

Salt/Nitrate Balance Study Evaluation Checklist

		Pilot Study	Turlock Study
1	Description of the Study and Physical Description of Study Area		
	Identifies Stakeholders Participating in the Study	●	○
	Identifies Goals and Objectives of the Study	●	●
	Physical Description of Study Area		
	Describes physical boundaries of the Study Area	●	●
	Describes the rationale for the physical boundaries	●	●
	Applies physical boundaries to water, salt, and nitrate balances	●	●
	Provides the areal extent (acreage) of the Study Area	●	●
	Identifies watershed boundaries within and near the Study Area	●	○
	Identifies groundwater subbasin boundaries within and near the Study Area	●	●
	Identifies hydrologic areas (surface and groundwater) tributary to and from the Study Area	●	○
	Describes Study Area geology	●	●
	Describes Study Area hydrogeology	●	●
	Describes current Study Area land use	●	●
	Describes the Study Area climate	○	○
	Identifies Study Area water sources	●	●
	Are GIS shapefiles and data sources available for the following:		
	Physical boundaries of Study Area	●	○
	Boundaries of watershed(s)	●	○
	Boundaries of groundwater subbasin(s)	●	○
	Surface water bodies	●	○
	Land use	●	○
2	Data		
	Presents and references all flow data used for the study	○	●
	Presents and references all salt data used for the study	●	●
	Presents and references all nitrate data used for the study	●	●
	Evaluates and discusses data sensitivity	●	○
	Identifies and quantifies data limitations, including accessibility and availability in useful format	●	○
3	Water Budget(s)		
	Provides a conceptual model of the water budget(s)	○	●
	Identifies and describes the water uses associated with various land uses	○	○
	Defines and discusses an appropriate physical scale based on available data	●	●
	Defines and discusses an appropriate temporal scale based on available data	○	○
	Develops water budget(s) for dry, wet, and average conditions	○	○
	Identifies and discusses the applicability of the following factors in the water budget:		
	assumed water usage used for different land use categories	○	●
	hydrology	○	○
	residence time factors	○	○
	regulatory demands	○	○
	habitat considerations	○	○
	flood control	○	○
	water supply variability	○	○
	Identifies and discusses the applicability of the following elements in the water budget(s):		
	imported surface water	○	●
	precipitation	○	●
	land application of wastewater	○	●
	wastewater discharges to surface water	○	●
	residential irrigation	○	●

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3	Water Budget(s) (continued)		
	irrigation subsurface drainage	○	●
	agricultural runoff	○	●
	stormwater runoff	○	●
	groundwater extraction	○	●
	groundwater recharge	○	●
	groundwater seepage to surface water	○	●
	groundwater inflow from outside the Study Area	○	●
	groundwater outflow from the Study Area	○	●
	surface water inflow from outside the Study Area	○	○
	surface water outflow from the Study Area	○	○
	infiltration	○	●
	evaporation	○	○
	evapotranspiration	○	●
	Defines terminologies used in the water budget(s)	○	●
	Provides a written explanation of the water budget(s)	○	●
	Identifies data gaps in the water budget(s) and recommends areas for further study	○	●
	Provides a graphical representation of the water budget(s)	○	●
	--Graphic identifies and quantifies all significant sources of inflow to the Study Area	○	●
	--Graphic identifies and quantifies all water leaving the study area	○	●
4	Salt Balance(s)		
	Provides a conceptual model of salt movement from sources to sinks in the Study Area	●	●
	Develops salt balance(s) for dry, wet, and average conditions	○	○
	Identifies and discusses the applicability of the following sources and sinks in the salt balance(s):		
	imported surface water	●	●
	agricultural runoff	○	●
	irrigation subsurface drainage	●	●
	soil amendments	●	●
	fertilizer	●	○
	CAFOs (e.g., dairies)	●	●
	industries (e.g., food processors, wineries)	○	●
	food and other products exported from the Study Area	○	●
	land application of wastewater		
	-- CAFOs	●	●
	-- municipalities	●	●
	-- food processors and other industries	●	●
	wastewater discharges to surface water		
	-- municipalities	●	●
	-- food processors and other industries	●	●
	residential irrigation	●	●
	septic tank systems	●	●
	stormwater runoff	○	●
	water transfers	●	○
	groundwater extraction	●	●
	groundwater recharge	●	●
	groundwater seepage to surface water	●	●
	groundwater inflow from outside the Study Area	○	●
	groundwater outflow from the Study Area	○	●
	surface water inflow from outside the Study Area	●	●

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4 Salt Balance(s) (continued)			
	surface water outflow from the Study Area	●	●
	mineral dissolution	●	●
	atmospheric deposition and scour	●	●
	upwelling of saline groundwater	○	●
	Defines terminologies used in the salt balance(s)	○	●
	Identifies, quantifies, and prioritizes salt sources to groundwater largest to smallest	●	●
	Identifies, quantifies, and prioritizes salt sources to surface water largest to smallest	●	●
	Provides concentrations and flow rates for each source	○	○
	Provides loading rates for each source		
	lbs	●	○
	tons	○	●
	per day	●	○
	per month	○	○
	per year	○	●
	per acre	○	○
	per Study Area	○	●
	Identifies and quantifies salt sinks	●	●
	Provides loading rates to each sink	●	●
	Provides a written explanation of the salt balance(s)	○	●
	Provides a graphical representation of the salt balance(s)	○	●
	--Graphic identifies and quantifies all significant salt sinks out of the Study Area	●	●
	Identifies data gaps in the salt balance and recommends areas for further study	●	○
	Quantifies the rate of salt accumulation or reduction in the Study Area assuming current conditions	●	●
	Projects salinity concentrations into the future assuming current conditions	○	●
5 Nitrate Balance(s)			
	Provides a conceptual model of nitrate movement from sources to sinks in the Study Area	●	○
	Develops nitrate balance(s) for dry, wet, and average conditions	○	○
	Identifies and discusses the applicability of the following sources and sinks in the nitrate balance(s):		
	imported surface water	●	○
	agricultural runoff	○	○
	irrigation subsurface drainage	●	○
	soil amendments	●	○
	fertilizer	●	○
	CAFOs (e.g., dairies)	●	○
	industries (e.g., food processors, wineries)	○	○
	food and other products exported from the Study Area	○	○
	land application of wastewater		
	-- dairies and other CAFOs	●	○
	-- municipalities	●	○
	-- food processors and other industries	○	○
	wastewater discharges to surface water		
	-- municipalities	○	○
	-- food processors and other industries	○	○
	residential irrigation	●	○
	septic tank systems	●	○
	stormwater runoff	○	○
	water transfers	●	○
	groundwater extraction	●	○

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5	Nitrate Balance(s) (continued)		
	groundwater recharge	●	○
	groundwater seepage to surface water	●	○
	groundwater inflow from outside the Study Area	○	○
	groundwater outflow from the Study Area	○	○
	surface water inflow from outside the Study Area	●	○
	surface water outflow from the Study Area	●	○
	atmospheric deposition and scour	●	○
	naturally occurring nitrate in groundwater	●	○
	plant uptake and nutrient cycle	●	○
	reaction decay	●	○
	gaseous loss, volatilization	○	○
	Defines terminologies used in the nitrate balance(s)	○	○
	Identifies transformation of nitrate precursors into nitrates by discharge type	○	○
	Identifies, quantifies, and prioritizes nitrate sources to groundwater largest to smallest	●	○
	Identifies, quantifies, and prioritizes nitrate sources to surface water largest to smallest	●	○
	Provides concentrations and flow rates for each source and pre-cursor	○	○
	Provides loading rates for each source and pre-cursor		
	lbs	●	○
	tons	○	○
	per day	●	○
	per month	○	○
	per year	○	○
	per acre	○	○
	per Study Area	○	○
	Identifies and quantifies nitrate and precursor sinks	○	○
	Provides loading rates to each sink	●	○
	Includes nitrogen losses in analysis	○	○
	Provides a written explanation of the nitrate balance(s)	○	○
	Provides a graphical representation of the nitrate balance(s)	○	○
	--Graphic identifies and quantifies all significant nitrate sources into the Study Area	●	○
	--Graphic identifies and quantifies all significant nitrate sinks out of the Study Area	●	○
	Identifies data gaps in the nitrate balance and recommends areas for further study	●	○
	Quantifies the rate of nitrate accumulation or reduction in the Study Area assuming current conditions	●	○
	Projects nitrate concentrations into the future assuming current conditions	○	○

LEGEND:

- Study adequately addresses issue
- Study partially addresses issue
- Study does not address issue