Bay Area Clean Water Agencies

Regional Planning Study

Scoping Plan

June 16, 2025

BACWA
BAY AREA
CLEAN WATER
AGENCIES

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1 Introduction

Discharges of total inorganic nitrogen (i.e., the sum of ammonia, nitrite, and nitrate; referred to here as TIN) by municipal Publicly Owned Treatment Works (POTWs or Dischargers) to San Francisco Bay are regulated by the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) through a collective National Pollutant Discharge Elimination System (NPDES) permit (Permit No. CA0038873). In July 2024, the Regional Water Board adopted Order R2-2024-0013, which is the third iteration of the Nutrient Watershed Permit (2024 Permit). The 2024 Permit became effective on October 1, 2024, replacing the 2019 Permit (Order No. R2-2019-0017).

The 2024 Permit requires the Dischargers to reduce the aggregate dry season (May through September) TIN load to San Francisco Bay by 40% relative to the 2022 dry season aggregate load. Individual limits are based on the specific TIN concentration (i.e., mg N/L) that, when the various flows are considered, results in loads summing to the total aggregate average load of 26,700 kg/day, assuming 2022 dry season flows. This concentration is 20.5 mg TIN/L. This means that the required percentage reduction for each agency varies depending on current effluent concentrations and flows. If aggregate TIN loads are below 26,700 kg/d, then all Dischargers will be deemed in compliance. The 2024 Permit limits the time to comply with this load limit to 10 years, which is the maximum time allowed in an NPDES permit by the State Water Resources Control Board's (State Water Board) Policy for Compliance Schedules in NDPES Permits (Compliance Schedule Policy; Resolution 2008-0025).

The 2024 Permit requires Dischargers to comply with individual interim performance-based limits while taking steps to meet their final individual load limits by the 2035 dry season. There is no aggregate interim load limit. If a Discharger cannot comply within 10 years, the Regional Water Board will consider regulatory mechanisms as warranted and as available to grant more time (see Fact Sheet sections 6.3.5 and 6.3.6 in the 2024 Permit). A summary of the enforceable effluent TIN limits for each Discharger is provided in Table 1. The interim effluent TIN limits have been enforceable since the 2024 Permit became effective (October 1, 2024) and will apply to the dry seasons from 2025 through 2034. The final effluent TIN limits are enforceable starting October 1, 2034, and will apply beginning in the 2035 dry season. Additionally, the 2024 Permit requires the Dischargers to continue to track and evaluate treatment plant performance, report on compliance milestones, fund nutrient research and monitoring programs, and complete a Regional Planning Study.

The Regional Planning Study is a key deliverable that will provide an analysis of the timeline, cost, and cross-media impacts associated with the required nutrient reduction projects. The study will also include an evaluation of beneficial projects that may require more than ten years, and a preliminary investigation of the potential for nutrient credit trading. As shown in Figure 1, going beyond the minimum permit requirements for the Regional Planning Study provides a valuable opportunity for the Dischargers to coordinate their efforts to reduce regional costs, foster regional solutions, and promote innovation.

This Scoping Plan details the components of the Regional Planning Study and specifies how the components will be completed, including how information will be collected, processed, and presented. The subsections that follow include details on the minimum requirements of the 2024 Permit (Section 1.1), the anticipated schedule (Section 1.2), and proposed additional tasks that go beyond the minimum requirements of the 2024 Permit (Section 1.3).

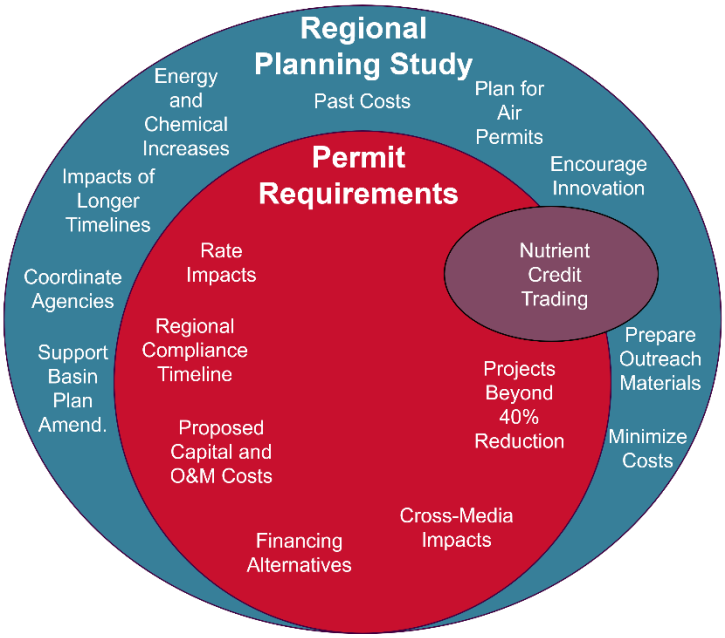

Figure 1. Comparison of Permit Requirements and Additional Goals of the Regional Planning Study.

Minimum requirements from Provision 6.3.4 of the 2024 Permit are shown at center, in red. Additional elements to support the BACWA community in project implementation are shown in the blue outer circle. Nutrient credit trading is indicated separately because it listed in Provision 6.3.4(f) of the 2024 Permit as an optional component of the Regional Planning Study.

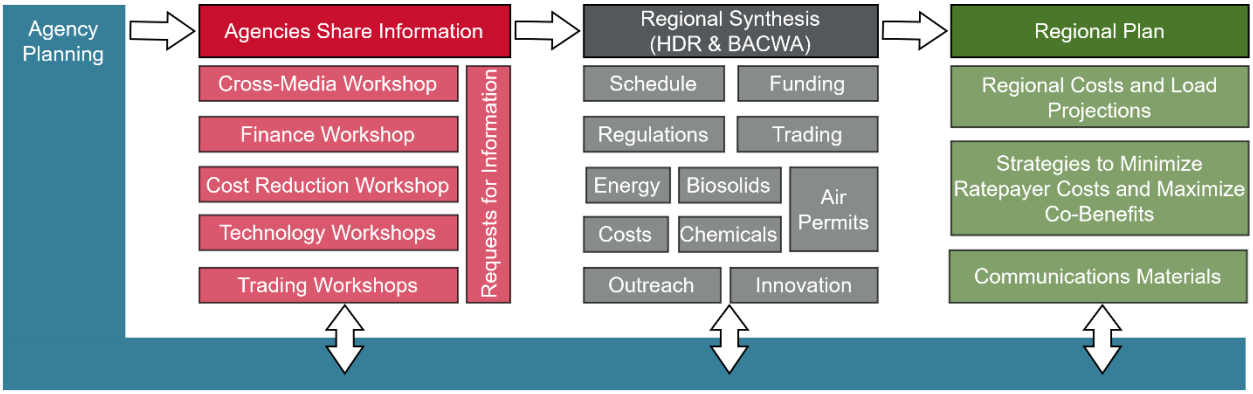

Figure 2. The Regional Planning Study Process.

Table 1. Municipal Wastewater Dischargers and their Corresponding TIN Discharge Limits in the 2024 Permit

Discharger Name (Abbreviation)	POTW Facility Name	Interim Effluent TIN Limitations (kg N/d) [i]	Final Effluent TIN Limitations (kg N/d) [ii]
American Canyon, City of (American Canyon)	Wastewater Treatment and Reclamation Facility	79	62
Benicia, City of (Benicia)	Benicia Wastewater Treatment Plant	290	120
Burlingame, City of (Burlingame)	Burlingame Wastewater Treatment Plant	610	160
Central Contra Costa Sanitary District (Central San)	Central Contra Costa Sanitary District Wastewater Treatment Plant	4,300	2,300
Central Marin Sanitation Agency (CMSA)	Central Marin Sanitation Agency Wastewater Treatment Plant	1,300	480
Crockett Community Services District (Port Costa)	Port Costa Wastewater Treatment Plant	5.3	3.7
Delta Diablo (Delta Diablo)	Delta Diablo Wastewater Treatment Plant	2,000	920
East Bay Dischargers Authority (EBDA): Cities of Hayward and San Leandro; Oro Loma Sanitary District; Castro Valley Sanitary District; Union Sanitary District; Livermore-Amador Valley Water Management Agency; Dublin San Ramon Services District; and City of Livermore	San Leandro Water Pollution Control Plant	9,000	4,200
	Oro Loma/Castro Valley Sanitary Districts Water Pollution Control Plant		
	Raymond A. Boege Alvarado Wastewater Treatment Plant		
	Hayward Water Resource Recovery Facility		
	Livermore-Amador Valley Water Management Agency Export and Storage Facilities		
	Dublin San Ramon Services District Wastewater Treatment Plant		
	City of Livermore Water Reclamation Plant		
East Bay Municipal Utility District (EBMUD)	East Bay Municipal Utility District, Special District No. 1 Wastewater Treatment Plant	11,000	3,300
Fairfield-Suisun Sewer District (FSSD)	Fairfield-Suisun Wastewater Treatment Plant	1,600	880
Las Gallinas Valley Sanitary District (Las Gallinas)	Las Gallinas Valley Sanitary District Sewage Treatment Plant	-- [iii]	-- [iii]
Marin County (Paradise Cove), Sanitary District No. 5 of	Paradise Cove Treatment Plant	3.7	3.5
Marin County (Tiburon), Sanitary District No. 5 of	Wastewater Treatment Plant	69	47
Millbrae, City of (Millbrae)	Water Pollution Control Plant	340	100
Mt. View Sanitary District (Mt View)	Mt View Sanitary District Wastewater Treatment Plant	190	78
Napa Sanitation District (Napa)	Soscol Water Recycling Facility	-- [iii]	-- [iii]
Novato Sanitary District (Novato)	Novato Sanitary District Wastewater Treatment Plant	210	140
Palo Alto, City of (Palo Alto)	Palo Alto Regional Water Quality Control Plant	2,900	1,200
Petaluma, City of (Petaluma)	Municipal Wastewater Treatment Plant	-- [iii]	-- [iii]
Pinole, City of (Pinole)	Pinole-Hercules Water Pollution Control Plant	460	190

Discharger Name (Abbreviation)	POTW Facility Name	Interim Effluent TIN Limitations (kg N/d) [i]	Final Effluent TIN Limitations (kg N/d) [ii]
Rodeo Sanitary District (Rodeo)	Rodeo Sanitary District Water Pollution Control Facility	50	38
San Francisco (San Francisco International Airport), City and County of (SFO Airport)	Mel Leong Treatment Plant, Sanitary Plant	560	71
San Francisco (Southeast Plant), City and County of (SFPUC Southeast)	Southeast Water Pollution Control Plant	11,000	3,300
San Jose/Santa Clara Water Pollution Control Plant and Cities of San Jose and Santa Clara (San Jose)	San Jose/Santa Clara Water Pollution Control Plant	6,400	5,000
San Mateo, City of (San Mateo)	City of San Mateo Wastewater Treatment Plant	1,700	670
Sausalito-Marin City Sanitary District (SMCSD)	Sausalito-Marin City Sanitary District Wastewater Treatment Plant	180	69
Sewerage Agency of Southern Marin (SASM)	Sewerage Agency of Southern Marin Wastewater Treatment Plant	280	140
Silicon Valley Clean Water (SVCW)	Silicon Valley Clean Water Wastewater Treatment Plant	3,000	880
Sonoma Valley County Sanitary District (Sonoma Valley)	Municipal Wastewater Treatment Plant	-- [iii]	-- [iii]
South San Francisco and San Bruno, Cities of (South SF)	South San Francisco and San Bruno Water Quality Control Plant	1,500	560
Sunnyvale, City of (Sunnyvale)	Sunnyvale Water Pollution Control Plant	830	740
Treasure Island Development Authority	Treasure Island Wastewater Treatment Plant	29	21
Vallejo Flood and Wastewater District (Vallejo)	Vallejo Wastewater Treatment Plant	1,000	580
West County Wastewater District (West County) and City of Richmond Municipal Sewer District (Richmond) [iv]	West County Wastewater-City of Richmond Combined Outfall West County Wastewater District Treatment Plant Richmond Municipal Sewer District Water Pollution Control Plant	1,100	430
Total Aggregate Limit [v]			26,700

i Interim seasonal effluent limits at the discharge points and monitoring locations are specified in the Monitoring and Reporting Program (Attachment E of the 2024 Permit; Effective on October 1, 2024). Compliance with these final limitations shall be determined seasonally based on discharges from May 1 through September 30.

ii In accordance with the compliance schedule established by the 2024 Permit in Provision 6.3.3, starting October 1, 2034, the Dischargers shall comply with the following final seasonal water quality-based effluent limitations at the discharge points and monitoring locations specified in the MRP. Compliance with these final limitations shall be determined seasonally based on discharges from May 1 through September 30.

iii Agencies with a dry season discharge prohibition were excluded from TIN load limits.

iv Formerly West County Agency, a Joint Powers Authority that was dissolved effective December 31, 2024. West County Wastewater District and the City of Richmond now share responsibility for permit compliance.

v The sum of the individual final effluent TIN limits is 26,683.2 kg/d, which is lower than the total aggregate limit of 26,700.

1.1 Regional Planning Study 2024 Permit Requirements

Provision 6.3.4 of the 2024 Permit requires Dischargers with effluent limits and designated as "major" (greater than one million gallons per day average dry weather flow permitted capacity) to develop a report that describes regionwide planning efforts to meet the final effluent TIN load limits. The report is required to include the following:

- Regional schedule that lays out the phasing of identified future projects.
- Identification of anticipated capital, operation, and maintenance costs of proposed projects, to the extent feasible for the level of planning.
- Description of anticipated financing alternatives and impacts on agency rates (i.e., the cost to the community) associated with the identified projects.
- Assessment of the impact of the proposed projects on other regulations or requirements (e.g., air and biosolids regulations).
- Identification of the nutrient reduction projects that would occur beyond the compliance schedule established in provision 6.3.3 (with a focus on recycled water and nature-based solution projects) with the potential to reduce the baywide total inorganic nitrogen load to below 22,000 kg/d and below 17,600 kg/d (50% and 60% reduction from 2022 total inorganic nitrogen load).
- Nutrient trading program, if Dischargers seek to engage in trading consistent with U.S. EPA's "Water Quality Trading Policy" (January 13, 2003) to facilitate achieving total inorganic nitrogen load reductions. The proposed trading program should evaluate baywide and subembayment trading allowances that are supported by the best available science.

1.2 Schedule

Table 2 provides key due dates for the Regional Planning Study as they related to other requirements from the 2024 Permit.

Table 2. Key Due Dates for the Regional Planning Study (Bold) and Other Permit Requirements

Deliverable	Description	Permit Due Date
Scoping Plan	**Contents, methods, and schedule for Regional Planning Study (this document).**	**2025-07-01**
Compliance Schedule Milestone #2	Perform Alternatives Analysis[1,2] Dischargers shall evaluate the compliance alternative(s) and which alternative or combination of alternatives will best achieve compliance with the final effluent limits in Table 1.	2026-04-01
Group Annual Report (2025)	Data and trending analysis on flows and nutrient levels for influent, discharge, and recycled water for each discharger and the compliance milestone summary. Example: https://bacwa.org/wp-content/uploads/2025/04/2024-BACWA-GAR-Final-2025-04-01.pdf	2026-04-01
Status Report	**Update to Regional Water Board regarding tasks completed and preliminary findings**	**2026-07-01**
Compliance Schedule Milestone #3	Submit Compliance Plan[1,2] Dischargers shall describe proposed improvements and provide an implementation schedule for meeting the final effluent limits in Table 1.	2027-04-01
Group Annual Report (2026)	Same as Group Annual Report (2025)	2027-04-01
Status Report	**Update to Regional Water Board regarding tasks completed and preliminary findings**	**2027-07-01**
Compliance Schedule Milestone #4	Submit Design Progress Report[1,2] Dischargers implementing a capital project as described in the 2024 Permit to meet the final effluent limits in Table 1 shall provide project details.	2028-04-01
Group Annual Report (2027)	Same as Group Annual Report (2025)	2028-04-01
Regional Planning Study Final Report	**Results and findings of Regional Planning Study. Each Discharger will have the opportunity to review a draft of the report and provide comments prior to submission of the final report.**	**2029-03-31**
Compliance Schedule Milestone #5	Submit Design Progress Report and Compliance Update[1,2] Dischargers shall summarize their progress towards meeting the final effluent limits in Table 1.	2029-04-01
Group Annual Report (2028)	Same as Group Annual Report (2025)	2029-04-01

1. See Table 5 in the 2024 Permit.
2. Compliance milestone reporting may be delayed for one year from the dates shown in this table if the Discharger meets certain conditions described in the 2024 Permit.

Table 3 provides a timeline of anticipated activities for the Regional Planning Study. This schedule was designed to facilitate incremental progress while giving agencies time to develop their plans in more detail.

Table 3. Anticipated Activities for the Regional Planning Study

Activity	Description	Completion Date
Project Management and QA/QC	Scheduled meetings, status updates, and QA/QC	Ongoing
Workshops	Various workshops will be held throughout the preparation of the Regional Planning Study that will focus on cross-media impacts, strategies to reduce regional costs, rate impacts, innovative technologies, and nutrient credit trading. The dates of these workshops have not been determined, but the approximate timing of the workshops is shown in the Gantt chart given in Appendix A.	Ongoing
Supplemental Information Request #1	Focuses on nutrient credit trading, cross-media impacts, and rate model information to help development of analysis methodology. Dischargers will be asked to review a draft RFI prior to completing the final RFI. This RFI will be distributed after the Group Annual Report (2025). For more details see Section 2.3.4.	2026-07-01
Supplemental Information Request #2	Focuses on updating information collected from the previous supplemental RFI and filling any identified gaps. Dischargers will be asked to review a draft RFI prior to completing the final RFI. This RFI will be distributed after the Group Annual Report (2026). For more details see Section 2.3.4.	2027-07-01
Supplemental Information Request #3	Includes the majority of the construction, compliance, and cost information needed for the planning study, as well as updates to information collected previously. Dischargers will be asked to review a draft RFI prior to completing the final RFI. This RFI will be distributed after the Group Annual Report (2027). For more details see Section 2.3.4.	2028-07-01
Data Update and Confirmation	Opportunity for Dischargers to revise and/or confirm their data prior to submission of the final report. For more details see Section 2.3.4.	2029-01-31
Annual Assessment of baywide nutrient management efforts (Optional)	Use the Practices, Policies, and Partnerships framework developed as part of the Water Research Foundation Project No. 4974 titled “Holistic Approach to Improved Nutrient Management”. This non-permit component will serve as an annual “report card” that compares the on-going Bay Area efforts against at least three other watersheds. Each report card will be limited to 2 slides per watershed.	Annual

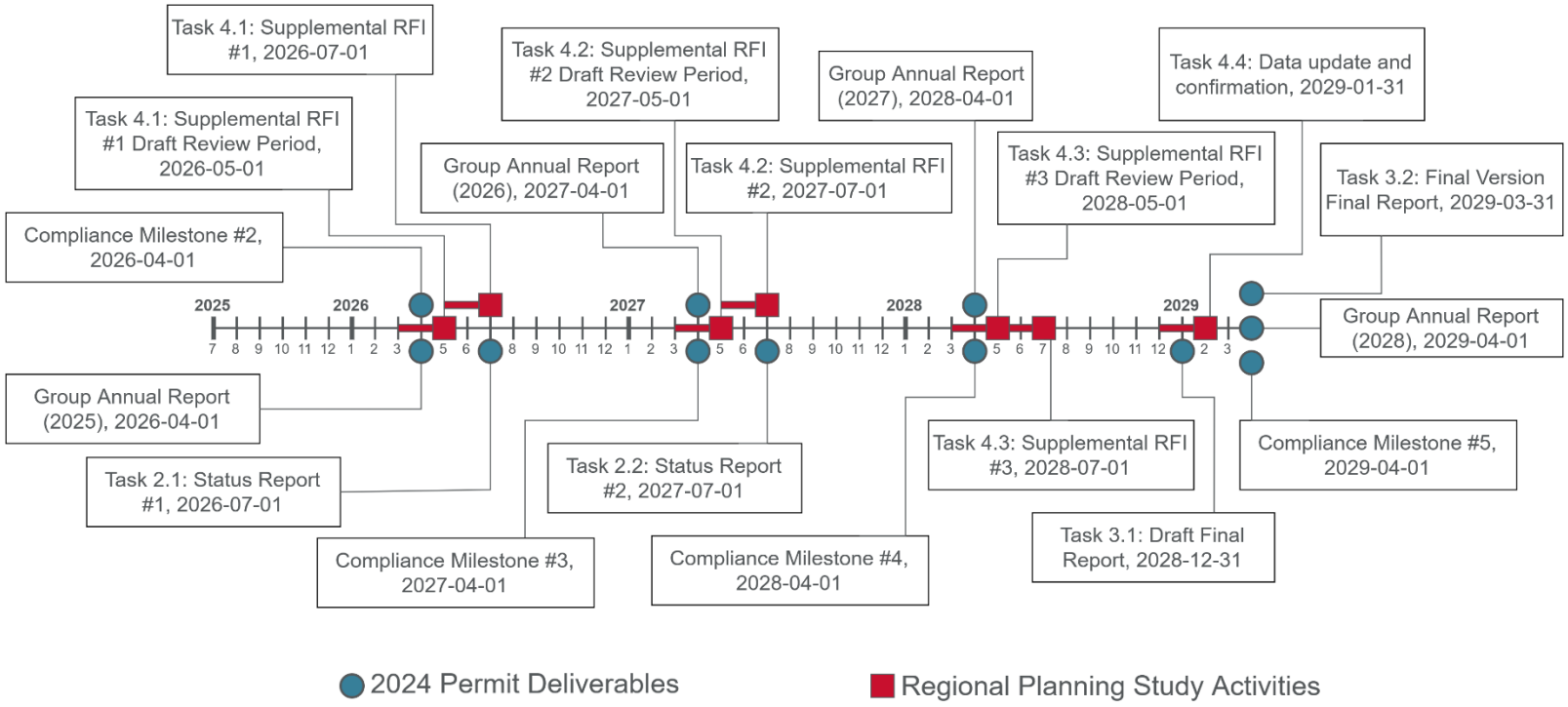

Figure 3. Timeline for 2024 Permit Deliverables and Activities.

1.3 Additional Tasks

The following tasks go beyond the 2024 Permit's minimum requirements for the Regional Planning Study. These items are included in the scoping plan because they provide context on additional plans that the Dischargers consider important for advancing baywide nutrient management efforts.

- Coordinate between agencies on scheduling capital improvement projects to reduce delays, mitigate potential resource constraints, and minimize costs.
- Provide information about project schedules to support the development of a potential Basin Plan Amendment that would extend the maximum time period for compliance schedules beyond ten years.
- Evaluate the financial impacts of longer compliance timelines, including the impact to customer rates.
- Estimate the total capital, operations, and maintenance costs associated with nutrient reduction requirements (not just the capital, operations, and maintenance costs of proposed projects). For example, operations and maintenance costs for projects that that remove nitrogen but were constructed prior to the adoption of the first nutrient watershed permit.
- Facilitate the exchange of information between agencies, including information related to piloting and demonstration efforts. For example, the recently completed membrane aerated biofilm reactor (MABR) pilot at Central San has provided key information of interest to many dischargers. An open house was offered to assist with information dissemination, as well as presentations and publications for industry groups such as the California Water Environment Association.
- Provide materials for public outreach (e.g., to inform regional advocacy to improve likelihood of additional funding).
- Maintain industry involvement (e.g., communicate with consultants and contractors to improve availability of local resources).
- Provide the Bay Area Air District information on upcoming air permit applications to allow them to allocate resources to process the applications.
- Provide information needed to advance the development of a nutrient credit trading framework. This information is only required by the 2024 Permit "if Dischargers seek to engage in trading."

2 Regional Plan to Reduce TIN Discharge Loads

This section outlines the deliverables associated with the Regional Planning Study, the content that will be included, how the necessary information will be obtained, and how the information will be processed and presented.

2.1 Deliverables

There are four deliverables associated with the Regional Planning Study that must be submitted to the Regional Water Board (see Table 2).

- The Scoping Plan (this document) details the components of the Regional Planning Study and specifies how the components will be completed, including how information will be collected, processed, and presented. The Scoping Plan is due July 1, 2025.
- Status Reports describing the tasks completed and preliminary findings will be submitted on July 1, 2026, and July 1, 2027.
- The Final Report describing the results of the Regional Planning Study is due March 31, 2029.

2.2 Components of the Regional Planning Study

The Regional Planning Study will include information and analysis that satisfies the 2024 Permit requirements (see Section 1.1) and provide additional information beyond the minimum permit requirements (see Section 1.3). The anticipated outline for the Final Report is as follows.

1. Background
2. Compliance and Construction Timelines
    2.1. Current Status of Nutrient Upgrades
    2.2. Need for Extended Compliance Timeline
3. Capital, Operations, and Maintenance Costs
4. Financing Alternatives and Community Rate Impacts
5. Strategies to Reduce Regional Cost
6. Cross-Media Impacts
    6.1. Energy and Chemicals
    6.2. Other Air Pollutants
    6.3. Biosolids
7. Nutrient Credit Trading
8. Member Information Sharing
9. Public Outreach and Industry Involvement
10. Practice, Policy, and Partnership (Optional)
11. Appendix A: Detailed Project Descriptions

2.3 Tasks

The following tasks describe the work needed to complete the Regional Planning Study. See Appendix A for a Gantt chart describing the schedule of deliverables and tasks.

2.3.1 Task 1: Project Management and QA/QC

Project management and quality assurance/quality control (QA/QC) activities will be essential for meeting compliance due dates and maintaining the quality of the analysis and associated deliverables.

2.3.2 Task 2: Status Reports

The Status Reports will consist of a one to two-page summary of the tasks completed and the preliminary findings for the Regional Planning Summary. The consultant team will draft the Status Reports, and BACWA and the Dischargers will have the opportunity to review and provide markups and comments prior to submission to the Regional Water Board. The Status Reports are due July 1, 2026 and July 1, 2027.

2.3.3 Task 3: Draft and Final Report

The consultant team will produce draft and final versions of the Final Report. The Final Report will contain the information and analysis needed to satisfy the 2024 Permit's requirements for the Regional Planning Study (see Section 1.1) and the additional tasks proposed by BACWA (see Section 1.3). The Final Report is anticipated to consist of the components outlined in Section 2.2 and detailed below. BACWA and the Dischargers will have the opportunity to review the draft version of the Final Report and provide markups and comments prior to submission to the Regional Water Board. The Final Report will be submitted to the Regional Water Board as a PDF file. BACWA will be provided an editable Microsoft Word document in addition to the submitted PDF file. The Final Report is due March 31, 2029.

In addition to the components described in the subsections that follow, the Final Report will contain background information providing an overview of the 2014, 2019, and 2024 Permits, their requirements, and key findings from previous BACWA-led special studies. The report will also contain a brief summary of the state of scientific information being developed through the Nutrient Management Strategy, and how it is informing policy and permitting decisions. For example, the anticipated discharge TIN levels associated with the various listed projects in the Regional Planning Study could be used as scenario(s) in the future modeling efforts by the Nutrient Management Strategy science team.

2.3.4 Task 4: Obtaining Information from Dischargers

Information needed to complete the Regional Planning Study will be obtained from Dischargers through two types of requests for information (RFI): 1) the compliance milestone RFI (Section 6.3.3 of the 2024 Permit) completed annually as part of the Group Annual Report and 2) supplemental RFIs independent of the compliance milestone reporting. This approach is preferred because it provides flexibility and will distribute the burden of work for the Dischargers throughout the year and can be tailored to different agency staff. The schedule of anticipated RFIs is summarized in Figure 3,

with descriptions given in Table 2 and Table 3.

Additional supplemental RFIs may be issued as needed. RFIs will be developed and distributed to the Dischargers using Microsoft Forms. Draft versions of the RFIs will be distributed to the Dischargers for review prior to the distribution of the final RFIs. Accompanying Excel workbook templates will be provided where necessary to standardize the format of the responses. The RFIs will be constructed to build on previous RFIs and to allow Dischargers to update information provided previously. A final opportunity to update the information used for the Regional Planning Study will be provided prior to submission of the Final Report. This task includes provision of "office hours" for BACWA members prior to each RFI due date. The following provides more details regarding the information that will be requested in each RFI.

- **Compliance Schedule Milestone #2 (Perform Alternatives Analysis)**
    - BACWA will distribute a draft RFI in December 2025
    - BACWA will distribute a final RFI in January 2026
    - BACWA will ask Dischargers to provide information by February 13, 2026
    - Permit Due Date: April 1, 2026
    - The RFI will request the following information:
        - Evaluation of alternatives and identification of which compliance pathway best meets final effluent limits.
        - If Discharger has already identified compliance pathway, provide status update on implementation.
        - If optimization is part of compliance plan, Discharger must submit schedule to complete optimization work no later than May 1, 2028.
- **Supplemental Information Request #1**
    - BACWA will distribute a draft RFI April 1, 2026
    - BACWA will distribute a final RFI May 1, 2026
    - BACWA will ask Dischargers to provide information by July 1, 2026
    - The first supplemental request will be made after the Group Annual Report is submitted to allow the analysis approach to be developed in more detail prior to asking Dischargers for additional information.
    - The request will include the following:
        - More detailed information describing interest in nutrient credit trading.
        - Rate information and models so the analysis approach can be further developed based on what is available. An Excel template will be provided.
        - Information on Cross-media impacts.
- **Compliance Schedule Milestone #3 (Submit Compliance Plan)**
    - BACWA will distribute a draft RFI in December 2026
    - BACWA will distribute a final RFI in January 2027

- BACWA will ask Dischargers to provide information by February 12, 2027
- Permit Due Date: April 1, 2027 (may be delayed for one year if conditions of footnote [1] in Table 4 of the 2024 Permit are invoked).
- The RFI will request the following information:
  - Description of proposed improvements and implementation schedule with major milestones for compliance pathway.
  - Schedule for design and construction of improvements.
  - If a multi-benefit solution is selected, Discharger must submit a governance plan.

- **Supplemental Information Request #2**
  - BACWA will distribute a draft RFI April 1, 2027
  - BACWA will distribute a final RFI May 1, 2027
  - BACWA will ask Dischargers to provide information by July 1, 2027
  - This request will focus on updating the information received in the first supplemental information request as well as filling any identified gaps.
- **Compliance Schedule Milestone #4 (Submit Design Progress Report):**
  - BACWA will distribute a draft RFI in December 2027
  - BACWA will distribute a final RFI in January 2028
  - BACWA will ask Dischargers to provide information by February 10, 2028
  - Permit Due Date: April 1, 2028 (may be delayed for one year if conditions of footnote [1] in Table 4 of the 2024 Permit are invoked).
  - The RFI will request the following information:
    - Details of capital projects, if applicable, including a description, estimated nutrient removal, evidence of progress to design stage, the percent completion of the design, an updated implementation schedule, estimated capital costs, a financial assessment, and a funding strategy.
- **Supplemental Information Request #3**
  - BACWA will distribute a draft RFI April 1, 2028
  - BACWA will distribute a final RFI May 1, 2028
  - BACWA will ask Dischargers to provide information by July 1, 2028
  - This request will focus on gathering the final planning information used to produce the Regional Planning Study.
    - Updated rate model information.
    - Construction timelines and associated TIN reductions related to projects in the following categories:
      - Projects completed prior to the first Nutrient Watershed Permit.

- Projects completed in response to the first or second Nutrient Watershed Permit (Early Actors).
- Projects completed in response to the 2024 Permit.
- Projects that are in-progress.
- Projects that have been proposed.
- Projects that are being considered but have not been proposed for implementation.

  - Capital, operations, and maintenance costs associated with the projects described above. An Excel template will be included. The template will ask for a breakdown of costs by year, project, and category and will extend from the first year a Discharger had costs for nutrient related projects through 2059 (a 30-year planning horizon starting from the year the Final Report is due).
  - Detailed descriptions of the projects described above.
  - Estimated number and timing of projects requiring air permits.

- **Data Update and Confirmation Request**:
  - BACWA will distribute a request for review and confirmation in December 2028
  - BACWA will ask Dischargers to provide information by January 31, 2029
  - This request will provide the Dischargers with the opportunity to review and confirm the data used for the Regional Planning Study and to provide any needed updates.
- **Compliance Schedule Milestone #5 (Submit Design Progress Report and Compliance Update)**
  - BACWA will distribute a draft RFI in December 2028
  - BACWA will distribute a final RFI in January 2029
  - BACWA will ask Dischargers to provide information by February 9, 2029
  - Permit Due Date: April 1, 2029 (may be delayed for one year if conditions of footnote [1] in Table 4 of the 2024 Permit are invoked).
  - The RFI will request the following information:
    - Summary of progress toward meeting final effluent limits.
    - Status update regarding implementation of compliance pathway.
    - Status update on progress of capital projects, including the percent completion of design, the status of contract documents, and an updated implementation schedule.

2.3.5 Task 5: Compliance and Construction Timelines

Using information provided by the Dischargers, the consultant team will produce a construction phasing timeline that includes completed, in-progress, proposed, and conceptual capital improvements projects. The information needed to complete this task will be collected from the

Dischargers through the RFIs detailed in Section 2.3.4. The resolution of the timelines will be yearly. The information that is collected throughout the project will be subject to review and revision by the Dischargers prior to submission of the Final Report, and Dischargers will be presented with opportunities to revise their information. The construction phasing timeline will include 1) an analysis of the anticipated reductions in aggregate TIN load both baywide and by subembayment and 2) a comparison to the load reductions required by the 2024 Permit. This task will also include an analysis of the possibility of schedule delays due to external and internal factors (may include analysis of recently observed delays for nutrient-related capital improvements projects in the Bay Area if the information is made available). For example, all projects will need permits from the Bay Area Air District (Air District), which has limited capacity to issue new permits. To mitigate this concern, the Regional Planning Study will include anticipated new permits so that the Air District can allocate resources appropriately. The Dischargers' ability to finance new capital improvements may also lead to delays.

Subtask 5.1: Potential Alternative Compliance Timelines

This task includes an analysis of the effects of extended compliance timelines, annual variability, and population growth on discharge loads and compliance. Additionally, the synergy between extended compliance timelines and nutrient trading will be explored. For example, there could be a benefit to smaller dischargers if extended timelines are approved for larger projects that go below the effluent TIN limit and thus have potential TIN credits available for trading. The information needed to complete this task will be collected from the Dischargers through the RFIs detailed in Section 2.3.4.

2.3.6 Task 6: Potential Projects for Additional Load Reductions

Permit Provision 6.3.3 requires the identification of nutrient reduction projects (with a focus on recycled water and nature-based solution projects) with the potential to reduce the baywide total inorganic nitrogen load to below 22,000 kg/d and below 17,600 kg/d (50% and 60% reduction from 2022 total inorganic nitrogen load). As part of the RFIs (Section 2.3.4), the Dischargers will be asked if they are considering such projects. The consultant team will use the load projection information compiled for Task 5 to determine the magnitude of additional load reductions that would be required to meet the 50% and 60% reductions. The consultant team will work with a subset of larger dischargers (≥10 MGD) to identify additional recycled water and nature-based opportunities to further reduce the regional TIN load.

2.3.7 Task 7: Capital, Operations, and Maintenance Costs

While the 2024 Permit only requires analysis of proposed projects (as of the Final Report submission deadline), the consultant team will aggregate the estimated capital, operations, and maintenance costs associated with all projects that have significantly reduced nitrogen discharges to San Francisco Bay. These costs may be associated with a variety of projects, including:

- Projects completed prior to the first Nutrient Watershed Permit.
- Projects completed in response to the first or second Nutrient Watershed Permit (Early Actors).
- Projects completed in response to the 2024 Permit.
- Projects that are in-progress.

- Projects that have been proposed.
- Projects that are being considered but have not been proposed for implementation.

The operations and maintenance costs will include energy, chemicals, and labor (if available). The information needed to complete this task will be collected from the Dischargers through the RFIs detailed in Section 2.3.4. The request will include a template Excel workbook for Dischargers to complete. The template will include annual estimates of costs for each project for all categories of costs (i.e., capital, operations, and maintenance costs). Along with cost information, the classification of the costs (as per the American Association of Cost Engineers Recommended Practice No. 17R-97) will also be requested, which will inform the lower and upper bounds on the cost estimate. In addition to constructing a timeline of costs for each Discharger and for the region in aggregate, the lifecycle costs will be evaluated using a net present value method that accounts for the time value of money.

The results of this analysis will be presented in a way that is complementary to the construction and compliance timelines (see Section 2.3.5). A cost schedule will be created that coordinates with the construction and compliance timelines to clarify when projects will bid. The chart will be similar to a Gantt chart that depicts the cost schedule for each project.

Costs will not be separated within projects to isolate costs limited to nutrient elements. For example, the cost of a new electrical upgrade would be included if required for nutrient reduction upgrades. These additional improvements will be listed to support an understanding of the co- benefits realized through nutrient reduction project. This task will also include a discussion of any potential adverse impacts at the plant and associated costs, such as staffing requirements, use of space within existing plant footprints, or significant new maintenance requirements.

2.3.8 Task 8: Financing Alternatives and Community Rate Impacts

This task will include a market assessment of financing options available to Dischargers and present options with their associated advantages and disadvantages. A general financial plan for each agency will be produced based on industry standard approaches (WEF MOP No. 27). For Dischargers that are unable to provide the needed information, general industry standard revenues and expenses for each agency will be assumed. The consultant team will estimate ratepayer impacts (e.g., additional $/year, percent increase per account, and affordability impacts on the lowest quintile of earners) based on Discharger-provided rate structures and anticipated costs for both future and on-going projects. Where Dischargers are unable to provide information, industry standards will be assumed. The information needed to complete this task will be collected from the Dischargers through the RFIs detailed in Section 2.3.4. The consultant team will evaluate the information provided by the Dischargers to ensure the comparison of rates and costs between Dischargers is valid and consistent.

This task includes a workshop with Discharger finance representatives to understand the ability of agencies to provide financial information, and to ensure the consultant team is sensitive to agency legal constraints related to rate projections. The scope of this task may be modified if legal barriers prevent the collection of adequate information. The workshop will also include a discussion with Discharger finance representatives about options for ratepayer affordability metrics.

2.3.9 Task 9: Strategies to Reduce Regional Cost

Coordinating the regional upgrades may have significant benefits for Dischargers and their ratepayers. This task will include an evaluation of potential opportunities to reduce regional costs; for example, economies of scale, nutrient trading, and the impact of construction timelines, and extended deadlines. This task will also include an analysis to estimate the sensitivity of costs to economic conditions and project completion schedules. The conditions evaluated in the sensitivity analysis will include the following:

- Interest rates and availability of favorable financing terms
- Project completion schedules (i.e., moving faster to comply within 10 years as required by the 2024 Permit versus 15 years)

This task includes one workshop for Dischargers to discuss specific strategies to reduce costs.

2.3.10 Task 10: Cross-Media Impacts

This task includes an evaluation of the cross-media impacts of the proposed upgrades. The cross-media impacts are focused on energy and chemical consumption, air pollutants, and biosolids.One workshop with Dischargers and a panel of experts will be held to assess the cross-media impacts of planned upgrades. This workshop will be held after 2027 (see Appendix A) to provide time for Dischargers to develop their plans.

Subtask 10.1: Energy and Chemical Consumption

A general assessment of the anticipated increase in energy and chemicals will be performed. Energy and chemical consumption are being used as surrogates for greenhouse gas emissions since the carbon intensity of the State's electrical grid is expected to change over the next decade. Benefits associated with nature-based solutions and water supply improvements may also be evaluated if sufficient information is available.

Subtask 10.2: Air Pollutants

An evaluation of the potential for increases (or decreases) in air pollutants will be performed. Volatile organic compounds may also be evaluated. Because the data are generally limited, this analysis may be based on industry standard assumptions.

Subtask 10.3: Biosolids

Biosolids production associated with biological growth is different for treatment facilities that provide nutrient removal compared to those that provide up to secondary treatment. For example, a treatment facility that increases its solids retention time (SRT) to enable ammonia/TIN load reduction will experience a reduction in biosolids yield (i.e., mass of biosolids produced per unit mass of organic matter removed). Furthermore, the biosolids produced in processes with longer SRTs have a lower energy density, which results in reduced biogas production. There are several other parameters of interest related to biosolids that will be included, such as the impact on the levels of contaminants of emerging concern. For this task, the consultant team will prepare a tabular summary of the regional impact of nutrient load reduction projects on biosolids operations. The following is a preliminary list of parameters that will be considered in the table:

- Biosolids yield
- Biogas production
- Impact on co-digestion
- Unit energy demand of biosolids processing
- Unit chemical demand of downstream biosolids handling
- Biosolids dewatering

2.3.11 Task 11: Nutrient Credit Trading

The consultant team will evaluate the Dischargers' interest in trading nutrient credits, including which may have credits to sell and which may need to buy credits. The consultant team will produce a schedule of anticipated credit availability and needs and provide a preliminary estimate of the effect of anticipated population growth as per the projections published by Association of Bay Area Governments and/or projections provided by the Dischargers. The information needed to complete this task will be collected from the Dischargers through the RFIs detailed in Section 2.3.4.

This task includes several deeper analyses of the potential for a nutrient credit trading program. These analyses will be completed by a subconsultant and will include the following:

- Define and contextualize the various forms of nutrient trading (e.g., between agencies, a centralized bank, etc.).
- Establish the viability/long term sustainability/role of nutrient credit trading among the Dischargers.
- Evaluate baywide and subembayment trading allowances that are supported by the best available science.
- Identify entities suitable for managing the trading of credits among Dischargers.
- Provide recommendation(s) for how best to proceed.

Key details that the consultant team will consider when completing this analysis include: 1) dischargers planning to reduce their TIN effluent load below the minimum required by the 2024 Permit (i.e., projects that would help reduce the aggregate TIN load below 22,000 kg/L and 17,600 kg/d), as this will directly influence the availability of nutrient credits, 2) uncertainty and variability in annual nutrient loads and the effect on availability of nutrient credits, 3) the viability of nutrient credit trading in the event that the aggregate effluent TIN limits are reduced to 22,000 kg/d or 17,600 kg/d, 4) potential scenarios in which credits that a Discharger relies upon for compliance are not available due to unforeseen conditions (e.g., unexpectedly high population growth that leads to higher than expected influent loads), 5) the rules of trading in the event that compliance timelines are extended for some but not all Dischargers.

This task includes up to two workshops with the Dischargers and the consultant team to discuss a potential trading framework (see Appendix A). An initial workshop with the consultant team may be held if there is sufficient interest from the Dischargers. Once the subconsultant's work is substantially

complete, a workshop with the Dischargers and the subconsultant team will be held. The sub-consultant's report will be summarized in the Final Report and included as an appendix (Figure 4).

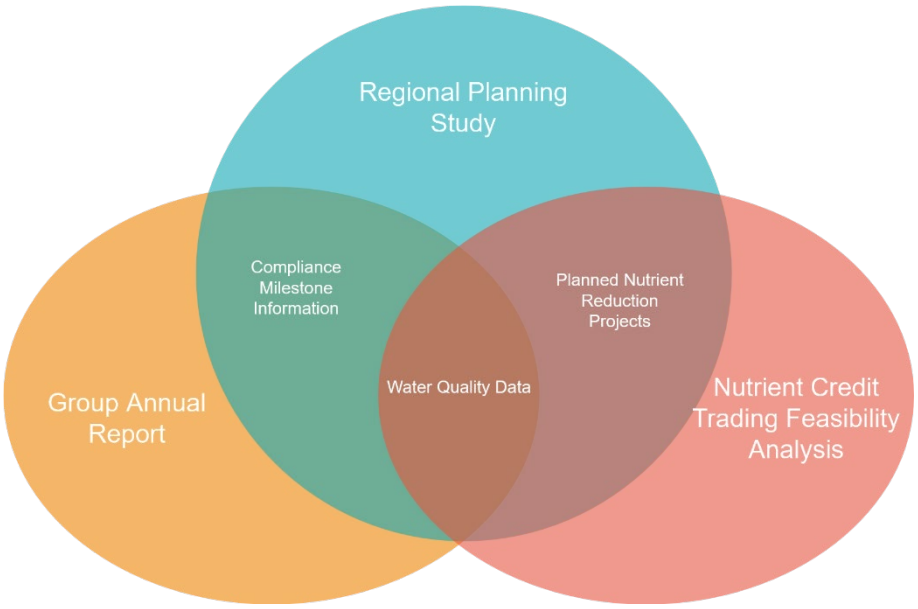

Figure 4. Venn Diagram Illustrating the Overlap Between the Regional Planning Study and Other Anticipated BACWA Reports

2.3.12 Task 12: Member Information Sharing

As part of Compliance Schedule Milestone RFIs, BACWA will facilitate the creation of working groups devoted to sharing information on innovative technologies, multi-benefit solutions, and pilot studies (e.g., Central San's MABR pilot). Such groups could improve communication between Dischargers and encourage collaboration and information sharing in a way that may lead to increased willingness to explore multi-benefit solutions and innovative technologies. This task includes up to two workshops for Dischargers to discuss plans for multi-benefit projects and deploying innovative technologies.

2.3.13 Task 13: Public Outreach and Industry Involvement

This task includes the production of educational outreach materials regarding the nutrient reduction efforts. One goal is to educate the public, another is to inform regional advocacy groups that may be able to influence and improve the availability of funding. Another part of this task is to improve the construction industry's awareness of the forthcoming projects. Due to the regional scale of the required upgrades, resource constraints in the consulting and construction industry may limit progress, delay compliance, and inflate costs. The hope is that industry resources will be relocated to the Bay Area in anticipation of the impending significant increase in workload. Several webinars will be held that will explain the context and scale of the nutrient upgrades that are needed. The webinars will be advertised widely throughout the contracting industry. Additionally, a concise fact sheet with graphics included will be produced and distributed to Dischargers for use with governing bodies and/or ratepayers.

2.3.14 Task 14: Appendix A: Detailed Project Descriptions

Based on the RFIs detailed in Section 2.3.4, detailed descriptions of the completed, in-progress, proposed, and conceptual projects will be compiled for all the participating Dischargers. The descriptions will be complementary to the construction and compliance timeline described in Section 2.3.5.

Appendix A: Schedule of Deliverables and Tasks