

Groundwater Quality Management Measures for Salts and Nutrients in the Main San Gabriel Basin of Los Angeles County

STAFF MEMORANDUM

I. Introduction

The State Water Resources Control Board (State Water Board) adopted the Recycled Water Policy (State Water Board Resolution No. 2009-0011) on February 3, 2009 and revised it on January 22, 2013 (State Water Board Resolution No. 2013-0003). The purpose of the Recycled Water Policy (hereinafter, Policy) is to protect groundwater resources and increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Policy provides direction to the Regional Water Quality Control Boards (Regional Water Boards), proponents of recycled water projects, and the public regarding the appropriate criteria to be used by the State Water Board and the Regional Water Boards in issuing permits for recycled water projects.

The Policy recognizes the potential for increased salt and nutrient loading to groundwater basins as a result of increased recycled water use, and therefore, requires the development of regional or sub-regional salt and nutrient management plans. In requiring such plans, the Policy acknowledges that recycled water may not be the sole cause of high concentrations of salts and nutrients in groundwater basins, and therefore regulation of recycled water alone will not address such conditions. The intent of this requirement is to make certain that salts and nutrients from all sources are managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial uses.

The Recycled Water Policy states:

- a)** Every basin/sub-basin shall have a consistent salt and nutrient management plan (hereinafter, SNMP);
- b)** SNMPs shall be tailored to address the water quality concerns in each basin;
- c)** Shall be developed or funded pursuant to the provisions of Water Code sections 10750 et seq. or other appropriate authority;
- d)** SNMPs shall be completed and proposed to the Regional Water Board within five years from the adoption date of the Policy;
- e)** SNMPs are not required in areas where a Regional Water Board has approved a functionally equivalent salt and nutrient plan¹; and

¹ This is not applicable in the Los Angeles Region as there are currently no functionally equivalent salt and nutrient management plans that could be approved by the Regional Water Board.

- f) SNMPs may address constituents other than salt and nutrients that adversely affect groundwater quality.

Within one year of the receipt of a proposed SNMP, the Regional Water Board is expected to consider for adoption revisions to the program of implementation for protection of groundwater in its Basin Plan, consistent with Water Code section 13242, for those groundwater basins within their regions where water quality objectives for salts or nutrients are being, or are threatening to be, exceeded.² The revisions to the program of implementation for protection of groundwater that are incorporated into the Regional Water Boards' Basin Plans are to be based on the salt and nutrient management plans required by the Policy.

The Policy is clear that the SNMP process should be stakeholder-led and conducted in a collaborative manner among interested persons, with participation by the Regional Water Board.

The Policy's intended outcome is that participation in plan development will allow water purveyors and basin management agencies to take advantage of a streamlined permit process for recycled water projects that is intended to expedite the implementation of recycled water projects, since groundwater conditions relative to planned projects will have already been evaluated in a basin-wide context.

The required elements of a SNMP, as specified by the Policy include:

- a) Source identification/source loading and assimilative capacity estimates;
- b) Implementation measures;
- c) Consideration of water recycling/stormwater recharge/use;
- d) Anti-degradation analyses;
- e) Development of a basin-wide monitoring plan; and
- f) Annual monitoring of constituents of emerging concern (CECs).

This Staff Memorandum introduces the Draft Salt and Nutrient Management Plan (SNMP) for the Main San Gabriel Basin, which is located in Los Angeles County, California. The Main San Gabriel Basin SNMP is developed to provide a framework for the long-term management of

² The Recycled Water Policy refers to "revised implementation plans" for adoption into regional basin plans pursuant to Water Code section 13242. Water Code section 13242 uses the term "program of implementation." Water Code section 13242 states, "[t]he program of implementation for achieving water quality objectives shall include, but not be limited to:

- (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.
- (b) A time schedule for the actions to be taken.
- (c) A description of surveillance to be undertaken to determine compliance with objectives."

salts and nutrients in the Main San Gabriel Basin, while allowing for increased use of recycled water. The SNMP was developed through a collaborative, stakeholder-led process.

II. Background

The Main San Gabriel basin underlies the San Gabriel Valley located in southeastern Los Angeles County, and serves as the major source of water supply to about 1.4 million residents in the 19 cities overlying the basin. The basin covers a surface area of approximately 167 square miles. It is bounded by the San Gabriel Mountains on the north, the Raymond fault on the northeast, a system of low rolling hills (Repetto, Merced, Puente, and San Jose Hills) on the west and south, and by the bedrock high between San Dimas and La Verne on the east. The Whittier Narrows, a 1.5-mile gap between the Merced and Puente Hills, forms the only exit for the Basin surface water and groundwater. The Basin Plan identifies two subareas in the Main San Gabriel Basin: the Western Area, and the Eastern Area which are demarcated by a series of streams (Walnut Creek, Big Dalton Wash and Little Dalton Wash) in the overlying land area.

The Basin is filled with permeable alluvial deposits (water-bearing formations) and underlain and surrounded by relatively impermeable rocks (nonwater-bearing formations). It also contains many geological features and faults that may influence groundwater movement into, through, or within the Basin. The water-bearing formations extend to a maximum depth of more than 4,000 feet, and consist primarily of (i) the older alluvium, which constitutes the main valley fill material and is exposed around the margins of the entire Basin, (ii) the recent alluvium, which blankets the center of the valley floor, and (iii) the transition zone deposits, which lie along San Dimas Wash in the eastern part of the Basin.

The Basin ground surface slopes downward from approximately 1,200 feet above mean sea level (msl) in the San Dimas area, 850 feet msl in the Pomona area on the east, and 600 feet msl in the Alhambra area on the west to approximately 200 feet msl in the Whittier Narrows area on the southwest. The direction of groundwater movement in some areas of the Basin remains the same as that during earlier periods. In other portions of the Basin, the direction of groundwater movement is affected naturally by hydrologic conditions and geological features and artificially by groundwater resources management measures such as extraction and/or groundwater recharge.

The Main San Gabriel Basin provides about eighty-five percent of the water demand for the basin, and is actively managed by the Main San Gabriel Basin Watermaster (Watermaster). The Watermaster is headed by a nine members board: six of those members are nominated by water producers (producer members) and three members (public members) are nominated by the Upper San Gabriel Valley Municipal Water District (Upper District) and the San Gabriel Valley Municipal Water District (SGVMWD), which overlie most of the Basin. The Watermaster is charged with managing the water supply in the Basin and has the authority to control pumping for water quality purposes.

Sources of water for use and recharge in the Main San Gabriel Basin include precipitation on the valley floor, percolation of water applied for irrigation (groundwater, local surface water, treated imported water, and recycled water), artificial recharge with local stormwater and untreated imported water, percolation of recycled water discharged from water reclamation plants to unlined portions of the San Gabriel River, San Jose Creek and Rio Hondo, and subsurface inflow

III. SNMP Development

The SNMP for the Main San Gabriel Basin was developed collaboratively by the Main San Gabriel Basin Watermaster (Watermaster) in conjunction with the Upper San Gabriel Valley Municipal Water District, San Gabriel Valley Municipal Water District, Three Valley's Municipal Water District, the County of Los Angeles Department of Public Works; the Metropolitan Water District of Southern California; and the Sanitation Districts of Los Angeles County. In addition, Watermaster staff regularly kept the Basin groundwater producers up to date with the planning process during Basin Water Management Committee meetings. Regional Water Board staff actively participated in the Main San Gabriel Basin SNMP development process.

The primary goal of the Main San Gabriel Basin SNMP was to assist the Watermaster and participating stakeholders to comply with the Policy regarding the use of the recycled water from municipal wastewater treatment facilities as a safe source of water supply, while maintaining the water quality objectives for salt and nutrients in the Basin Plan. The SNMP is intended to provide the framework for water management practices to ensure protection of beneficial uses, and allow for the sustainable use of groundwater resources.

A data period of 2001-02 to 2011-12 was selected to assess current water quality conditions. On average, concentrations of nitrate, chloride, sulfate and TDS are all below the water quality objectives, and assimilative capacity is available for all constituents. A review of available water quality data indicates a decreasing trend for nitrate concentrations within the basin, and increasing trends for chloride, sulfate, and TDS. The water quality concentrations in the San Gabriel Basin appear to be inversely related to groundwater in storage, increasing as groundwater levels decrease, and vice versa.

The SNMP identifies a variety of existing and potential salt and nutrient management measures for the Main San Gabriel Basin. Existing measures include groundwater replenishment, recycled water treatment upgrades, imported water management, and institutional and regulatory measures. Planned implementation projects and programs include, development of new spreading facilities, development of an Indirect Reuse Replenishment Project (IRRP), and promotion of onsite stormwater capture and retention.

The SNMP contains all the required elements prescribed by the Recycled Water Policy, including considerations of water recycling and stormwater recharge. The plan also presents current and proposed measures for the management of basin water quality including those to

maximize recycled water use in the area. These stakeholder-developed implementation measures for groundwater quality control are being incorporated into the Los Angeles Region's Basin Plan.

IV. California Environmental Quality Act (CEQA) Analysis

In accordance with the salt and nutrient management plan requirements of the Recycled Water Policy, Main San Gabriel Basin stakeholders also conducted an analysis of the foreseeable impacts of the salt and nutrient management measures and future (potential) recycled water projects for consideration by the Regional Water Board, which was documented in an accompanying Substitute Environmental Document (SED). The SED considers three program alternatives, including: (i) Alternative 1 - a "No Program" alternative – where no Salt and Nutrient Management Plan is adopted, but current groundwater quality management measures are maintained, (ii) Alternative 2: "Planned Recycled Water Projects" – where current basin management measures are maintained and a planned recycled water project is implemented, and (iii) Alternative 3: "Planned and Potential Recycled Water Projects and Potential Implementation Measures" – where the measures in Alternative 2 are implemented along with other potential implementation measures including developing new spreading facilities for imported water, recycled water and stormwater. Alternative 3 was selected as the preferred program alternative.

The CEQA assessment concluded that the environmental effects of the foreseeable methods to implement Alternative 3, including both nonstructural and structural management measures, would not cause significant impacts that cannot be mitigated through commonly used construction, design and operational practices. The SED identifies mitigation methods for impacts with potentially significant effects and finds that these methods can mitigate potentially significant impacts to levels that are less than significant.

V. Anti-degradation Considerations

State Water Resources Control Board Resolution 68-16 ("Statement of Policy With Respect to Maintenance of High Quality Water in California") requires the Regional Board in regulating discharges of waste to, among other requirements, maintain the highest water quality possible consistent with the maximum benefit to the people of the state. The salt and nutrient management strategies developed by the Main San Gabriel Basin stakeholders are measures designed to provide a framework for the long-term management of salts and nutrients in the Main San Gabriel Basin, while supporting for increased use of recycled water areas. A spreadsheet model developed for the SNMP demonstrated that planned recycled water projects may be implemented within the basin while still maintaining groundwater quality that is supportive of beneficial uses. Given these considerations, the amendment is consistent with State Water Board Resolution No. 68-16

VI. Relevant Documents

The Basin Plan amendment incorporating groundwater management strategies for salts and nutrients in the Main San Gabriel Basin is based wholly on the stakeholder-led effort, which culminated in the document titled “San Gabriel Valley Basin Salt and Nutrient Management Plan. This document contains all the necessary elements of a SNMP. This SNMP, its appendices and the accompanying SED are appended to this Staff Memorandum and are an integral part of the Administrative Record for this Basin Plan amendment.