHM Data from the most recent land cover	http://ca.water.usgs.gov/projects/central-valley/central-valley-hydrologic-model.html
	Hydrography	Hydrography will be screened from: CVHM Data, WARMF Database, and NHD for areas not covered by WARMF	http://ca.water.usgs.gov/projects/central-valley/central-valley-hydrologic-model.html http://nhd.usgs.gov/data.html
Subsurface Characteristics	Soil	Vertical hydraulic conductivity and drainage data (capillary fringe data) comes from CVHM Data	http://ca.water.usgs.gov/projects/central-valley/central-valley-hydrologic-model.html
	Depth to Groundwater	Data will be screened from CVHM and dairy data, as well as from DWR and USGS data in Geotracker GAMA.	http://ca.water.usgs.gov/projects/central-valley/central-valley-hydrologic-model.html http://geotracker.waterboards.ca.gov/data_download_by_county.asp
Applied Materials	Recommended and Common Application Rates	Data will be screened from Viers et al., 2012.	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Fertilizer and Soil Amendment Sales Data	WARMF Database	N/A
		<i>For areas not covered by WARMF - Data will be screened from Viers et al., 2012.</i>	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Atmospheric Deposition Data	WARMF Database	N/A
<i>For areas not covered by WARMF – Data will be screened from Viers et al., 2012, National Atmospheric</i>		http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf	

Data Category	Data Sub-Category	Data Source	Online Data Source Location (if applicable) ⁵
		Deposition Program (NADP) and Clean Air Status & Trends Network (CASTNET)	s.edu/files/149916.pdf
Uptake and Losses	Nitrogen Concentrations in Harvested Material	WARMF Database	N/A
		For areas not covered by WARMF – Data will be screened Viers et al., 2012 or plant tissue literature	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Crop Yields	WARMF Database	N/A
		<i>For areas not covered by WARMF - Data will be screened from literature i.e. Viers et al., 2012.or from published values from Agricultural Commissioner's annual reports by county</i>	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Nitrogen Removal Rates	WARMF Database	N/A
		<i>For areas not covered by WARMF – Data will be screened from literature i.e. Viers et al., 2012.</i>	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Ranges of Gaseous Loss Rates	WARMF Output	N/A
		<i>For areas not covered by WARMF - literature values</i>	N/A
Point Sources	POTW and industrial outfalls	WARMF Database	N/A
		<i>For areas not covered by WARMF - To be incorporated with GIS and surface water quality estimates</i>	N/A
	Industrial and municipal land application	WARMF Database	N/A
		<i>For areas not covered by WARMF - CVRWQCB Permits from major sources</i>	N/A

Data Category	Data Sub-Category	Data Source	Online Data Source Location (if applicable) ⁵
Nonpoint Sources	Dairy Land Application	WARMF Database	N/A
		<i>For areas not covered by WARMF - In areas where dairies are a major land-use, Dairy Program data (UCCE and DairyCARES) will be used to determine if dairies are a major source outside of WARMF coverages</i>	N/A
	Leaching Water and Constituents	WARMF Output	N/A
		<i>For areas not covered by WARMF – Data may be screened from literature values or WARMF runs. Nearby WARMF runs will be scaled to provide percolation water quality in these areas.</i>	http://groundwaternitrate.ucdavis.edu/files/139110.pdf http://groundwaternitrate.ucdavis.edu/files/149916.pdf
	Stormwater Flow and Quality	WARMF Database	N/A
		<i>For areas not covered by WARMF - To be incorporated with GIS and surface water quality estimates</i>	N/A