

Central Coast Regional Water Quality Control Board

Salt and Nutrient Management Plan Elements:

Paragraph 6.b.(3) of the Recycled Water Policy¹ states the following:

(3) Each salt and nutrient management plan shall include the following components:

(a) A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations. The scale of the basin/sub-basin monitoring plan is dependent upon the site-specific conditions and shall be adequate to provide a reasonable, cost-effective means of determining whether the concentrations of salt, nutrients, and other constituents of concern as identified in the salt and nutrient plans are consistent with applicable water quality objectives. Salts, nutrients, and the constituents identified in paragraph 6(b)(1)(f) shall be monitored. The frequency of monitoring shall be determined in the salt/nutrient management plan and approved by the Regional Water Board pursuant to paragraph 6(b)(2).

(i) The monitoring plan must be designed to determine water quality in the basin. The plan must focus on basin water quality near water supply wells and areas proximate to large water recycling projects, particularly groundwater recharge projects. Also, monitoring locations shall, where appropriate, target groundwater and surface waters where groundwater has connectivity with adjacent surface waters.

(ii) The preferred approach to monitoring plan development is to collect samples from existing wells if feasible as long as the existing wells are located appropriately to determine water quality throughout the most critical areas of the basin.

(iii) The monitoring plan shall identify those stakeholders responsible for conducting, compiling, and reporting the monitoring data. The data shall be reported to the Regional Water Board at least every three years.

(b) A provision for annual monitoring of Emerging Constituents/ Constituents of Emerging Concern (e.g., endocrine disrupters, personal care products or pharmaceuticals) (CECs) consistent with recommendations by CDPH and consistent with any actions by the State Water Board taken pursuant to paragraph 10(b) of this Policy.

¹http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/docs/recycledwaterpolicy_approved.pdf

- (c) Water recycling and stormwater recharge/use goals and objectives.
- (d) Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients.
- (e) Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis.
- (f) An antidegradation analysis demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.

The following is an expanded list of Central Coast Regional Water Quality Control Board recommended elements:

(Note: clarification/definitions provided at end of document for elements marked with an asterisk.)

- **Background**
 - Recycled water policy overview
 - Existing related plans and projects (IRWMs, GMPs – AB3030, etc.)
 - Regulatory setting (303(d) listings, TMDLs, WDRs, local controls/ordinances, etc.)
 - Stakeholder list, roles and responsibilities
- **Groundwater Basin Description/Environmental Setting**
 - Climate (existing and forecast, i.e. climate change)
 - Geology
 - Hydrogeology/hydrology
 - Landcover and landuse evaluation/mapping
 - Existing/background groundwater and surface water quality conditions (inclusive of all groundwater/aquifers; i.e. shallow groundwater and domestic well water quality)
 - Beneficial uses
 - Recharge area identification/mapping/ranking
- **Source Analysis**
 - *Conceptual model
 - Water Balance (existing and forecast)
 - Salt and nutrient balance (source identification and loading/concentration analysis; existing and forecast based on future growth)

- Fate and transport analysis (integrated surface water/groundwater modeling)
- Assimilative capacity analysis
- **Regional (basin/sub-basin) Monitoring Plan**
 - (see Recycled Water Policy paragraph 6.b.(3) for specifics)
 - *Quality Assurance Project Plan (QAPP)
 - Data management and reporting (GAMA GeoTracker)
 - Water balance monitoring (in addition to water quality monitoring)
 - Monitoring parameters/constituents
 - Salt and nutrient balance and source loading monitoring (documentation of loading [reduction] by source)
 - Constituents of Emerging Concern (CEC) monitoring
 - Trend analysis
 - Monitoring plan implementation schedule
- **Goals and Objectives**
 - Recommended Water Quality Objectives (WQO) and goals
 - Beneficial use protection
 - Institutional controls, general plan amendments, local ordinances, etc.
 - Landuse planning
 - Management Practices (MPs); to reduce salt and nutrient loading
 - Sustainable water balance plan
 - Load allocations
 - Load reduction goals
 - Water conservation goals
 - Water recycling goals
 - Storm water retention/recharge goals
 - Recharge area protection/restoration
 - Wellhead protection
- **Implementation**
 - *Performance measures
 - Implementation plan and schedule
 - *Adaptive Management Plan; tied to regional monitoring
 - Public outreach and education
 - Cost analysis
 - Funding opportunities
 - *Antidegradation Analysis
 - CEQA
 - Institutional agreements (between stakeholders for plan implementation)
 - Organizational structure or groups (technical advisory committees etc.)

Clarification/Definitions

Conceptual model: a simple two dimensional drawing of the groundwater basin identifying all groundwater zones/aquifers and showing salt/nutrient and water quantity inputs and outputs from known sources such as adjacent groundwater basins, recharge, point and non-point sources, water purveyors, etc.

Quality Assurance Project Plan (QAPP): A Quality Assurance Project Plan documents the planning, implementation, and assessment procedures for a particular project, as well as any specific quality assurance and quality control activities. See following EPA website for more information:

<http://www.epa.gov/QUALITY/qapps.html>

Performance measures: Indicators of results or measures of effectiveness that provide qualitative and/or quantitative information needed to measure the extent to which a project is achieving its intended outcomes, objectives or goals.

Performance Measures are metrics used to provide an analytical basis for decision making and to focus attention on what matters most. Performance Measures answer the question, 'How is an organization or project doing at the job of meeting its objectives or goals?' Examples could include number of facilities implementing salt/nutrient management plans or the reduction of salt/nutrient loading from individual facilities/entities.

Adaptive Management Plan: Adaptive Management (AM), also known as Adaptive Resource Management (ARM), is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals; increases scientific knowledge; and reduces tensions among stakeholders

Alternatively, adaptive management is a structured, iterative process of optimal decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring. In this way, decision making simultaneously maximizes one or more resource objectives and, either passively or actively, accrues information needed to improve future management. Adaptive management is often characterized as "learning by doing."

Typical steps in the process of Adaptive Management could include:

START: Clarify organization or project mission
STEP A: Design a conceptual model based on known conditions
STEP B: Develop a management plan: goals, objectives, and activities
STEP C: Develop a monitoring plan
STEP D: Implement management and monitoring plans
STEP E: Analyze data and communicate results
ITERATE: Use results to adapt and learn

Antidegradation Analysis: The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the Legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state. An antidegradation analysis needs to be conducted demonstrating that the projects included within the plan will, collectively, satisfy the requirements of Resolution No. 68-16.