December 2011

SCOPE OF WORK
Salt/Nutrient Management Plan for the Antelope Valley

PURPOSE

To develop a regional Salt/Nutrient Management Plan (SMP) for the Antelope Valley (AV) to manage salts and nutrients (and possibly other constituents of concern) from all sources within the basin to maintain water quality objectives and support beneficial uses. The intention is to involve all surface water and groundwater users and wastewater dischargers in the Antelope Valley basin to participate in efforts to protect these waters from accumulating concentrations of salt and nutrients that would degrade the quality of water supplies in the Antelope Valley to the extent that it may limit their use.

BACKGROUND

On February 3, 2009, the State Water Resources Control Board (State Water Board) adopted a Recycled Water Policy (Policy) that addresses the concern for protecting the quality of California's groundwater basins. In response to this Policy, Los Angeles County Waterworks Districts and Sanitation Districts of Los Angeles County have, with support of the Lahontan Regional Water Quality Control Board (Lahontan Water Board) staff, initiated efforts to organize a group to develop a regional SMP for the Antelope Valley.

Activities, such as irrigation using imported water, groundwater or recycled water can potentially add salts, typically measured as total dissolved solids (TDS), and nutrients to groundwater basins. Other sources of salts/nutrients can include natural soil conditions, atmospheric deposition, discharges of waste, soil amendments and water supply augmentation using surface water or recycled water.

The SMP shall be completed and proposed to the Lahontan Water Board by May 14, 2014; an extension of up to two years may be allowed if the Lahontan Water Board finds that the stakeholders are making substantial progress toward completion of the plan. In no case shall the period for the completion of the plan exceed seven years.

GOALS

One goal is to address salt/nutrient loading in the Antelope Valley basin region through the development of a management plan by the collaborative stakeholder process rather than the regional regulating agency imposing requirements on individual water projects. The process shall involve participation by Lahontan Water Board staff and be in compliance with California Environmental Quality Act (CEQA) regulations. The involvement of local agencies in a SMP may lead to more cost-effective means of protecting and enhancing groundwater quality, quantity, and availability.

Another goal is to assess impacts resulting from all activities with potential long-term basin-wide effects on groundwater quality, such as surface water, groundwater, imported water, and recycled water irrigation projects and groundwater recharge projects, as well as other salt/nutrient contributing activities through regional groundwater monitoring.

The design and implementation of a regional groundwater monitoring program must involve all stakeholders, including, but not limited to, water importers, purveyors, stormwater management agencies, wastewater agencies, Lahontan Water Board, and other significant salinity/nutrient contributors, in addition to the recycled water stakeholders.

The completion of the SMP may lead to the potential for enhanced partnering opportunities and potential project funding between water and wastewater agencies, or other stakeholders, for developing and protecting water supplies.

PLAN REQUIREMENTS

Data Collection and Assessment

1. Stakeholder Participation
    a. Outreach to the Lahontan Water Board staff and the stakeholders.
    b. Convene stakeholder meetings.
    c. Receive and review stakeholder input.

2. Determine SMP Area Boundaries
    a. The AV Integrated Regional Water Management (IRWM) Plan efforts cover the Antelope Valley groundwater basin. SMP stakeholders have determined that, while the scope of the AV SMP will include the groundwater sub-basins within the AV IRWM geographic boundaries, the Lancaster, Buttes, Neenach, and Pearland sub-basins, for which data has been provided to the AV SMP effort and relevant projects overlay, will be specifically addressed in detail. Additional sub-basins may be further addressed in the AV SMP depending on the willingness of users, purveyors, wastewater agencies, regulators, significant salt/nutrient contributors, and other stakeholders to participate and provide data. Surface water resources are defined using a watershed approach and are categorized based on a hierarchy of hydrologic systems including basins, units, areas, and subareas, which may or may not coincide with groundwater basin nomenclature defined by the CA Department of Water Resources (DWR). The surface waters within the Antelope Valley IRWM geographic boundary fall within the Antelope Hydrologic Unit of the South Lahontan Hydrologic Basin. There are a total of eight hydrologic areas within the Antelope Hydrologic Unit. For clarity and consistency, surface water hydrologic areas and hydrologic subareas will be identified and correlated, to the extent practical, with the groundwater basins as identified by DWR nomenclature within SMP area.
    b. Within the determined scope, identify land uses, surface water resources, groundwater basins and sub-basins, well locations, and hydrogeologic conditions including confined and unconfined aquifer systems, and current water quality.

3. Understand Current and Future Basin Uses

a. Collect data from counties and participating cities regarding past/historic, current and potential future land uses contributing, or that could contribute, to potential salt/nutrient impacts.
b. Identify existing surface/groundwater data collection efforts throughout the region.
c. Create a map(s) with land uses and sites related to salts and nutrients, such as: irrigation (agricultural, commercial, residential); wastewater treatment and disposal (including septic and water softening systems); water recycling; groundwater augmentation and recharge, water treatment, applicable alternative energy; imported water; land application of solids; animal wastes (dairy, confined animal, and ranching) and other potential sources of salinity/nutrient contributions to the groundwater supply.

4. Create Groundwater Quality Database for Sub-basin
    a. Determine groundwater characteristics, recharge areas, and background water quality.
    b. Compile data and determine existing water quality, defined as the average concentration of salts/nutrients and other constituents of concern measured at each well.

5. Data Analysis
    a. Conduct a regional analysis of available groundwater quality databases to determine whether sufficient data and ongoing monitoring are available for the sub-basin.
    b. Collect data regarding other factors (such as atmospheric deposition, mixing of imported water with native basin water, natural sources) contributing, or that could contribute, to potential salt/nutrient impacts.
    c. If necessary, chose an appropriate model for data analysis and run the model. Provide rationale for selection of the specific model, if used. Calibrate the model used to analyze the data (including de-bugging of the chosen model) and verify the input data. Compare various model runs to observed values for each basin, as applicable.

<u>Characterization of Basin</u>

6. Salt and Nutrient Characterization
    a. Identify the current and projected sources and loadings of salts/nutrients. Include water balance/budget (volumetric analysis) and consider atmospheric nitrogen as a source.
    b. Determine the basin's assimilative capacity of salts/nutrients. Identify and include rationale for the assimilative capacity determination (e.g., selection of maximum TDS limit, etc.). Assimilative capacity will not be necessarily assumed based on Maximum Contaminant Levels, but rather based on a reasonably achievable objective derived from site-specific characteristics and source water quality.
    c. Determine the fate and transport of salt/nutrients.

d. Include other constituents of concern as necessary and appropriate (include naturally occurring constituents such as fluoride, boron, arsenic, chromium as well as constituents from anthropogenic sources, such as those concerned with cleanup sites).
e. Identify potential salt sinks.
f. Develop future planning scenarios for future users/uses that would include expected requests for projected recycled water production, reuse, discharges to Antelope Valley basins, and expected quality for each wastewater treatment facility (existing and projected). Planning scenarios could include appropriate planning spans, including, for example, a 5-year plan, 10-year plan, 25-year plan and a 50-year projected plan, or some combination as determined by the stakeholders.
g. Prepare a draft report to the stakeholders to present the data collected during basin characterization and the results for assimilative capacity (by sub-basin). Include rationale for selection of sub-basins (e.g., current uses, at risk basins, water quality, hydrogeology).
h. Consider the effects of importation of water and transferring recycled water sources between sub-basins. For example, consider the effects of source water derived from the Lancaster sub-basin that is recycled and subsequently transferred to the Buttes sub-basin (Buttes Hydrologic Area) for reuse as irrigation.

<u>Monitoring</u>

7. Develop a Monitoring Plan
    a. Define the scale of the monitoring plan component, dependent on site-specific conditions.
    b. Monitor for salts, nutrients, and other constituents of concern that potentially could adversely affect the water quality of the basin.
    c. Determine appropriate monitoring by targeting basin water quality at existing water supply and monitoring wells and areas proximate to large water recycling projects, and groundwater recharge projects.
    d. The monitoring plan should be designed to evaluate and track the long-term impacts to groundwater quality resulting from past, current, future, and transitioning land uses.
    e. Identify stakeholders responsible for conducting, compiling, and reporting the monitoring data.

8. Monitoring Implementation and Data Management
    a. Monitor each location at a determined frequency to assess impacts and take into account changes in all significant sources.
    b. Establish criteria for concentrations above ambient conditions based on statistical evaluation of data to trigger additional investigations.
    c. Conduct monitoring of constituents of concern (CECs), as recommended by the “blue-ribbon” Advisory Panel and approved by the State Water Board. CEC monitoring will be conducted in a manner consistent with the Policy.

d. Data submitted to the State Water Board for GAMA (Groundwater Ambient Monitoring & Assessment Program) shall follow the guidelines for "electronic submittal of information" outlined on the website: http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml
e. Report data to the Lahontan Water Board staff every 3 years.

Implementation Measures

9. Manage Salt/Nutrient Loadings on a Sustainable Basis
    a. Identify potential methods and best management practices to reduce and/or maintain salt and nutrient loadings—such as disposal and/or reducing methods.
    b. Recommend most appropriate methods and best management practices for reducing and/or maintaining salt and nutrient loadings.
    c. Include cost estimates for implementation and other economic information as required by state water law.
    d. Identify goals and objectives for water recycling and stormwater use/recharge and recommend management measures and ways to make the best use of these water resources.

Antidegradation Analysis

10. Demonstrate that the projects included in the SMP will satisfy the requirements of the State Antidegradation Policy (Resolution No. 68-16).

Preparation of the SMP, Adoption by the members of the Antelope Valley Regional Water Management Group and Submittal to Lahontan Regional Water Board

11. Draft the Salt and Nutrient Management Plan. At a minimum, plan will include the required elements as described in the State Board's Recycled Water Policy and as detailed in this Scope of Work.

12. Obtain approval/adoption/acceptance of the SMP by the members of the Antelope Valley Regional Water Management Group.

13. California Environmental Quality Analysis (CEQA)
    a. Draft appropriate CEQA documents related to the SMP.
    b. Adopt or file CEQA document.

14. Adoption of SMP by Lahontan Regional Board
    a. Collaborate as necessary with the Lahontan Regional Water Board staff to prepare the SMP for adoption into the Lahontan Region's Basin Plan (could include public hearing process, additional CEQA, presentation of SMP to the Lahontan Regional Water Board).
    b. Submit final SMP along with final CEQA document(s) to the Lahontan Regional Water Board for adoption.

Proposed Schedule

Task	Description	Estimated Completion Date
1a	Outreach to RWQCB and Stakeholders	July 2009
1b	Convene Initial S/N Management Plan Meeting	August 2009
2	Determine SMP Area Boundaries	January 2010
3	Current and Future Basin Uses	February 2012
4	Create Groundwater Quality Database	ongoing updates
5	Data Analysis	ongoing updates
6	Characterization of Basin	December 2012
7	Develop Monitoring Plan	March 2012
8	Monitoring Implementation	Every three years
9	Identify Implementation Measures	March 2012
10	Antidegradation Analysis	November 2012
11	Draft S/N Management Plan	January 2013
12	Adoption of SMP by members of AV RWM Group	May 2013
13	Completion of CEQA Documents	August 2013
14	Submit Final SMP to RWQCB	October 2013