INFORMATION SHEET

INTRODUCTION

The purpose of this Information Sheet is to supplement and provide supporting information used by the Central Valley Regional Water Quality Control Board (Central Valley Water Board or Board) in preparation of General Order R5-2026-XXXX, *General Waste Discharge Requirements for Fruit and Vegetable Packing Facilities Within the Central Valley Region* (Order). The Order incorporates this Information Sheet as additional findings.

The purpose of the Order is to streamline the process and promote consistency throughout the region in permitting discharges to land from fruit and vegetable packing facilities that discharge between 10,000 gallons and 180 million gallons of wastewater annually. The Order will cover packing facilities that wash sort, store, pack, and ship fruits and vegetables for export or sale including but not limited to stone fruits, citrus, grapes, carrots, beans, potatoes, onions, tomatoes, and raisins. The Order provides a uniform regulatory framework for regulating these types of facilities.

Food processing operations such as dehydrators, tomato processors, canneries, milk and cheese processors, juice processors, and meat processors (i.e., slaughterhouses) generally involve activities that generate higher strength wastes (e.g., crushing, heating, concentrating, dicing, etc.) requiring additional treatment and/or control measures, and therefore, are not included in the Order. In addition, the Order does not include those packing facilities that tank and haul all their waste to a permitted facility for treatment and/or disposal.

This Information Sheet contains supplemental facts and information in support of the Order's requirements, including but not limited to:

1. Summary and rationale for preparation of the Order.
2. Key concepts such as wastewater characteristics, treatment, and disposal practices that influence compliance and water quality protection.
3. Rationale for tier designations, effluent limits, monitoring obligations, and best management practices (BMPs).
4. Outline of applicable requirements for use of ponds and groundwater monitoring including exemptions.
5. Details on compliance with the California Environmental Quality Act.

Appendix A of this document provides additional information on the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) Salt and Nitrate Control Programs aimed at addressing salt and nitrate accumulation in the region. CV-SALTS is a comprehensive program aimed at addressing salt accumulation in the Central Valley's groundwater and surface water resources and nitrate accumulation in groundwater. This initiative involves a collaborative effort among various stakeholders, including regulatory

agencies, water users, environmental groups, and agricultural interests, to develop and implement sustainable management practices that ensure the long-term viability of the region's water beneficial uses, water quality, and agricultural productivity.

GENERAL ORDER RATIONALE

California is the top agricultural producer in the United States (US) accounting for over 40 percent of the nation’s total fruit and vegetable production. The Central Valley Region covers seven of the top ten agricultural producing counties in California. Land application of liquid and solid waste from fruit and vegetable packing facilities is a common practice in the Central Valley since these facilities are generally located in rural areas not served by municipal sewer systems and it is a convenient and cost-effective method for disposal. In addition, land application provides treatment to filter and break down organic matter, and the reuse of process wastes can provide additional benefits, such as replacement of potable water supplies, and a low-cost organic soil amendment and fertilizer for crops.

Water Code section 13260 requires that any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state (both surface waters and groundwaters) file a Report of Waste Discharge (ROWD) with the appropriate regional board. The Central Valley Water Board generally regulates these discharges by prescribing Waste Discharge Requirements (WDRs) to ensure that the discharge does not threaten beneficial uses or otherwise impair water quality.

Central Valley Water Board records indicate about 90 non-municipal ROWDs have been submitted to the Central Valley Water Board and are awaiting new or updated WDRs. Of those, about 52 are related to food processing facilities, at least 14 of which are fruit or vegetable packing facilities. In addition, a records review shows that there are over 600 facilities that have existing WDRs that need to be reviewed based on the assigned threat and complexity rating and the adoption date of the WDRs. Of those, many are food processing facilities, particularly fruit and vegetable packing facilities.

The issuance of the Order to regulate discharges from fruit and vegetable packing facilities would help to address the backlog of both ROWDs and outdated WDRs.

WASTE CHARACTERISTICS

Order Findings 4 and 5 explain that, pursuant to Water Code section 13263 (i), it is appropriate to prescribe general WDRs for fruit and vegetable packing facilities because they share similar characteristics and utilize similar treatment and disposal methods. This section describes waste quality characteristics, including constituents of concern, as well as treatment and disposal characteristics common to fruit and vegetable packing facilities.

Process wastewater from fruit and vegetable packing includes, but is not limited to, water used for rinsing, conveyance, cooling, and equipment wash down, as well as stormwater that comes in contact with processing operations or waste residuals. Other waste streams may include water softener regeneration brine, reverse osmosis (RO)

concentrate, filter backwash water, boiler blow down, cooling water, and refrigeration condensate. Fruit and vegetable packing facilities generally implement similar types of waste treatment and/or control measures (e.g., screening, aeration, settling, filtration, etc.) to protect water quality. Lastly, waste disposal from fruit and vegetable packing facilities may include land application for crop and/or landscape irrigation, application as dust control, disposal via percolation and evaporation in ponds, or some combination of the three.

Wastewater Quality

Process wastewater quality data from applicable facilities was evaluated during development of the Order. As part of this evaluation staff considered analytical data compiled from existing WDRs, ROWDs, and individual self-monitoring reports from more than 30 different fruit and vegetable packing facilities within the region. Given the age of most WDRs, data was limited primarily to pH, electrical conductivity (EC), and 5-day biochemical oxygen demand (BOD_5) for most of the facilities reviewed. Data on nitrogen constituents (i.e., nitrate, ammonia, and Total Kjeldahl Nitrogen [TKN]), total dissolved solids (TDS), fixed dissolved solids (FDS), sodium, and chloride was somewhat limited.

Staff segregated the data based on the three major types of packing facilities in the Central Valley: vegetable packing, fruit packing that excludes raisins, and raisin fruit packing as shown in Table 1.

Table 1. Wastewater Characterization (Average/[Range])

Constituents	Units	Vegetable Packing	Fruit Packing (non-raisins)	Fruit Packing (raisins)
pH	std. units	7.7 [5.3-8.7]	7.8 [6.6-9.8]	5.4 [4.2-7.3]
Biochemical Oxygen Demand (BOD_5)	mg/L	586 [8-2,200]	102 [7–380]	4,836 [3,600-6,000]
Electrical Conductivity (EC)	µmhos/cm	1,272 [600-1,600]	858 [231–2,100]	715 [500-980]
Total Dissolved Solids (TDS)	mg/L	976 [590-2,100]	806 [140-2,100]	3,907 [800-9,800]
Fixed Dissolved Solids (FDS)	mg/L	764 [400-1,100]	620 [280-1,350]	507 [335-970]
Nitrate as N (NO_3-N)	mg/L	5.34 [<1-10]	8.37 [<1–34]	4.10 [3-5.7]
Total Nitrogen (TN)	mg/L	23 [5-50]	14 [3.1-35]	49 [30-68]
Sodium	mg/L	113 [62-300]	104 [26-480]	56 [32-79]
Chloride	mg/L	152 [57-273]	83 [17-200]	29 [18-30]

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Process wastewater quality varies based on source water quality, facility operations, and chemical usage. Wastewater quality and volume can also vary seasonally depending on the types of fruits and vegetables brought in for packing. The primary constituents of concern in process wastewater includes organics (i.e., measured as BOD), nitrogen, salts, and disinfection byproducts. Spills, and chemicals used for disinfection, sanitation, and cleaning, can contribute to these constituents, and source water can be a significant source for salts and, in some cases, nitrate in the process wastewater. Information related to the constituents of concern, including details to consider regarding treatment and disposal, is discussed below:

1. Biochemical Oxygen Demand (BOD): BOD is a measure of the biodegradable organic matter in process wastewater. The value represents the amount of oxygen required by microorganisms to oxidize organic material under aerobic conditions. Excessive BOD can create odor and nuisance conditions in soil and can mobilize metals that may be present in soils, which can then leach to groundwater and affect beneficial uses.
2. Nitrogen: Nitrogen in process wastewater may originate from rinse water collected from fruits and vegetables brought in from the fields, sanitation chemicals (i.e., quaternary ammonia, etc.), or source water. Initially, most of the nitrogen may be in organic form but may be converted to ammonia and then nitrate if adequate oxygen is present. Excessive application of nitrogen to land can cause groundwater degradation for nitrate and may affect beneficial uses of drinking water.
3. Salts: Salinity in process wastewater is made up of organic and inorganic constituents. Organic constituents typically break down in the environment. Fixed dissolved solids (FDS) are inorganic salts, including constituents such as sodium, calcium, potassium, magnesium, and phosphorus, can be utilized by crops or adsorbed to soil surfaces. FDS is helpful in differentiating inorganic salts and dissolved organic matter content and is the best indicator of salinity in wastewater with a significant BOD concentration. The majority of FDS in process wastewater originates from chemicals used in sanitation and disinfection processes. Excessive land application of salts may leach to groundwater and affect beneficial uses.
4. Disinfection byproducts: Disinfection byproducts (i.e., trihalomethanes or THMs) in process wastewater results from the use of chlorine, used as a disinfecting agent, interacting with the organic material in the wastewater. Disinfection byproducts are generally not a significant concern for land application, when applied at agronomic rates, since it attenuates in the soil column. However, shallow groundwater or a high concentration in wastewater being stored in unlined ponds may increase the potential impact on groundwater quality and affect beneficial uses.
5. Additional chemicals such as fungicides, cleaning solutions, and fruit waxes may also be present in the waste stream. However, these chemicals are generally biodegradable used sparingly or captured for reuse/disposal and do not significantly contribute to the discharge.

Solids

Typical fruit and vegetable packing facilities generate solids during pre-cleaning operations including leaves, stems, branches, dirt, and damaged material (e.g., culls). In addition, residual solids (e.g., skins, seeds, and pulp) can be collected from screens, filters, and settling tanks or ponds. This material is often collected, stored, and can be used for composting, returned to the fields as a soil amendment, shipped offsite as livestock feed or similar reuse option, or sent to a landfill for disposal. The Order requires Dischargers to properly manage and store solids to prevent leachate and runoff that could affect water quality.

GENERAL ORDER REQUIREMENTS

Tier Designation

Discharges regulated under the Order are grouped into regulatory tiers based in part on wastewater management practices and the volume of process wastewater discharged to land as outlined in Table 2, below.

Table 2. Tier Specifications

Tier Designation	Conditions
Tier 0 (Exempt)	Less than 10,000 gallons annually
Tier 1	10,000 gallons to 1 million gallons annually and no ponds
Tier 2a	10,000 gallons to 12 million gallons annually with lined ponds and/or just land application areas
Tier 2b	10,000 gallons to 12 million gallons annually with unlined ponds
Tier 3	12 million to 30 million gallons annually
Tier 4	30 to 180 million gallons annually

Application requirements, fees, and monitoring and reporting requirements are commensurate to the threat posed by the discharge and are linked to the regulatory tier.

Salinity Limits

The Order incorporates salinity limits commensurate with the Facility's selected compliance path for Phase 1 of the Salt Control Program (discussed in Appendix A).

Dischargers selecting the Conservative Path (Path 1) are required to maintain a monthly average **Electrical Conductivity (EC) Limit of 700 µmhos/cm, or 900 µmhos/cm** in areas that support municipal (MUN) but not agricultural (AGR) beneficial uses.

Dischargers selecting the Alternative Path (Path 2) are required to maintain participation in the region wide Prioritization and Optimization Study (P&O Study), including meeting all financial requirements. In addition, dischargers will maintain existing salinity levels by complying with a **Performance-Based Salinity Action Level** that will be included in the NOA. The performance-based salinity action level will be calculated using 125 percent

of the Facility's maximum five-year annual average salinity concentration in its discharge, measured as EC, total dissolved solids (TDS), or fixed dissolved solids (FDS), to allow flexibility for drought and water conservation. For new facilities or existing facilities where the five-year maximum cannot be determined, the performance-based salinity action level will be based on the Facility's estimated average annual salt discharge.

Compliance with the Salinity Action Level will be evaluated annually. Failure to comply will require preparation of a Salinity Action Plan, which will include an evaluation of the Facility's salinity effluent levels, sources of salinity in the discharge, potential impact on downgradient users, and evaluation and possible implementation of additional control measures.

Wastewater Ponds

Wastewater ponds provide storage, equalization, mixing, treatment, operational flexibility, and disposal. Ponds can be used to settle suspended solids and, with aeration, can reduce BOD. Ponds with alternating aerobic and anoxic zones can also be used to remove or reduce nitrogen. Pond size and land application area acreage are interrelated; more available storage generally means less acreage needed for land application. This balance is determined by site constraints, process wastewater volume and quality, treatment objectives, costs, and operational resources.

Undersized ponds can lead to spills, insufficient treatment, anaerobic conditions, and nuisance odors. In addition, unlined ponds that allow percolation for disposal have the potential to degrade underlying groundwater. Therefore, the Order requires ponds at Tier 3 and Tier 4 Facilities to be lined to minimize percolation related degradation, unless a demonstration can be made that the pond(s) will be sufficiently protective of groundwater quality and downgradient users, based on wastewater characteristics and site-specific soil and hydrogeologic conditions (e.g., percolation, depth-to-groundwater, distance to sensitive receptors [i.e., nearby supply wells], groundwater quality, etc.), and that the discharge will not cause or contribute to groundwater degradation.

Given their smaller size and generally shorter operating period, Tier 2 Facilities which discharge less than 12 million gallons annually, pose a lower threat to water quality. Therefore, the Order allows Tier 2 facilities to use unlined ponds for storage or disposal of process wastewater if they can comply with the following criteria:

1. Groundwater is greater than 25 feet below the lowest point of water in the pond,
2. Average annual BOD_5 of the wastewater is less than 300 mg/L; and
3. Average annual total nitrogen of the wastewater is less than 15 mg/L.

However, Tier 2 Facilities may be required to conduct groundwater monitoring or line their ponds if they cannot comply with the criteria listed above, unless a demonstration can be made that the pond(s) will be sufficiently protective of groundwater quality and downgradient users, based on wastewater characteristics and site-specific soil and hydrogeologic conditions (e.g., percolation, depth-to-groundwater, distance to sensitive

receptors [i.e., nearby supply wells], groundwater quality, etc.), and that the discharge will not cause or contribute to groundwater degradation.

A Tier 1 Facility that would otherwise meet the flow limits established for Tier 1 but utilizes a pond for storage and/or disposal of process wastewater will be required to comply with the conditions for a Tier 2 Facility.

Groundwater Monitoring

Groundwater monitoring within the land application areas may be required at Tier 2, Tier 3, and Tier 4 Facilities unless a demonstration can be made that the discharge will be sufficiently protective of groundwater quality and downgradient users, based on wastewater characteristics, waste management practices, proximity to sensitive receptors (i.e., downgradient supply wells), and site-specific soil and hydrogeologic conditions (e.g., depth-to-groundwater, groundwater quality, etc.). As part of its evaluation to determine if groundwater monitoring will be required Central Valley Water Board staff will consider:

- Depth-to-groundwater and feasibility of installing groundwater monitoring wells;
- Groundwater quality;
- Proximity of domestic water supply wells or natural surface water bodies within one-half mile downgradient of land application area boundaries or unlined storage/percolation ponds;
- Soil conditions (i.e., soil type, permeability, percolation rate, presence of a confining layer [aquitard], etc.); and
- Wastewater loading.

REGULATORY PLANS AND POLICIES

Water Quality Control Plans

Pursuant to Water Code section 13263, subdivision (a), WDRs must implement any relevant water quality control plans and take into consideration the beneficial uses to be protected. The Central Valley region is covered by the Water Quality Control Plan for the Sacramento and San Joaquin River Basins and the Water Quality Control Plan for the Tulare Lake Basin (collectively referred to as the Basin Plans). These Basin Plans designate beneficial uses, establish water quality objectives and contain implementation programs and policies to achieve those objectives for all waters (surface waters and groundwaters) within the basins. Requirements in this Order implement the Basin Plans.

Antidegradation Policy

State Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California* (Antidegradation Policy), prohibits the Central Valley Water Board from authorizing degradation of “high quality waters” unless it is shown that the discharge(s) causing such degradation will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, or otherwise result in water quality less than applicable water quality objectives. Any discharge to high

quality waters must meet requirements that will result in the best practicable treatment or control (BPTC) necessary to assure that pollution or nuisance will not occur and that the highest water quality consistent with the maximum benefit to the people of the State will be maintained. Whether a water is “high-quality” is established on a constituent-by-constituent basis, which means that an aquifer can be considered high-quality with respect to one constituent but not for others (SWRCB Order No. WQ 91-10).

Given that this Order regulates discharges to numerous groundwater basins/sub-basins throughout the region, there is insufficient data to determine the quality of every potential receiving water for every potential constituent of concern. However, it is likely that some will be considered “high quality waters” and some degradation is to be expected. The terms and conditions in this Order are designed to minimize groundwater degradation and protect beneficial uses to the extent feasible. This Order allows some limited degradation provided it is consistent with the applicable Basin Plan and of maximum benefit to the people of the State.

The primary methods used to determine compliance with the Antidegradation Policy are effluent and groundwater monitoring. This Order sets specific monitoring and reporting requirements based on the Tier designation of the discharge, and groundwater monitoring may be required unless a demonstration can be made that the discharge will be sufficiently protective of groundwater quality and downgradient users, based on wastewater characteristics, waste management practices, and site-specific soil and hydrogeologic conditions.

Economic Benefits: As mentioned previously, California is the largest agricultural producer in the nation and the Central Valley region plays a large part in it. According to the 2022 California Agricultural Statistics prepared by the California Department of Food and Agriculture (CDFA) California’s agricultural industry generated almost $55.9 billion in revenue in 2022 making it the largest producer in the United States. About $19 billion is from fruit and vegetable crops alone. The Central Valley region accounts for about 47 percent of crop production totals in California with seven of the top ten agricultural producing counties (California Department of Food & Agriculture, 2022-2023 California Agricultural Statistics Review).

Title 27 Regulations

California Code of Regulations, Title 27, section 20005 et seq. (Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of waste. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions of Title 27 section 20090(b).

Salt and Nitrate Control Programs

At its 31 May 2018 Board Meeting the Central Valley Water Board, as part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative, adopted Basin Plan amendments (Resolution R5-2018-0034) incorporating programs to address ongoing salt and nitrate accumulation in the Central Valley. These amendments were conditionally approved by the State Water Resources Control Board and Office of Administrative Law (OAL) and became effective on 17 January 2020. The

Central Valley Water Board revised the Basin Plan amendments in 2020 to make targeted revisions requested by the State Water Resources Control Board with Resolution R5-2020-0057, these revisions became effective 10 November 2021.

(https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2020-0057_res.pdf).

The Order requires compliance with the Salt and Nitrate Control Programs with specific requirements on dischargers depending on the path selected. Additional details are included in Appendix A.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

In accordance with CEQA, Public Resource Code section 21000 et seq., the Central Valley Water Board, as the lead agency responsible for regulating activities under the Order, prepared an Initial Study to evaluate foreseeable significant environmental impacts that could result from implementation of the Order to regulate discharges of process wastewater and solids from fruit and vegetable packing facilities. As part of the Initial Study analysis Central Valley Water Board staff consulted with responsible agencies and tribal communities.

The Initial Study concluded that potential environmental impacts from discharges of process wastewater and associated solids from fruit and vegetable packing facilities covered by this Order are less than significant while complying with Order conditions. As such, the Central Valley Water Board prepared a Negative Declaration. However, new or expanding facilities may be subject to further CEQA evaluation by local agencies on a site-specific basis as part of project approval related to land use and building.

Development and Outreach

The Order was developed in consultation with and collaboration with industry, regulatory authorities, environmental justice groups, tribal authorities, and other interested parties. In accordance with Water Code section 189.7, the Central Valley Water Board solicitated feedback from potentially affected disadvantaged communities and tribal communities within the region during the development process.

PROHIBITIONS, CONDITIONS, AND SPECIFICATIONS

The Order prohibits discharges to surface waters and requires implementation of BPTC to ensure that discharges of process wastewater and solids to land will not significantly degrade groundwater quality or impact beneficial uses. Specifically, the Order:

- Restricts the use of unlined ponds for storage and/or disposal of process wastewater.
- Requires a minimum two-foot freeboard in ponds to prevent overtopping or spills.
- Requires dissolved oxygen (DO) levels in all storage/disposal ponds be maintained above 1.0 mg/L to minimize objectionable odors.

- Requires a cycle average BOD loading rate of less than 100 lbs/ac/day (or 50 lbs/ac/day for Tier 1 Facilities).
- Requires even application of process wastewater and solids to minimize loading impacts to the land application areas.
- Prohibits discharge to the land application areas during significant precipitation events or when soils are saturated.
- Requires even application of process water used for dust control to prevent ponding or runoff.

MONITORING REQIREMENTS

Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of waste discharges to waters of the state. The Order includes specifications and requirements to establish a site-specific monitoring and reporting program (MRP) to monitor discharge activities. Monitoring reports will be reviewed and evaluated to determine compliance with Order conditions. Dischargers that do not comply with the requirements of the site-specific MRP will be subject to enforcement under the provisions of the California Water Code. Specifically, the MRP establishes requirements for:

- Flow monitoring
- Facility and source water monitoring
- Irrigation water monitoring
- Pond monitoring
- Effluent monitoring of the discharge to ponds and/or land application areas
- Solids monitoring and tracking
- Groundwater monitoring (if applicable)
- Quarterly and/or annual reporting

APPENDIX A
SALT AND NITRATE CONTROL PROGRAMS

The overarching goals and priorities of the Salt and Nitrate Control Programs are to (1) ensure safe drinking water supplies; (2) reduce salt and nitrate loading so that ongoing discharges neither threaten to degrade high quality waters absent findings by the Central Valley Water Board, nor cause or contribute to exceedances of water quality objectives (WQOs); and (3) implement long-term managed restoration of impaired water bodies.

To ensure compliance with the Salt and Nitrate Control Programs, this Order incorporates the Basin Plans' Conditional Prohibitions for these Programs.

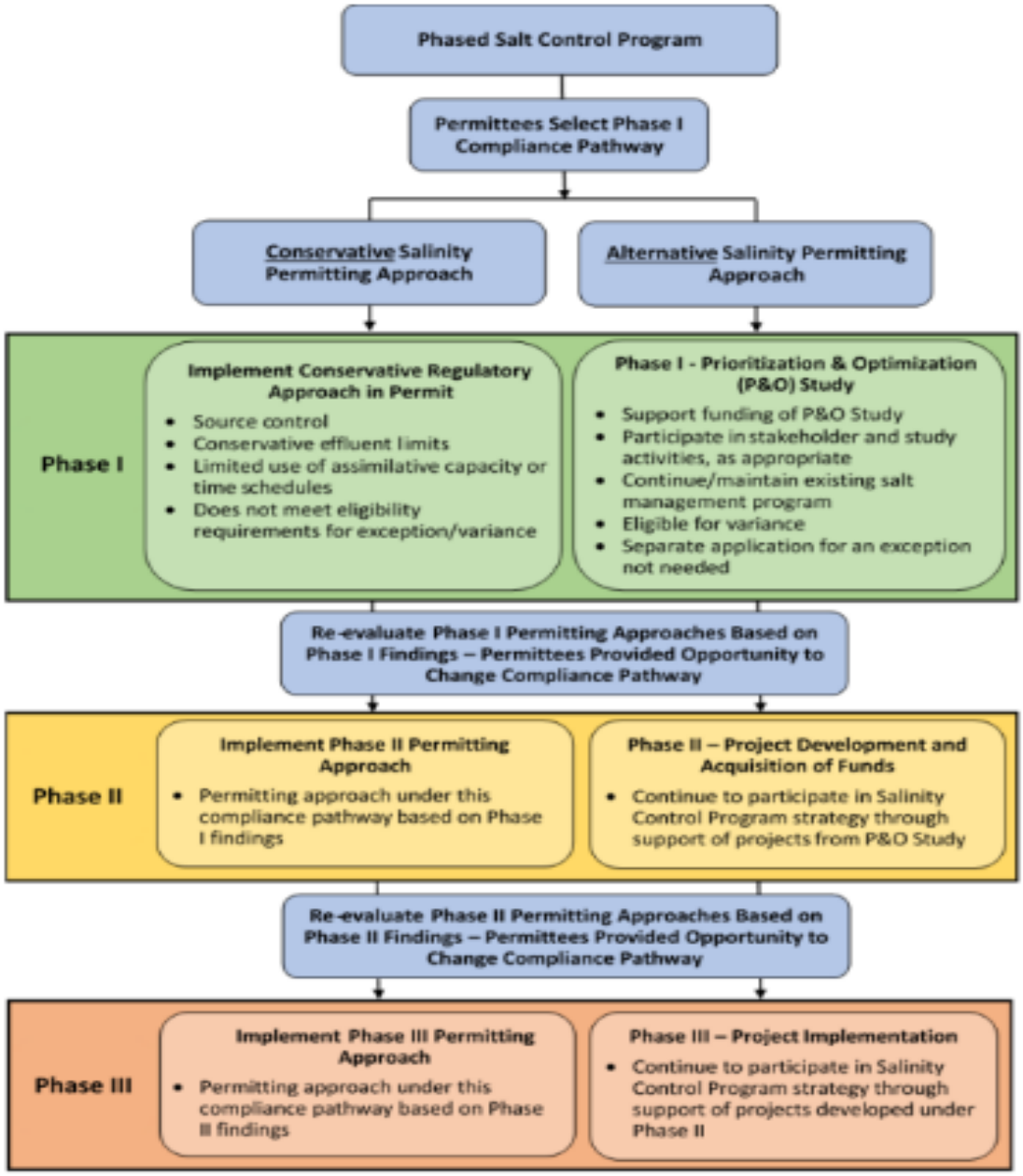
a. For the Salt Control Program (SCP), dischargers of salt that received a Notice to Comply are prohibited from discharging salts in concentrations that exceed the salinity numeric values in the Phase 1 Conservative Permitting Approach (700 µmhos/cm as a monthly average or 900 µmhos/cm in areas with municipal [MUN] but not agricultural (AGR) beneficial uses) unless they have requested and are implementing the requirements of the SCP as part of the Alternative Permitting Approach.

b. For the Nitrate Control Program (NCP), dischargers of nitrate that have received a Notice to Comply or whose discharges were initiated or expanded after the effective date of the NCP (17 January 2020) are prohibited from discharging nitrate unless they are implementing NCP requirements in a timely manner consistent with their selected path and basin priority.

Details on the compliance paths for the SCP and NCP are outlined below.

For the Salt Control Program:

FIGURE S-1: SALT CONTROL PROGRAM PATHWAYS TO COMPLIANCE



For the Nitrate Control Program:

FIGURE N-1: PRIORITIZED DWR BULLETIN 118 GROUNDWATER BASINS/SUB-BASINS

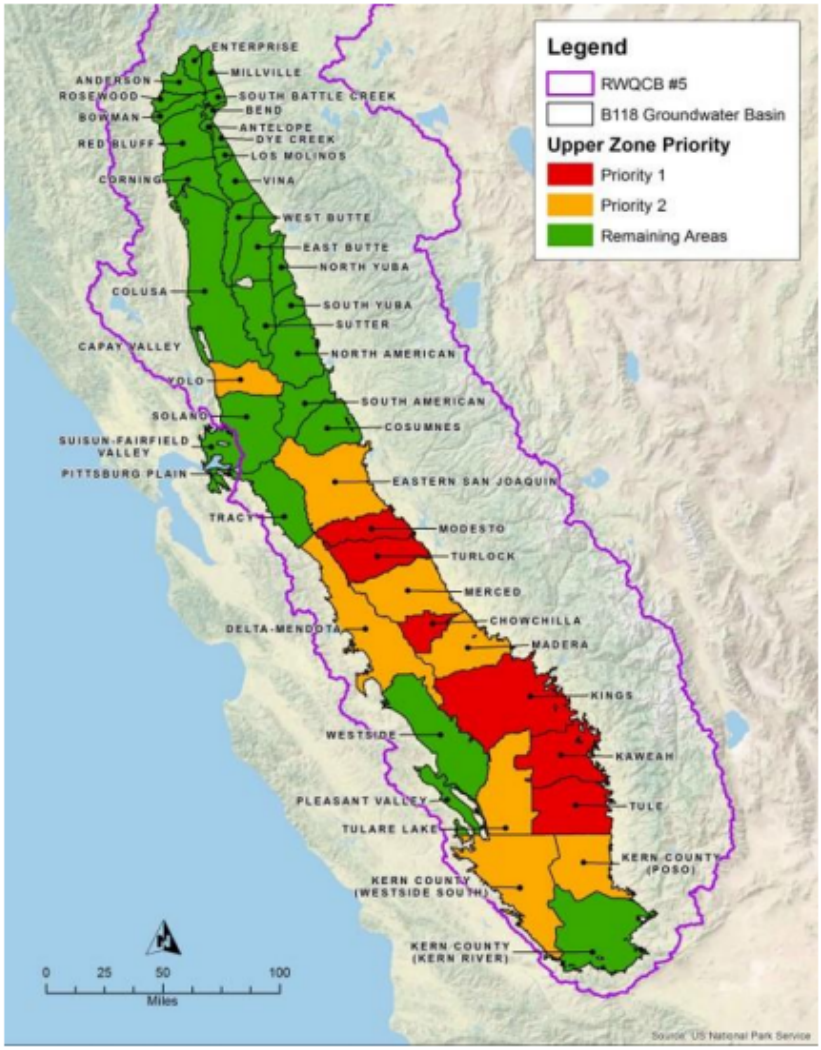


TABLE N-1: PRIORITIZED DWR BULLETIN 118 GROUNDWATER BASINS/SUB-BASINS

PRIORITY 1	
5-22.11	Kaweah
5-22.03	Turlock
5-22.05	Chowchilla
5-22.13	Tule
5-22.02	Modesto
5-22.08	Kings

PRIORITY 2	
5-21.67	Yolo
5-22.04	Merced
5-22.14	Kern County (Westside South)
5-22.12	Tulare Lake
5-22.14	Kern County (Poso)
5.22-07	Delta Mendota
5-22.01	Eastern San Joaquin
5-22.06	Madera

FIGURE N-2. NITRATE PERMITTING STRATEGY