

**CALIFORNIA COASTAL COMMISSION**

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# Th18a

March 25, 2022

**TO:** Coastal Commissioners and Interested Parties

**FROM:** Kate Huckelbridge, Senior Deputy Director  
Cassidy Teufel, Manager

**SUBJECT:** Condition Compliance for Consistency Determination No. CD-0006-20, National Park Service, 2020 General Management Plan Amendment for Point Reyes National Seashore and the North District of Golden Gate National Recreation Area

This memorandum provides background information regarding the enclosed correspondence and plans submitted to the Commission from the National Park Service in compliance with Conditions I, II and IV of Consistency Determination No. CD-0006-20. A motion and resolution for Commission action is also provided on page 4.

## I. Background

On April 22, 2021, by a vote of five in favor, four opposed, the California Coastal Commission conditionally concurred with the above-referenced consistency determination submitted by the National Park Service (NPS) for the 2020 General Management Plan Amendment (GMPA) for Point Reyes National Seashore and the north district of Golden Gate National Recreation Area. As specifically described in the NPS consistency determination and Coastal Commission staff report, the NPS requested Commission review of the “detailed elements” of the GMPA: the proposed zoning framework, management of ranch operations, and wildlife management.

The Commission adopted the conditions below for Consistency Determination No. CD-0006-20. These conditions, as well as clarifying descriptions of intent based on Commission deliberations, were included in a May 10, 2021 letter from the Commission to the NPS – also enclosed:

- I. The NPS will provide a water quality strategy for review and approval by the Executive Director before new leases with ranchers are finalized. This strategy shall have an overall purpose of assessing the effect of installed ranching best management practices and management measures on water quality throughout the

GMPA planning area and prioritizing further measures to be implemented to reduce ranching impacts on water quality. The water quality strategy shall include the following elements:

1. Proposed overall strategy and timeline for assessing and improving water quality through installation of ranching-related infrastructure and management practices in areas of the GMPA outside of the Tomales Bay watershed, including Abbott's Lagoon and Drake's Estero and the creeks that drain to these features, but also including watersheds that drain directly to the Pacific Ocean. The strategy should be informed by existing water quality data, and water quality enhancement efforts that have proven successful elsewhere (e.g., the Olema and Lagunitas Creek watersheds) and should prioritize resolution of the most significant water quality-related issues first, where practicable and as indicated by existing information. The timeline should reflect short- and long-term ranch management priorities related to water quality as expressed by the NPS and identified in ranch-specific ROAs. Both the strategy and timeline should be updated on an annual basis to reflect information and analysis provided under items 2 and 3 below.

2. Proposed sampling methodology for collecting quantitative water quality data in areas of the GMPA outside of the Tomales Bay watershed, consistent with the strategy provided in item 1 above. Data collection should be sufficient to enable comparison to existing water quality standards (e.g., concentrations of indicators of bacterial contamination as described in existing policies and programs of the State Water Control Board and RWQCB) and to inform identification of water quality-related issues and prioritization of management strategies to address those issues, as described in Item 3 below. The sampling methodology should incorporate guidelines and requirements from state and federal agencies (i.e., RWQCB, State Water Control Board, and/or U.S. Environmental Protection Agency) related to sampling coverage and frequency, sample testing procedures, and reporting of results.

3. A provision for annual NPS reporting of water quality monitoring results and measures taken and planned to address identified water quality issues to the Executive Director. These annual reports should include monitoring results from all previous years, comparison of water quality data with relevant state and federal water quality standards, proposed measures to address identified issues including identification of priority areas for additional ranching or grazing related best practices, and plans (including responsible entities, funding, timing and schedule) for incorporating such practices into ROAs or implementation through other measures, as appropriate.

4. The annual report to the Executive Director shall also describe the best management practices and ranching measures implemented in the previous year. For example, this reporting should include miles of fencing installed or repaired, number of stream crossings constructed or improved, installation of dairy-related infrastructure or practices to address manure management, and

other ranching-related measures installed, and their locations and efficacy. This information will help provide details regarding actual implementation of the GMPA.

5. Annual reports shall also include results of continuing or proposed implementation of best management practices and water quality monitoring of ranch lands in the PRNS and GGNRA portions of the Tomales Bay watershed, including Olema and Lagunitas Creeks.
- II. The National Park Service will bring its water quality strategy to the Commission within a period of twelve months for public review, as well as Commission review and approval.
  - III. The National Park Service will return to the Commission in five years so that the Commission can hear from them in regard to the progress that has been made on protection of coastal resources, including a report on the status of elk herd management, and make appropriate advisory comments and allow the public to be heard on these issues.
  - IV. The National Park Service will come back to the Commission with a Climate Action Plan to address ranching activities at the same time that it brings its water quality strategy to the Commission.

The Water Quality Strategy and Climate Action Plan described above in Conditions I, II and IV are required to be submitted within 12 months of the Commission's April 22, 2021 concurrence. On March 4, 2022, NPS requested the Commission extend this deadline. During its public hearing on March 11, 2022, Commissioners were opposed to that extension request and directed staff to bring forth NPS' Water Quality Strategy and Climate Action Plan for consideration at the Commission's April 2022 hearing. On March 24, 2022, NPS submitted the enclosed cover letter, a Climate Action Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area and a Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version. These documents were timely submitted prior to the April 22, 2022 deadline established in Conditions II and IV.

Consistent with Condition II, the Water Quality Strategy is being provided for public review as well as Commission review and approval. Consistent with Condition IV, the Climate Action Plan is being provided for public review as well as Commission review and comment. At a public hearing on April 7, 2022, interested members of the public will have an opportunity to provide comments on these documents and the Commission will consider them and have an opportunity to act on the Water Quality Strategy. As part of this process, NPS will present the plans to the Commission and be available for questions from the Commission.

## II. MOTION AND RESOLUTION

### **Motion:**

*I move that the Commission approve NPS' March 24, 2022 Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version on the grounds that it is consistent with Conditions I and II of the Commission's conditional concurrence with Consistency Determination No. CD-0006-20.*

Staff makes no recommendation on the motion. Passage of this motion will result in an approval of the Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version and adoption of the following resolution. Failure of the motion will result in disapproval of the Water Quality Strategy. An affirmative vote of a majority of Commissioners present is required to pass the motion.

### **Resolution:**

*The Commission hereby approves [or disapproves] the National Park Service's March 24, 2022 Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version, finding that it is consistent [or inconsistent] with Conditions I and II of the Commission's conditional concurrence with Consistency Determination No. CD-0006-20.*

### **ENCLOSURES:**

- Letter from the Commission to NPS, dated May 10, 2021
- Letter from NPS to the Commission, dated March 24, 2022
- Climate Action Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area
- Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version

**CALIFORNIA COASTAL COMMISSION**

455 MARKET STREET, SUITE 300  
SAN FRANCISCO, CA 94105  
FAX (415) 904-5400  
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May 10, 2021

Craig Kenkel  
Superintendent  
Point Reyes National Seashore  
1 Bear Valley Road  
Point Reyes Station, CA 94956

Re: **CD-0006-20, National Park Service**, Consistency Determination, 2020 General Management Plan Amendment for Point Reyes National Seashore and the north district of Golden Gate National Recreation Area

Dear Mr. Kenkel:

On April 22, 2021, by a vote of five in favor, four opposed, the California Coastal Commission conditionally concurred with the above-referenced consistency determination submitted by the National Park Service (NPS) for the 2020 General Management Plan Amendment (GMPA) for Point Reyes National Seashore and the north district of Golden Gate National Recreation Area. As specifically described in the NPS consistency determination and Coastal Commission staff report, the NPS requested Commission review of the “detailed elements” of the GMPA: the proposed zoning framework, management of ranch operations, and elk management.

The Commission’s adopted conditions for consistency determination CD-0006-20 provide for the following:

First, that the NPS submit a water quality strategy as follows:

The NPS will provide a water quality strategy for review and approval by the Executive Director before new leases with ranchers are finalized. This strategy shall have an overall purpose of assessing the effect of installed ranching best management practices and management measures on water quality throughout the GMPA planning area and prioritizing further measures to be implemented to reduce ranching impacts on water quality. The water quality strategy shall include the following elements:

1. Proposed overall strategy and timeline for assessing and improving water quality through installation of ranching-related infrastructure and management practices in areas of the GMPA outside of the Tomales Bay watershed, including Abbott’s Lagoon and Drake’s Estero and the creeks that drain to these features, but also including watersheds that drain directly to the Pacific Ocean. The strategy should be informed by existing water quality data, and water quality enhancement efforts that have proven successful elsewhere (e.g., the Olema and Lagunitas Creek watersheds) and should prioritize resolution of the most significant water quality-

related issues first, where practicable and as indicated by existing information. The timeline should reflect short- and long-term ranch management priorities related to water quality as expressed by the NPS and identified in ranch-specific ROAs. Both the strategy and timeline should be updated on an annual basis to reflect information and analysis provided under items 2 and 3 below.

2. Proposed sampling methodology for collecting quantitative water quality data in areas of the GMPA outside of the Tomales Bay watershed, consistent with the strategy provided in item 1 above. Data collection should be sufficient to enable comparison to existing water quality standards (e.g., concentrations of indicators of bacterial contamination as described in existing policies and programs of the State Water Control Board and RWQCB) and to inform identification of water quality-related issues and prioritization of management strategies to address those issues, as described in Item 3 below. The sampling methodology should incorporate guidelines and requirements from state and federal agencies (i.e., RWQCB, State Water Control Board, and/or U.S. Environmental Protection Agency) related to sampling coverage and frequency, sample testing procedures, and reporting of results.
3. A provision for annual NPS reporting of water quality monitoring results and measures taken and planned to address identified water quality issues to the Executive Director. These annual reports should include monitoring results from all previous years, comparison of water quality data with relevant state and federal water quality standards, proposed measures to address identified issues including identification of priority areas for additional ranching or grazing related best practices, and plans (including responsible entities, funding, timing and schedule) for incorporating such practices into ROAs or implementation through other measures, as appropriate.
4. The annual report to the Executive Director shall also describe the best management practices and ranching measures implemented in the previous year. For example, this reporting should include miles of fencing installed or repaired, number of stream crossings constructed or improved, installation of dairy-related infrastructure or practices to address manure management, and other ranching-related measures installed, and their locations and efficacy. This information will help provide details regarding actual implementation of the GMPA.
5. Annual reports shall also include results of continuing or proposed implementation of best management practices and water quality monitoring of ranch lands in the PRNS and GGNRA portions of the Tomales Bay watershed, including Olema and Lagunitas Creeks.

The Commission also adopted the following conditions during its deliberations:

1. Condition: The National Park Service will bring its water quality strategy to the Commission within a period of twelve months for public review, as well as Commission review and approval.

Clarification of Intent: Further discussion at the Commission hearing between the Commission and the NPS resulted in the following clarifications. Submission of the first-year version of the strategy will be prior to NPS approval of any leases under the GMPA. The Commission and NPS also agreed that the first year version of the strategy, which would be the subject of a Commission hearing, will include specific water quality monitoring details with general priorities and objectives to improve water quality; future iterations of the strategy and/or annual reporting to the Executive Director will be more specific on implementing actions.

2. Condition: The National Park Service will return to the Commission in five years so that the Commission can hear from them in regard to the progress that has been made on protection of coastal resources, including a report on the status of elk herd management, and make appropriate advisory comments and allow the public to be heard on these issues.
3. Condition: The National Park Service will come back to the Commission with a Climate Action Plan to address ranching activities at the same time that it brings its water quality strategy to the Commission.

Clarification of Intent: Further discussion at the Commission hearing between the Commission and the Park Service clarified the scope and content of the plan as follows. First, the plan should be more properly characterized as a climate action strategy in that it would identify actions that could be conducted in response to local (Marin County) and/or state (CA Air Resources Board) climate-related requirements, delineate current conditions, and put forth a strategy about how to move forward toward reducing greenhouse gas emissions from ranching operations in the GMPA area. Second, the NPS further described that this strategy would consider how climate change initiatives from the Administration and Department of the Interior, to the extent that such initiatives are developed and pertinent, distill down to the level of Point Reyes National Seashore and the north district of Golden Gate National Recreation Area, and then discuss with leaseholders opportunities to innovate or adapt ranch operations. Third, the NPS will make a presentation on the climate action strategy at the same time (i.e., one year after initial Commission concurrence) as the hearing on the water quality strategy. Finally, the NPS and the Commission recognized that there are fewer climate-related metrics than there are for water quality.

Also, not formally adopted as a condition, there was NPS agreement to provide the Executive Director with an annual report describing the status of free-ranging elk herds in the GMPA planning area, the effects of drought, and the results of elk management in the GMPA planning area.


The Commission determined that, only as conditioned, could the GMPA be found consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program.

The Commission notes that as provided in 15 CFR § 930.4(b), should the NPS not agree with the Commission's condition of concurrence, then all parties shall treat this conditional concurrence as an objection.

The link to the CCC staff recommendation and related documents, which we have sent you previously and are posted on our website, can be found at:  
<https://www.coastal.ca.gov/meetings/agenda/#!/2021/4>.

If you have any questions, please feel free to call me at (415) 396-9708.

Sincerely,

DocuSigned by:  
  
0D697AECAB0D4F4...

Kate Huckelbridge  
Deputy Director  
Energy, Ocean Resources, and Federal Consistency Division

cc: Coastal Commission, North Central District Office  
Office for Coastal Management (OCM) (David Kaiser, Kerry Kehoe)





# United States Department of the Interior



NATIONAL PARK SERVICE  
Point Reyes National Seashore  
1 Bear Valley Road  
Point Reyes Station, CA 94956  
Department of the Interior Region 10

IN REPLY REFER TO:

L7617

March 24, 2022

John Ainsworth, Executive Director  
California Coastal Commission  
455 Market Street, Suite 300  
San Francisco, CA 94105

Dear Mr. Ainsworth:

*Re: CD-0006-20, National Park Service: Submission of First-Year Version of Water Quality Strategy and Climate Action Plan in Accordance with Conditions I and IV of the Commission's conditional concurrence*

The National Park Service (NPS) is pleased to submit the First Year Version of the Water Quality Strategy and the initial Climate Action Strategy in support of agenda item 18 for the Commission's April 7, 2022, hearing.

On April 22, 2021, the California Coastal Commission (Commission) conditionally concurred with the consistency determination (CD-0006-20) submitted by the NPS for the *General Management Plan Amendment for Point Reyes National Seashore and the North District of Golden Gate National Recreation Area* (GMPA). The Commission adopted conditions by which the GMPA could be found consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program, including that the NPS submit a Water Quality Strategy and Climate Action Strategy to the Commission.

Following the April 2021 Commission hearing, the NPS developed a modified preferred alternative for the GMPA that would result in further improvements to natural and cultural resources. The NPS adopted the modified preferred alternative in the GMPA Record of Decision (ROD), issued on September 13, 2021. The modifications address the Commission's concerns related to ranching and are supportive of the parties' goals to improve water quality and climate-related adaptations. The modifications were presented to the Commission in the Executive Director's October 2021 report and are incorporated, as appropriate, into the Water Quality and Climate Action strategies submitted with this letter.

The conditions adopted by the Commission and agreed to by the NPS are set forth in a May 10, 2021, letter from the Commission and need not be repeated in full here. However, one condition

related to the Water Quality Strategy and its accompanying clarification provide important context for the forthcoming April 7, 2022, hearing. The letter states as follows:

Condition: The National Park Service will bring its water quality strategy to the Commission within a period of twelve months for public review, as well as Commission review and approval.

Clarification of Intent: Further discussion at the Commission hearing between the Commission and the NPS resulted in the following clarifications. Submission of the first-year version of the strategy will be prior to NPS approval of any leases under the GMPA. **The Commission and NPS also agreed that the first year version of the strategy, which would be the subject of a Commission hearing, will include specific water quality monitoring details with general priorities and objectives to improve water quality;** future iterations of the strategy and/or annual reporting to the Executive Director will be more specific on implementing actions (**emphasis added**).

In accordance with the May 10<sup>th</sup> letter, the NPS hereby submits the *Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version* for Commission review consistent with the conditions set forth in the Commission condition.

The Water Quality Strategy includes four main elements: (1) a water quality monitoring and assessment program; (2) changes to ranching operations adopted in the GMPA ROD that will improve water quality (3) implementation of the GMPA zoning framework as adopted in the ROD; and (4) mandatory conditions for Ranch Operating Agreements. The water quality monitoring element presented in this First Year Version of the strategy has been developed consistent with ongoing monitoring programs conducted in the Tomales Bay Watershed based on discussions and in consultation with staff from the San Francisco Bay Regional Water Quality Control Board (Regional Board) with whom the NPS will continue to consult.

As provided in the clarified condition, this First Year Version of the strategy includes a detailed water quality monitoring plan and an initial set of priority actions that have been implemented or will be implemented in the short term (1-2 years) to improve water quality. Future versions of the strategy and strategy elements will be informed by feedback from the Commission review process and continued consultation with the Regional Board and Commission staff. Future versions of the strategy will also identify additional actions that will be implemented in the GMPA planning area to improve water quality outcomes.

The NPS is also pleased to submit an initial version of a Climate Action Strategy for Commission review. The May 10<sup>th</sup> letter provided as follows for this strategy:

Condition: The National Park Service will come back to the Commission with a Climate Action Plan to address ranching activities at the same time that it brings its water quality strategy to the Commission.

Clarification of Intent: Further discussion at the Commission hearing between the Commission and the Park Service clarified the scope and content of the plan as

follows. First, the plan should be more properly characterized as a climate action strategy in that it would identify actions that could be conducted in response to local (Marin County) and/or state (CA Air Resources Board) climate-related requirements, delineate current conditions, and put forth a strategy about how to move forward toward reducing greenhouse gas emissions from ranching operations in the GMPA area. Second, the NPS further described that this strategy would consider how climate change initiatives from the Administration and Department of the Interior, to the extent that such initiatives are developed and pertinent, distill down to the level of Point Reyes National Seashore and the north district of Golden Gate National Recreation Area, and then discuss with leaseholders opportunities to innovate or adapt ranch operations. Third, the NPS will make a presentation on the climate action strategy at the same time (i.e., one year after initial Commission concurrence) as the hearing on the water quality strategy. Finally, the NPS and the Commission recognized that there are fewer climate-related metrics than there are for water quality.

The Climate Action Strategy includes two components. The first is related to changes to ranching operations adopted in the GMPA ROD that will improve air quality in the short term. The second element relates to mandatory conditions that will be added to Ranch Operating Agreements issued under the GMPA in the future.

The NPS looks forward to presenting the First Year Version of the Water Quality Strategy and the initial Climate Action Strategy to the Commission on April 7, 2022.

Sincerely,

Craig Kenkel  
Superintendent

Attachments (2)

- *Water Quality Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version*
- *Climate Action Strategy for the General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area, First Year Version*

# **Climate Action Strategy**

for the

*General Management Plan Amendment for  
Point Reyes National Seashore and  
North District Golden Gate National Recreation Area*

First Year Version

Prepared for the  
California Coastal Commission

CD-0006-20

March 24, 2022

## Introduction

As provided in the conditions adopted for CD-0006-20, the National Park Service (NPS) has prepared this Climate Action Strategy for the *General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area* (GMPA).

The Commission's May 10, 2021 letter sets forth the conditions adopted by the Commission and agreed to by the NPS for CD-0006-20. The May 10th letter articulates the following condition and clarification related to the preparation of a Climate Action Strategy:

Condition: The National Park Service will come back to the Commission with a Climate Action Plan to address ranching activities at the same time that it brings its water quality strategy to the Commission.

Clarification of Intent: Further discussion at the Commission hearing between the Commission and the Park Service clarified the scope and content of the plan as follows. First, the plan should be more properly characterized as a climate action strategy in that it would identify actions that could be conducted in response to local (Marin County) and/or state (CA Air Resources Board) climate-related requirements, delineate current conditions, and put forth a strategy about how to move forward toward reducing greenhouse gas emissions from ranching operations in the GMPA area. Second, the NPS further described that this strategy would consider how climate change initiatives from the Administration and Department of the Interior, to the extent that such initiatives are developed and pertinent, distill down to the level of Point Reyes National Seashore and the north district of Golden Gate National Recreation Area, and then discuss with leaseholders opportunities to innovate or adapt ranch operations. Third, the NPS will make a presentation on the climate action strategy at the same time (i.e., one year after initial Commission concurrence) as the hearing on the water quality strategy. Finally, the NPS and the Commission recognized that there are fewer climate-related metrics than there are for water quality.

## Changes to Preferred Alternative adopted in GMPA Record of Decision

With regard to air emissions, the April 2021 Commission hearing evaluated air quality impacts from the GMPA preferred alternative as it was presented in the Final Environmental Impact Statement (FEIS). Following the April 2021 Commission hearing, the NPS adopted modifications to the GMPA preferred alternative that resulted in further reductions in air quality impacts. These modifications were adopted in the GMPA Record of Decision (ROD) which was issued on September 13, 2021. The reduced impacts flowing from these modifications are explained in Appendix C of the ROD.

As part of the GMPA preferred alternative and the GMPA ROD, a conformity applicability analysis was completed. The analysis concluded that emissions from the preferred alternative were below the *de minimis* levels. The GMPA and ROD further found that the primary driver of air quality in the GMPA planning area was and would continue to be regional sources. The ROD concluded that the modified preferred alternative would not change the regulatory attainment

status of the region. Nevertheless, the NPS adopted additional changes to the preferred alternative that would further reduce air emissions and greenhouse gases (GHG) (see below).

## **Proposed Strategy Overview**

The initial Climate Action Strategy is focused on the actions adopted in the GMPA ROD that address and reduce air emissions associated with agricultural activities.

The Commission's condition for the Climate Action Strategy identifies that future updates to the Strategy would integrate regional and state climate action objectives with any relevant initiatives developed by the Department of the Interior. The second element of the Air Quality Strategy is under development.

**(1) Operational Changes resulting in reduced emissions - Reduction in Dairies and Adjustment to Diversification Activities:** This element reflects changes to the GMPA Preferred Alternative since the submission of the Consistency Determination. These changes, which have been adopted in the GMPA ROD, will further improve air quality conditions. The changes adopted in the ROD entail a reduction in the number of dairy operations, immediately from six to five, and a prohibition on replacement of dairy operations should other dairies close. In addition, the ROD adopted additional limitations on diversification activities.

**(2) Establishment of Mandatory Conditions for Ranch Operating Agreements on Beef and Dairy Ranches:** This element involves the development and administration of Ranch Operating Agreement (ROA) for each ranch allotment with mandatory requirements which would be used to address priority emission reduction activities.

## **Reduction in Dairies and Adjustment to Diversification Activities:**

### Reduce Authorized Dairy Operations within Planning Area

Following the April 2021 Commission hearing, the McClure Dairy at I Ranch notified the NPS that it would cease dairy operations by July 2021. As a result of this notification, the NPS made the following adjustments to the GMPA preferred alternative and adopted these changes in the ROD:

- Reduce the number of authorized dairies from six to five, and prohibit replacement of dairy operations if additional dairies close;
- Reduce authorized dairy animals by 22% (690 dairy animals) in the planning area (3,115 to 2,425 dairy animals);
- reduce the total acreage affected by Manure and Nutrient Management (manure spreading) from 2,500 acres to 1,800 acres (approximately 28%); and
- remove 552 acres of Forage Production from the planning area (55% reduction in area authorized for forage production in the planning area).

### Adjustment to Diversification Activities

The GMPA ROD removes crops and commercial chickens from the list of diversification activities that could be authorized without additional review under the National Environmental Policy Act (NEPA). Instead, ranchers would have to pay for and prepare site specific NEPA planning and associated compliance documentation for NPS review and approval.

Of relevance to air quality, the GMPA FEIS version of the preferred alternative analyzed the impacts of up to 9,000 chickens in the planning area. The GMPA ROD now requires ranchers to provide site-specific analysis before chicken operations can be authorized. There is one operator currently authorized to have 2,900 chickens. Because on the modifications to the preferred alternative adopted in the ROD, the interim lease that will be issued to this operator will require the phase out of this chicken operation.

As explained in ROD Appendix C, the reduction in dairy animals by more than 20% from the GMPA preferred alternative levels as well as the removal of chickens from the diversification authorizations will result in a 24-27% reduction in NH<sub>3</sub>, a 15-17% reduction in VOC, a 16% reduction in CO<sub>2</sub>e, and a 17% reduction in PM<sub>2.5</sub>.

With these changes, the GHG emissions from livestock under the ROD would represent 17.2% of the agricultural sector emissions in Marin County and 4.8% of total County emissions. In comparison to the statewide agricultural emissions of 32.4 million metric tons CO<sub>2</sub>e (CARB 2021), the emissions from livestock on park ranches would constitute less than one tenth of one percent (<0.07%).

Any further reductions in authorized dairy animals resulting from future dairy closures would result in further emission reductions.

### **Establishment of Mandatory Conditions for Ranch Operating Agreements on Dairy Ranches**

As discussed extensively during the April 2021 hearing, the GMPA FEIS preferred alternative assumed that issuance of long-term permits would facilitate voluntary investment in Management Activities, which would reduce impacts on air quality. Based on further consideration after the hearing, the NPS determined that it was appropriate to make these operational considerations and recommended Management Activities be mandatory elements of new lease/permits issued under the GMPA, and the NPS adopted this approach in the GMPA ROD. In doing so, the NPS is addressing the core concerns raised during the April 2021 hearing, specifically how would the NPS be able to ensure intended improvements would occur. By requiring investment in infrastructure and operational changes as a condition of GMPA lease/permits, the NPS will be able to demonstrate progress towards the intended improvement objectives. Shifting these from guidelines to mandatory conditions will effectively accelerate the implementation of the Management Activities and maintenance requirements and will result in meaningful and demonstrable changes.

The NPS is not yet in a position to definitively identify investments and adjustments on dairies, but the NPS is committed to identifying and presenting this information through submittal of a future iteration of this Climate Action Strategy to the Commission in advance of issuing GMPA lease/permits. Toward this end, the NPS is monitoring the development of scalable infrastructure technologies for small dairy operations (e.g., solids separators and methane digestors) and operational approaches (e.g., alternate feed solutions) that could be taken to further reduce emissions from existing operations.

### **Dairy Operations**

- For future ROAs, the NPS and dairy operators would evaluate infrastructure conditions and identify necessary measures for the operator to undertake to modernize manure management infrastructure and practices. If the operator is unable to commit to invest the necessary resources to meet this requirement, the dairy operation would cease within two years but could convert to beef.
  - o NPS initiated site visits with ranch operators following issuance of the GMPA ROD. Based on these reviews, the NPS identified highly variable infrastructure conditions which would necessitate additional assessment to make any infrastructure need determinations. Should operators remain committed to continued dairying, operational and condition assessments will inform development of dairy specific dairy infrastructure needs. These discussions are ongoing.
- Future ROAs would include a schedule for implementation of modernization requirements to ensure resource protection outcomes related to air quality are realized as promptly as possible. The NPS would use the ROA process to regularly document and evaluate implementation of Management Activities that would reduce the air quality impacts of ranching operations.

### **Annual Climate Action Strategy Reporting**

The NPS will produce an annual report listing and describing Operational Changes related to dairy and diversification activities. Quantitative evaluation of how operational changes effect calculated air emissions would be incorporated into the report as appropriate. The reporting will also list the mandatory conditions applied under ROAs that are relevant to addressing and reducing air quality emissions.



# **Water Quality Strategy**

for the

*General Management Plan Amendment for  
Point Reyes National Seashore and  
North District Golden Gate National Recreation Area*

First Year Version

Prepared for the  
California Coastal Commission

CD-0006-20

March 24, 2022

## Introduction

As provided in the conditions adopted for CD-0006-20, the National Park Service (NPS) has prepared this First Year Version of a Water Quality Strategy for lands within the planning area of the *General Management Plan Amendment for Point Reyes National Seashore and North District Golden Gate National Recreation Area* (GMPA). Consistent with the Commission's May 10, 2021 letter, this First Year Version of the Strategy "include[s] specific water quality monitoring details with general priorities and objectives to improve water quality."

## Proposed Strategy Overview and Timeline

The Water Quality Strategy consists of a water quality monitoring program and an array of management strategies adopted in the GMPA Record of Decision (ROD) which revised and clarified requirements for ranch operations based on the Commission's adopted conditions. Management strategies include both short-term and long-term priorities to further improve water quality. The strategy is divided into the following four components:

**(1) Water Quality Monitoring and Assessment:** This element consists of short-term and long-term monitoring and adaptive management to inform implementation and track performance of Management Activities (Appendix F of the GMPA/FEIS) that protect and improve water quality. Monitoring is ongoing, and additional coastal watershed monitoring, informed by efforts in the Olema and Lagunitas creek watersheds, was reinitiated in late 2021;

**(2) Reduction in Dairies, Reduced Forage Production, and Limitations to Diversification Activities:** Following the April 2021, Commission hearing the NPS modified the GMPA preferred alternative to further improve water quality outcomes. These changes were adopted in the GMPA ROD (September 2021). This element therefore reflects changes to ranching operations since the submission of the Consistency Determination. These changes entail a reduction in the number of dairy operations immediately from six to five beginning in September 2021 with a prohibition on replacement of dairy operations should other dairies close, a reduction in forage production on beef ranches to be phased out, and additional limitations to diversification activities identified in the GMPA preferred alternative;

**(3) GMPA Zoning Framework:** This element consists of implementing the GMPA zoning framework which will exclude cattle from priority water quality protection areas (as part of the resource protection subzone) and ensuring that more intensive ranch activities are conducted in relatively flat areas away from waterways and wetlands. This element reflects additional changes to ranching operations since the submission of the Consistency Determination including removal of grazing on allotment 4 and other changes;

**(4) Establishment of Mandatory Conditions for Ranch Operating Agreements on Beef and Dairy Ranches:** This element involves the development and administration of a Ranch Operating Agreement (ROA) for each ranch allotment. This element reflects changes to the approach for implementing ROAs since the submission of the Consistency Determination that will identify specific mandatory requirements related to water quality protection as part of new leases issued under the GMPA.

The Strategy discusses each of the four components below. The NPS has initiated water quality monitoring and assessment and will continue to conduct these efforts as we work with the Commission and San Francisco Bay Regional Water Quality Control Board (Regional Board) to further refine this program. The other three components of the strategy will be implemented either in the short-term through existing lease instruments, or in the future through long-term leases under the GMPA.

Current authorizations for ranch operations in the GMPA planning area expire in mid-July 2022. The NPS stated in its March 4, 2022, letter to the Commission that it would not issue long-term leases under the GMPA at this time, but instead will issue short-term (1 or 2 year) interim lease extensions to ranchers. In order to achieve some of the environmental benefits of the ROD's modified preferred alternative, the NPS intends to include some operational changes in the interim lease extensions. Operational changes that will be included in interim leases are identified in the component descriptions below.

# **Component 1: Water Quality Monitoring and Assessment**

## **Proposed Water Quality Sampling Methodology**

The quantitative monitoring and assessment portion of the Water Quality Strategy involves reinitiating water quality monitoring efforts in coastal watersheds and continuing ongoing, long-term and regulatory monitoring within Point Reyes National Seashore (PRNS) and the north district of Golden Gate National Recreation Area (GGNRA) portions of the Tomales Bay watershed.

Water quality monitoring involves a suite of activities tailored by watershed, regulatory context, and type of ranch operation. Long-term monitoring will continue to evaluate watershed-scale trends in key constituents over time. Assessment and regulatory monitoring will document conditions and inform management to prioritize and target any areas where improvements may be required.

### **Monitoring Program 1: Coastal Watershed Monitoring**

- a. Long-term monthly monitoring was reinitiated at a subset of previously assessed coastal watershed stations (2000-2013; Figure 1; Table 1) in December 2021. This program is focused on fecal indicator bacteria and general physicochemical water quality parameters (Table 3) to track long-term trends (see GMPA Appendix L and Voeller et al. 2021 for existing trend analysis).
  - i. This program expands the same long-term water quality monitoring framework for successful programs conducted in the Olema Creek and Tomales Bay watersheds (see Monitoring Programs 5 and 6 below) to these coastal sites.
- b. Bacterial water quality monitoring, consisting of 6-week consecutive sampling events (geometric mean sampling) in winter and summer, will also be conducted at these locations to compare to the State Water Resources Control Board's (State Board) regulatory bacteria water quality objectives.
  - i. The incorporation of summer and winter geometric mean samples, in line with the Tomales Bay Total Maximum Daily Load (TMDL) monitoring program operated through the Regional Board, and statewide bacteria water quality objectives will allow for consistency in interpretation and reporting of data for these smaller coastal systems (see Monitoring Program 6 below).
- c. All monitoring results will be reported annually as part of this Water Quality Strategy.

### **Monitoring Program 2: Short-term Assessment Monitoring**

- a. The NPS has identified assessment monitoring locations (Figure 1; Table 1) to conduct short-term assessments at the ranch or watershed scale to determine and isolate potential pollutant source areas.
- b. Key locations where ranches drain to adjacent lands or water bodies will be prioritized and sampled first, and further investigated based on monitoring results to isolate potential areas of concern. The NPS would continue to select specific watersheds or ranches for these efforts on a rotating priority basis.

- c. Initial sampling will focus on bacterial water quality monitoring consisting of 6-week consecutive sampling events in winter and summer at these locations to compare to the State Board's regulatory bacteria water quality objectives.
- d. These efforts will lead to the implementation of appropriate Management Activities (GMPA/FEIS Appendix F) intended to address observed conditions where water quality concerns are identified. This strategy has been utilized successfully in the Olema and Lagunitas creek watersheds and will be effective at targeting source areas for improvement within the Point Reyes peninsula Ranchland zone.
- e. Results of short-term assessment monitoring will be reported annually under the Water Quality Strategy.

### **Monitoring Program 3: Regulatory Dairy Monitoring**

- a. Dairy operators are required to conduct regulatory monitoring downstream of their operations during 3 wet season storm events per year to meet the Regional Board's General Waste Discharge Requirements (([Confined Animal Facilities General WDR Order NO. R2-2016-0031 \(ca.gov\)](#)) (General WDR) for Confined Animal Facilities, sampling nutrients, conductivity, pH, and temperature (Figure 1; Table 4).
- b. Dairy operations in the park have met this standard by participating in a qualified group monitoring program that meets the standards set forth in the General WDR.
- c. Results of this monitoring program are reported to the Regional Board as set forth in the General WDR. Data reporting to the NPS under this element will be added as a required condition in interim lease extensions, and in future long-term leases issued under the GMPA.
- d. Results of this sampling will be incorporated into annual reports under the Water Quality Strategy.

### **Monitoring Program 4: Recreational Beach Sampling**

- a. Recreational beach sampling for fecal indicator bacteria is conducted weekly (April 1 - October 31) at Drakes Beach and Drakes Estero (see Figure 1) as part of the Marin County Ocean and Bay Water Quality Testing Program ([Ocean and Bay Water Quality Testing Program - Community Development Agency - County of Marin \(marincounty.org\)](#)).
- b. The NPS is working with Environmental Action Committee of West Marin to continue implementation of this program, including the summer sampling, as well as monthly winter monitoring at these stations (November – March).
- c. Results of the weekly sampling are reported on the Marin County Ocean and Bay Water Quality Testing Program website and will be incorporated into the annual reporting under the Water Quality Strategy.

### **Monitoring Program 5: Tomales Bay watershed - Long-Term Monthly Monitoring**

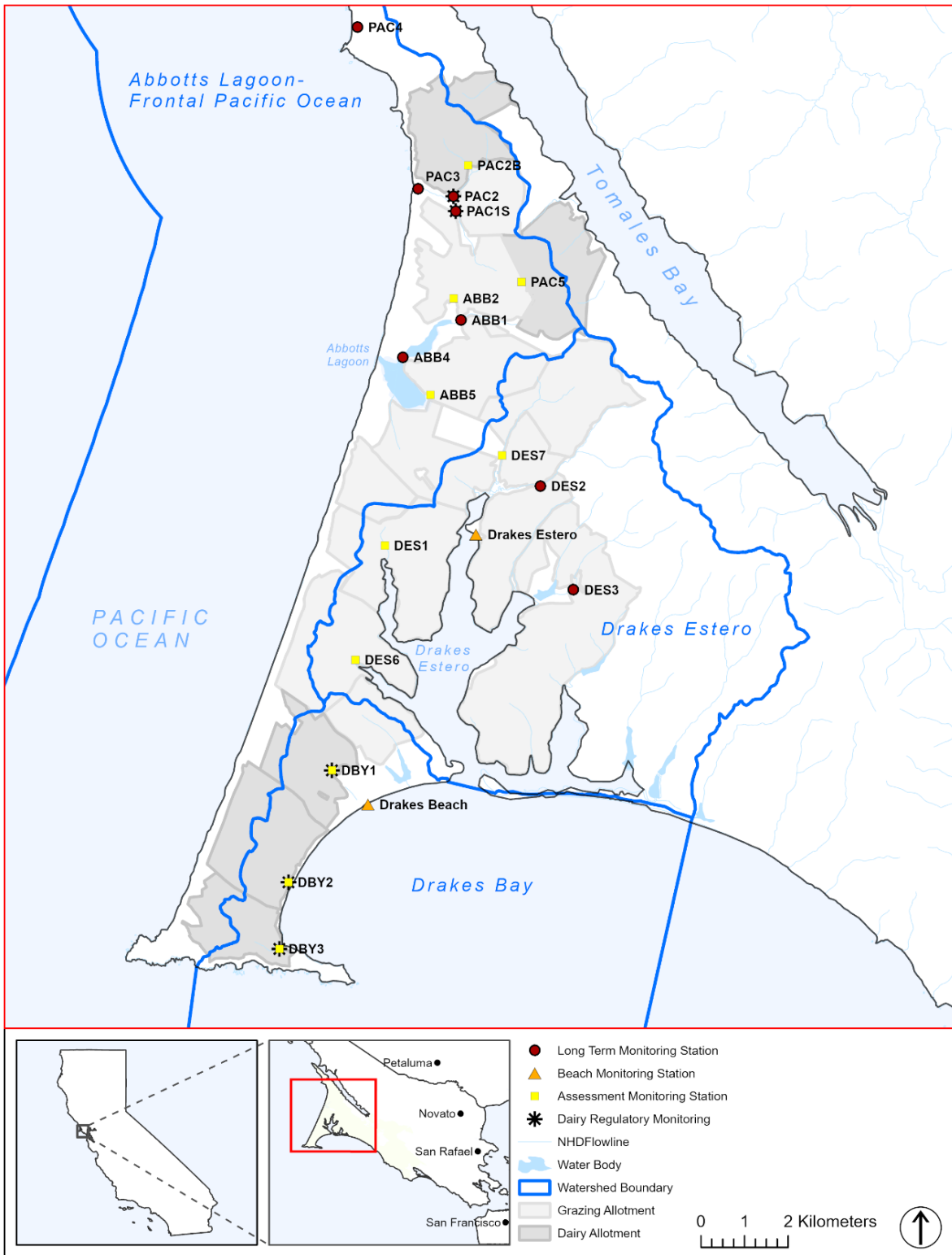
- a. Long-term monthly monitoring is conducted in the Olema Creek and Lagunitas Creek watersheds (see Figure 2) through the NPS San Francisco Bay Area Network Freshwater Quality Monitoring Protocol (see Cooperider and Carson 2006); [DataStore - Published Report - \(Code: 660032\) \(nps.gov\)](#) to track long-term trends.
- b. The ongoing monitoring being conducted under this established protocol since 2006 (with some legacy sampling as far back as 1999) includes fecal indicator bacteria, core physicochemical parameters, and nitrate at six stations in the Olema Creek

watershed, and three stations in the Lagunitas Creek Watershed. The Olema Creek sites are monitored annually, while the Lagunitas Creek sites are monitored on an alternating cycle, two years on, two years off.

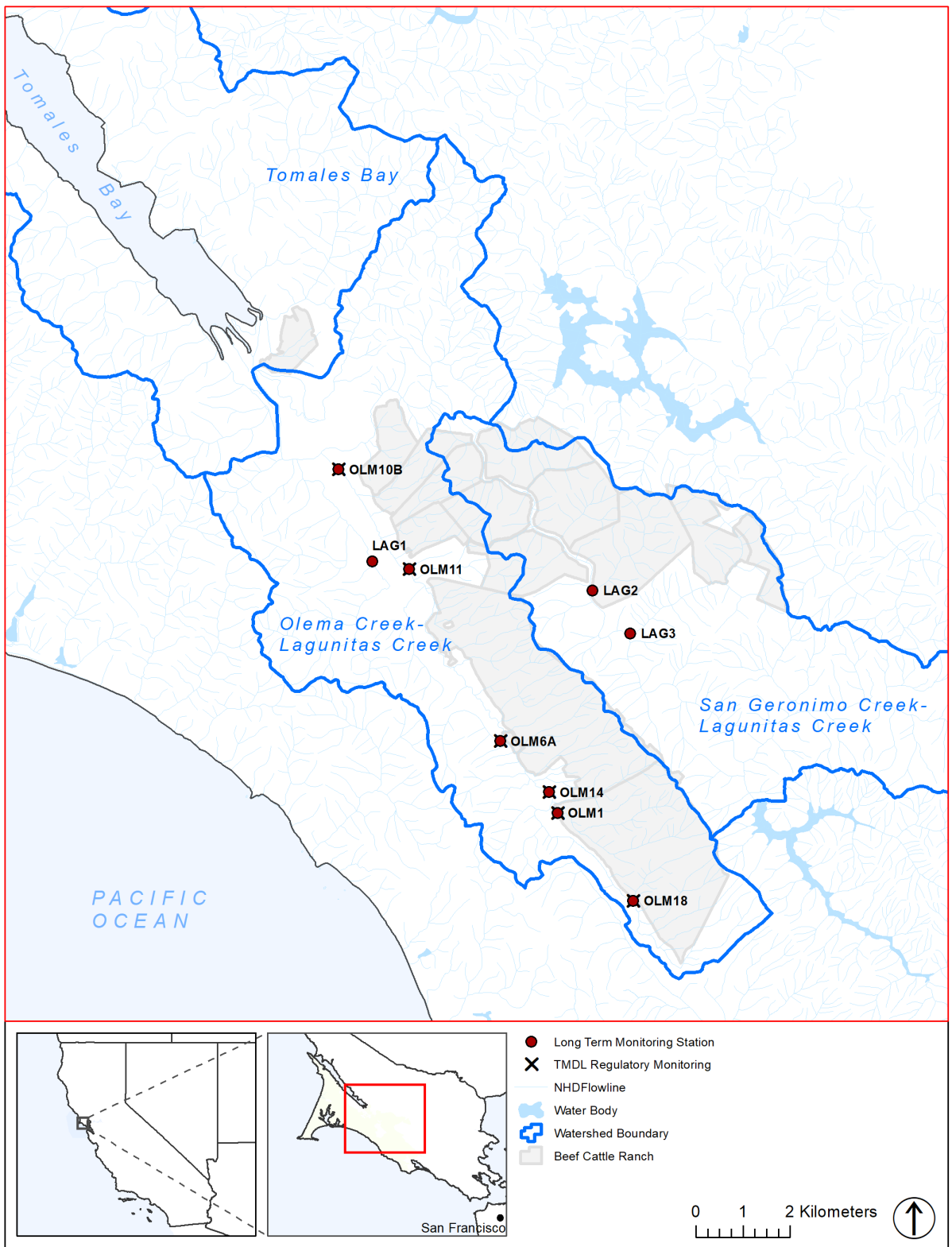
- c. For consistency, implementation of Monitoring Program 1 (above) is using standard operating procedures and protocols from this existing program and at the same frequency as the Olema Creek watershed sites.
- d. Reports from this ongoing monitoring effort will be included with the annual reporting under the Water Quality Strategy.

**Monitoring Program 6: Olema Creek watershed - Regulatory Bacterial Water Quality Monitoring (Continue)**

- a. As part of the Regional Board's bacteria water quality objectives under the Tomales Bay Pathogen Total Maximum Daily Load ([Tomales Bay Pathogen TMDL \(ca.gov\)](#)), the NPS collects monthly samples. In addition, 5-week consecutive sampling events are conducted in winter and summer at the six long-term monitoring stations in the Olema Creek watershed.
- b. This Tomales Bay TMDL monitoring program has been conducted in coordination with the Regional Board and other Tomales Bay watershed stakeholders since 2004. These efforts will continue under this program.
- c. Monitoring Program 1 described above would be conducted in parallel with these efforts which will result in consistency in data for comparison over time.



**Figure 1:** Point Reyes National Seashore coastal watershed long-term, regulatory and assessment water quality monitoring locations.



**Figure 2:** Tomales Bay watershed long-term and regulatory water quality monitoring locations.



## Water Quality Sampling Protocols, Constituents and Parameters

All NPS water quality sampling in the coastal watersheds will follow applicable established, peer reviewed NPS San Francisco Bay Area Network Freshwater Quality Monitoring Protocol Standard Operating Procedures (see Coopriider and Carson 2006), including sampling device quality assurance/quality control and operating requirements, and EPA-approved laboratory analysis methods. These protocols guide ongoing water quality monitoring procedures at five national park units in the Bay Area. Monitoring will occur as described in this document with station sampling frequency (Table 1) and parameters sampled (see Water Quality Monitoring Constituents by Program section below) based on the applicable Monitoring Program(s).

NPS water quality monitoring will continue to follow applicable Standard Operating Procedures established through the NPS San Francisco Bay Area Network Freshwater Quality Monitoring Protocol. The Standard Operating Procedures are working documents that are revised as monitoring activities and associated data are reviewed or technology is updated. Applicable Standard Operating Procedures including Personnel Training and Safety, Equipment and Preparations, Field Methods for Core Parameters, Field and Lab Methods for Bacteria, and Data Management, have been updated regularly through the program, with the last primary updates completed in 2018. Collected data is entered into the NPSTORET database which conforms to the National Water Quality Monitoring Council's metadata standards. Data is uploaded to the EPA STORET National Data Warehouse, which is automatically transferred to the Water Quality Portal ([Water Quality Data Home](#)), a national repository of publicly accessible water quality data ([Vital Signs Monitoring - Protecting Water \(U.S. National Park Service\) \(nps.gov\)](#)).

The Equipment and Field Preparations Standard Operating Procedures cover calibration inspection, and maintenance of field sampling equipment. Core parameter Standard Operating Procedures include practices for sampling the water column, measurement instructions, standard data sheets, and equilibration of equipment. Bacteria Standard Operating Procedures include sterile techniques to avoid contaminating grab samples, practices for sampling the water column, details of sample bottle labelling, storage and transport to laboratories, and quality assurance/quality control for field and lab samples. Data Management Standard Operating Procedures include data entry instructions, data verification, and preparing data for export and reporting. Additional quality assurance includes objectives and criteria for measurement data. Data sheets and photo documentation will include observed conditions during the sampling, such as presence of wildlife, flow condition, disturbance.

Comparison to regulatory objectives for surface waters will be informed by beneficial uses based on Table 2-1 of the Regional Board's Water Quality Control Plan (Basin Plan). [County/Waterbody \(ca.gov\)](#). Marin County waterbodies in the GMPA planning area with REC-1 listed as an existing or potential beneficial use (from Basin Plan Table 2-1) are the following:

*Pacific Ocean; Abbotts Lagoon; Drakes Estero; East Schooner Creek; Home Ranch Creek; Tomales Bay; Lagunitas Creek; Olema Creek; Devils Gulch Creek*

The water contact recreation (REC-1) objective is defined as “uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and uses of natural hot springs.” It should be noted that criteria required to protect this use are more stringent than those for more casual water-

oriented recreation. As such, this objective may set a higher bar than intended for existing uses of the named water bodies. The numeric objective for bacteria will be evaluated using the six-week rolling geometric mean defined by the State Board's bacteria provisions ([2019 ISWEBE Bacteria Provisions \(ca.gov\)](#)). In the Tomales Bay watershed, samples will be evaluated relative to the Tomales Bay TMDL water quality targets (Table 3). Samples will also be evaluated against benchmarks in the Regional Board's Basin Plan for ammonia, dissolved oxygen and pH intended to protect of fish and other aquatic life ([Basin Planning | San Francisco Bay Regional Water Quality Control Board \(ca.gov\)](#)) or the California Ocean Plan where applicable ([https://www.waterboards.ca.gov/water\\_issues/programs/ocean/docs/oceanplan2019.pdf](https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oceanplan2019.pdf)).

For assessment monitoring, Table 3 constituents may be narrowed to target source identification and tracking based on results and operations in the upstream watershed. These monitoring stations may also be retired over time if they are found to consistently meet regulatory benchmarks. Environmental changes over time may require adjustment to Table 1 sampling locations to ensure sampling requirements are met and for stations to be accessed safely by monitoring staff. For example, the long-term monitoring station at PAC1 on South Kehoe Creek was moved upstream to PAC1S as the area became a heavily vegetated marsh system with very little perceivable flow or stream channel. Subsequently, as the marsh expanded upstream, sampling has again been relocated to just downstream of the culvert near the original PAC1.

Specific monitoring constituents may also be dropped if they consistently fall below applicable regulatory benchmarks or laboratory detection limits. For example, nitrate has been monitored at long-term sites in the Olema Creek watershed by NPS since late 2006. Based on internal review of approximately 1,091 samples collected between November 2006 and January 2022, no samples exceeded the drinking water standard of 10 milligrams per liter, and 1% of samples exceeded 1.0 milligrams per liter (NPS unpublished data). Similarly, Tomales Bay Watershed Council sampling between 2008 and 2012 observed relatively low nutrient levels and no samples with nitrate as N over the drinking water standard (Carson 2013). Nitrate does not have a regulatory numeric benchmark for beneficial uses other than municipal and agricultural supply.

As the relationship between nutrient concentrations and stream discharge can be complex (e.g. [Aguilera and Melack 2018](#)), and there is no established numeric benchmark related to nitrate for beneficial uses, fecal indicator bacteria were chosen as a primary water quality monitoring parameter. They have been shown to be reliable at indicating contamination from humans and animals such as livestock (e.g. [Farnleitner et al. 2010](#)), and the NPS has conducted regular fecal indicator bacteria monitoring in park watersheds since the late 1990s. *E. coli* is a species of fecal coliform bacteria that is specific to fecal material from humans and other warm-blooded animals. EPA recommends *E. coli* as the best indicator of health risk from water contact in recreational waters. Enterococci are a subgroup within the fecal streptococcus group. Enterococci are distinguished by their ability to survive in salt water. EPA recommends enterococci as the best indicator of health risk in salt water used for recreation ([5.11 Fecal Bacteria | Monitoring & Assessment | US EPA](#)). Fecal indicator bacteria will allow for source tracking to determine corrective management actions where there is input from land use activities.

Waters will be analyzed for ammonia at dairy sampling locations as it is required under the General WDR for Confined Animal Facilities, can have toxic effects on aquatic life, and is indicative of human or animal waste. The EPA has developed Aquatic Life Ambient Water Quality Criteria for total ammonia nitrogen in freshwater ([EPA 2013](#)): an acute criterion of 17

mg/L (1-hr average at pH 7 & 20°C) and chronic criterion of 1.9 mg/L (30-day rolling avg at pH 7 & 20°C). The General WDR for confined animal facilities sets a total ammonia nitrogen benchmark at 1 mg/L, which is lower than both the EPA's acute and chronic criteria.

Visual/photo monitoring for signs of biostimulatory substances such as nutrients will be conducted during water quality monitoring based on the Basin Plan narrative objective that *“waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses”* and *“irregular and extreme levels of chlorophyll a or phytoplankton blooms may indicate exceedance of this objective and require investigation”* (Regional Basin Plan Section 3.3.3 Biostimulatory Substances).

These indicators will allow the NPS to find persistent signals and be responsive to land use activities in the watersheds. If necessary, other assessment monitoring techniques may be utilized such as microbial source tracking to aid in determining potential pollution sources. This method utilizes genetic markers to detect and quantify fecal contamination from sources such as human, canine, ruminant, cattle, horse, and avian.

Phosphorus was not chosen as an indicator because previous monitoring work found that area waters appear to be nitrogen limited (Kratzer et al. 2005; Coopriider and Carson 2006).

**Table 1.** Coastal watershed, regulatory (dairy WDR), and beach water quality sampling station descriptions with sampling frequency.

Watershed	Station ID	Description	Monitoring Type	Monitoring Frequency
Abbotts Lagoon	ABB1	Perennial stream mainstem just below tributaries on a beef cattle ranch; a branch of the headwaters is located on a dairy, but the mainstem then flows through an ungrazed area above the monitoring station	● Long-term	Monthly 6-Week (Winter & Summer)
	ABB2	Tributary downstream of former dairy corrals and ungrazed upstream wetlands and pond	* Regulatory (Dairy WDR) ■ Assessment	Winter (3 Storms) 6-Week (Winter & Summer)
	ABB4*	Abbotts lagoon at trail crossing bridge between lagoon chambers	● Long-term	Monthly 6-Week (Winter & Summer)
	ABB5	Tributary from a beef cattle ranch above confluence with Abbotts Lagoon	■ Assessment	6-Week (Winter & Summer)
Kehoe Creek	PAC1S	S. Kehoe Creek mainstem downstream of two dairies and adjacent to a beef cattle ranch, flows north through an ungrazed marsh area	● Long-term * Regulatory (Dairy WDR)	Monthly 6-Week (Winter & Summer) Winter (3 Storms)
	PAC2	N. Kehoe Creek mainstem downstream of a dairy and a beef cattle operation at culvert under Pierce Point Rd	● Long-term * Regulatory (Dairy WDR)	Monthly 6-Week (Winter & Summer) Winter (3 Storms)
	PAC2B	Branch of N. Kehoe Creek at culvert under ranch road downstream of dairy building complex	■ Assessment	6-Week (Winter & Summer)

<b>Watershed</b>	<b>Station ID</b>	<b>Description</b>	<b>Monitoring Type</b>	<b>Monitoring Frequency</b>
Kehoe Creek	PAC3	Kehoe Creek lagoon adjacent to Pacific Ocean	● Long-term	Monthly 6-Week (Winter & Summer)
	PAC4^	McClures Creek at beach interface	● Long-term	Monthly 6-Week (Winter & Summer)
	PAC5	Upper tributary of S. Kehoe Creek just downstream of dairy ranch boundary	■ Assessment	6-Week (Winter & Summer)
Drakes Estero	DES1	Creamery Bay Creek on beef cattle ranch	■ Assessment	6-Week (Winter & Summer)
	DES2^	E. Schooner Creek upstream of Sir Francis Drake crossing	● Long-term	Monthly 6-Week (Winter & Summer)
	DES3	Home Ranch Creek below beef cattle ranch complex	● Long-term	Monthly 6-Week (Winter & Summer)
	DES6	Drainage to Drakes Estero on beef cattle ranch	■ Assessment	6-Week (Winter & Summer)
	DES7	W. Schooner Creek at beef cattle ranch boundary	■ Assessment	6-Week (Winter & Summer)
	Drakes Estero*	Drakes Estero at Schooner Bay access	▲ Recreational Beach	Weekly (April-October) Monthly (Winter)

Watershed	Station ID	Description	Monitoring Type	Monitoring Frequency
Drakes Bay	DBY1	Dairy ranch drainage	* Regulatory (Dairy WDR) ■ Assessment	Winter (3 Storms) 6-Week (Winter & Summer)
	DBY2	Dairy ranch drainage	* Regulatory (Dairy WDR) ■ Assessment	Winter (3 Storms) 6-Week (Winter & Summer)
	DBY3	Dairy ranch drainage	* Regulatory (Dairy WDR) ■ Assessment	Winter (3 Storms) 6-Week (Winter & Summer)
	Drakes Beach*	Pacific Ocean	▲ Recreational Beach	Weekly (April-October) Monthly (Winter)

\*Beach or lagoon sampling locations with salinity > 1 ppt more than 5% of the time

^Reference station with minimal or no upstream influence from ranching activities

**Table 2:** Tomales Bay watershed long-term and regulatory monitoring station descriptions with sampling frequency.

Watershed	Station ID	Description	Monitoring Type	Monitoring Frequency
Olema Creek	OLM1	John West Fork Creek upstream of SR1	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
	OLM6A <sup>^</sup>	Davis-Boucher Creek upstream of Rift Zone Trail	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
	OLM10B	Olema Creek Olema Marsh upstream of confluence with Lagunitas Creek	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
	OLM11	Olema Creek downstream of Bear Valley Road bridge	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
	OLM14	Olema Creek downstream of Five Brooks bridge on SR1	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
	OLM18	Olema Creek upstream of Randall Gulch confluence (except during high flow)	● Long-term ✘ Regulatory (Tomales Bay TMDL)	Monthly 5-Week (Winter & Summer)
Lagunitas Creek	LAG1	Bear Valley Creek at Point Reyes headquarters administration	● Long-term	Monthly (rotating 2 years on, 2 years off)
	LAG2	Cheda Creek upstream of Sir Francis Drake Blvd	● Long-term	Monthly (rotating 2 years on, 2 years off)
	LAG3	Devil's Gulch upstream of Sir Francis Drake Blvd	● Long-term	Monthly (rotating 2 years on, 2 years off)

<sup>^</sup>Reference station with no upstream influence from ranching activities

### **Water Quality Monitoring Constituents and Parameters by Program:**

Monitoring Program 1 – Coastal watershed (Figure 1; Table 1): Sampling includes core parameters (pH, specific conductance, dissolved oxygen, temperature, salinity, and turbidity) as well as grab samples for bacterial laboratory analysis of *E. coli* concentration (Table 3). Station ABB4 includes grab samples for bacterial laboratory analysis of *E. coli* and Enterococci concentration (as previous monitoring has indicated salinity is >1 ppt more than 5% of the time). Station DES2 has minimal upstream influence from ranching activities except in the uppermost tributaries and station PAC4 has no upstream ranching activity influence; these will be considered reference locations to compare to the remaining stations with upstream influence from ranching activities in the monitoring program.

Monitoring Program 2 – Short-term Assessment (Figure 1; Table 1): sampling typically includes core parameters and fecal indicator bacteria (*E. coli* or Enterococci dependent on salinity) as in Monitoring Program 1. Constituents may be added or dropped based on upstream land uses and ability to aid in source identification and tracking.

Monitoring Program 3 – Regulatory Dairy (Figure 1; Table 1): sampling includes the constituents specific to the General WDR for Confined Animal Facilities (pH, specific conductance, temperature, total ammonia nitrogen, and unionized ammonia derived by calculation from other constituents; Table 4) collected downstream of the ranch complex dairy operations.

Monitoring Program 4 –Recreational Beach Monitoring (Figure 1; Table 1): sampling includes grab samples for bacterial laboratory analysis of *E. coli* and Enterococci concentration (as salinity is >1 ppt more than 5% of the time).

Monitoring Program 5 - Tomales Bay watershed (Figure 2; Table 2): Sampling includes core parameters (pH, specific conductance, dissolved oxygen, temperature, salinity, and turbidity) as well as grab samples for bacterial laboratory analysis of *E. coli* concentration and Nitrate (Table 3). Station OLM6A has no cattle influence and will be considered as a reference location to compare to the remaining stations with cattle influence in the monitoring program.

Monitoring Program 6 – Olema Creek watershed (Figure 2; Table 2): Sampling includes grab samples for bacterial laboratory analysis of fecal coliform concentration (Table 3), which is specific to the Total Maximum Daily Load for Tomales Bay watershed. Station OLM6A has no cattle influence and will be considered as a reference location to compare to the remaining stations with cattle influence in the monitoring program.



**Table 3:** Water quality sampling constituents and parameters.

Constituent	Units	Purpose	Method	Benchmark
pH		General water quality	Field; Electronic meter/probe	Basin Plan/CAF WDR: 6.5-8.5 For aquatic life
Specific Conductance	µS/cm	General water quality	Field; Electronic meter/probe	CAF WDR < 2000 Indicator of discharge
Dissolved Oxygen	% mg/L	General water quality	Field; Electronic meter/probe	Basin Plan: ≥ 7.0 mg/L cold water habitat ≥ 5.0 mg/L warm water habitat For aquatic life The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
Temperature	°C	General water quality	Field; Electronic meter/probe	
Salinity	PPTH	General water quality	Field; Electronic meter/probe	
Turbidity	NTU	Sediment analysis – linked to erosion	Laboratory; Electronic meter/probe	
Nitrate (as N)	mg/L	To characterize contamination from nutrients	Laboratory	
<i>E. coli</i> and Total coliform bacteria	MPN/100mL	To characterize contamination from potential pathogens (when salinity ≤ 1 ppt 95% or more of the time)	Laboratory	REC-1 for human health: Geometric Mean of 100 for six weekly samples; Statistical threshold value of 320 not to be exceeded by more than 10% of samples collected in a calendar month
Fecal coliform bacteria	MPN/100mL	To characterize contamination from potential pathogens	Laboratory	Tomales Bay TMDL for human health: Log mean <200 for five weekly samples spaced over a 30-day period 90 <sup>th</sup> percentile of 400 not to be exceeded by more than 10% of samples collected in a 30-day period

Constituent	Units	Purpose	Method	Benchmark
Enterococci	MPN/ 100mL	To characterize contamination from potential pathogens (when salinity >1 ppt more than 5% of the time)	Laboratory	REC-1 for human health: Geometric Mean of 30 for six weekly samples;  Statistical threshold value of 110 not to be exceeded by more than 10% of samples collected in a calendar month
Flow/ discharge		To characterize relative significance of sources and loads in tributaries	Field; Flow meter	

### **Regulatory Requirements for Dairies and Continued Dairy Monitoring Program**

PRNS dairies fall within Tier 2 (Confined Animal Facilities that utilize liquid waste retention ponds) of the Regional Board’s General Waste Discharge Requirements (WDRs) for Confined Animal Facilities (CAFs) (Order No. R2-2016-0031). This Order requires Tier 2 dairies to prepare and implement a Waste Management Plan, a Nutrient Management Plan, a Grazing Management Plan, and follow a Monitoring and Reporting Program.

Regulatory water quality monitoring under the General WDR is required to assess compliance with Regional Board water quality objectives and to assess the effectiveness of facility management plans. Sampling results will be used to assess water quality conditions and to make informed decisions regarding management practices. Dairy operations in the park have met this standard by participating in a qualified group monitoring program that meets the standards set forth in the General WDR. Interim lease extensions issued to dairies will require dairy operators to provide copies of Tier 2 plans to NPS and to report the results of the WDR required monitoring program to NPS.

The General WDR requires that surface water sampling shall take place during the winter rainy season (generally October-March) during or directly following 3 storm events after at least 1 inch of rain per 24 hours. Sampling events shall be at least 14 days apart. One sample shall be collected at each location to be tested for the constituents listed in Table 4. Visual observations, such as changes in surface water color or turbidity, must be recorded at the time of surface water sampling and submitted with the Annual Report to the Regional Board. Grab samples must be collected from surface waters at the point where the watercourse leaves the lands used for the operation, or downstream of areas closest to the operation if surface waters flow adjacent but not through the lands used for the operation. In the event downstream, representative grab samples show exceedances above benchmark values, additional grab surface water samples shall be collected upstream, or at other representative locations, to bracket and isolate the problem so that corrective action can be taken. Additional protocols and quality assurance procedures are listed in the WDR for Confined Animal Facilities.

**Table 4:** Surface water sampling constituents, parameters, and benchmarks for Confined Animal Facilities.

Surface Water Constituents	Method	Benchmarks
pH	On-site; handheld data sonde or comparable	6.5-8.5
Specific Conductance	On-site; handheld data sonde or comparable	< 2000
Temperature	On-site; handheld data sonde or comparable	None
Total Ammonia Nitrogen (NH <sub>3</sub> + NH <sub>4</sub> <sup>+</sup> )	Field test kit or Laboratory	< 1 mg/L and meets calculated unionized ammonia benchmark
Unionized Ammonia (NH <sub>3</sub> )	Calculated	0.025 mg/L

**Short-term Assessment Monitoring, Identification and Prioritization of Areas of Concern to Develop and Implement Management Activities**

Water quality monitoring will inform identification of areas of management concern and prioritization of Management Activities from GMPA/FEIS Appendix F. Results for constituents persistently above benchmarks or 5 to 6-week geometric means (for fecal indicator bacteria) will be investigated using the assessment approach. Specifically, assessment water quality sampling will attempt to bracket an area of concern, moving upstream from the initial station and sampling at intervals adjacent to varying land uses in order to isolate area(s) where pollutants may be entering the waterway. This will be coupled with inspections of ranch operations to look for suspected pathways, during periods of runoff when possible, depending on the coincidence of the monitoring results with precipitation events. Once an area of concern is isolated and identified sufficiently, a site-specific prescription of Management Activities will be developed, including proposed funding source(s), responsible parties, and timing for implementation. These will be incorporated into the dairy’s ROA and tracked to document performance. Dairies will also integrate monitoring and assessment information, and Management Activities from the ROA into required annual reporting under the WDR for Confined Animal Facilities. Residual dry matter monitoring of all ranches will continue to be conducted on an annual basis. Overall cost and funding availability may also influence timing and the nature of proposed management changes. Across the PRNS coastal watersheds, management will be prioritized based on the level and persistence of benchmark exceedances.

Inspections of all dairy facilities, led by the Regional Board and in coordination with the NPS, were conducted February 3-4, 2022 to identify short-term and long-term management actions necessary for improvements. The Regional Board is in the process of preparing inspection reports, which will be delivered to dairy operators and PRNS staff when available. The NPS will incorporate any required facility improvements or operational changes into the forthcoming interim leases or future long-term leases, as appropriate, including timelines for completing improvements.

## **Component 2: Reduction in Dairies, Reduced Forage Production, and Adjustment to Diversification Activities**

The GMPA ROD adopted both immediate and longer-term modifications to ranch operations to further improve water quality conditions. The actions included in Component 2 of this strategy reflect immediate changes to ranch operations that will be incorporated into the forthcoming interim lease extensions.

### Reduce Authorized Dairy Operations within Planning Area

Following the April 2021 Commission hearing, the McClure Dairy at I Ranch notified the NPS that it would cease dairy operations by July 2021. As a result of this notification, the NPS made the following adjustments to the GMPA preferred alternative and adopted these changes in the ROD:

- Reduce the number of authorized dairies from six to five, and prohibit replacement of dairy operations if additional dairies close,
- Reduce authorized dairy animals by 22% (690 dairy animals) in the planning area (from 3,115 to 2,425 dairy animals);
- reduce the total acreage affected by Manure and Nutrient Management (manure spreading) from 2,500 acres to 1,800 acres (approximately 28%); and
- remove 552 acres of Forage Production from the planning area (55% reduction in area authorized for forage production in the planning area).

In accordance with the ROD, the NPS will remove authorization for dairy operations from the interim lease extension for I Ranch. Operations under the interim lease extension will be limited to a small heifer operation (approximately 150 animals). The interim lease will also prohibit manure spreading (reducing this activity by 700 acres) and will direct the operator to coordinate with the NPS to begin conversion of the forage production areas to permanent pasture (reducing this activity by 552 acres).

These changes will noticeably reduce water quality impacts in the planning area and benefit coastal water quality resources.

### No Forage Production on Beef Ranches

The ROD requires the discontinuation of Forage Production on two beef ranches where it has previously been authorized. This action removes silage (Forage Production) from an additional 280 acres. (The GMPA/FEIS preferred alternative would have allowed Forage Production on approximately 1,000 acres. The modifications adopted in the ROD for the McClure Dairy and these two beef ranches result in forage production on only 168 acres.)

Under interim lease extensions, the NPS will include the requirement to begin the phase out of silage on these two ranches. The NPS will work with the operators to convert these Forage Production areas to permanent pasture over a period of 2-4 years. These changes would reduce impacts on soils, water, wildlife, and some vegetation resources.

### Adjustment to Diversification Activities

The ROD removes crops and commercial chickens from the list of diversification activities that could be authorized without additional review under the National Environmental Policy Act (NEPA). Instead, ranchers would have to pay for and prepare site specific NEPA planning and associated compliance documentation for NPS review and approval. This requirement makes the anticipated impacts of up to 45 acres of crops and 9,000 chickens (as analyzed in the FEIS) less likely to occur.

One operation is currently authorized for 2,900 chickens, and one operation has conducted limited crop production in recent years. The interim lease extensions for these ranches will require the phase out of chickens and a prohibition on crop production. These changes will result in reduced impacts on soils, water, vegetation, wildlife, and air resources.

The actions included in Component 2 directly address concerns raised by the Commission regarding potential impacts of ranching operations on water quality. Consistent with the adopted condition for the First Year Version of the Water Quality Strategy, these actions have been identified as priority actions to improve water quality. Individually and collectively these actions, as demonstrated in the ROD, will result in direct reduction of anticipated impacts to soils, water, vegetation, wildlife and air resources from that presented to the Commission in CD-0006-20.

## Component 3: GMPA Zoning Framework

The zoning framework adopted in the GMPA was developed based on an analysis of topography and detailed, sensitive resource information (see Appendix J of the GMPA/FEIS). The zoning framework identified resource criteria for the delineation of the Resource Protection, Range, Pasture, and Ranch Core subzones. Implementation of the GMPA zoning framework will enhance the protection of natural and cultural resources in the GMPA planning area by identifying the most appropriate locations for ranch activities.

The GMPA zoning framework recognizes the important role of seasonal grazing in landscapes like those found in PRNS and the north district of GGNRA. Conversion of pastures to seasonal grazing reduces impacts on water quality while maintaining important grassland habitat and moderating fire risk.

### Reduced Cattle Grazing through Rezoning and Expansion of Seasonal Grazing

#### Immediate Actions:

- The ROD rezoned Allotment 4 from cattle grazing to Scenic Landscape zone to support expanded habitat for the Drakes Beach tule elk herd. The NPS is currently coordinating completion of the boundary fence with the lessee to remove grazing from Allotment 4 by summer 2022, after which point grazing on Allotment 4 will be discontinued.
- The ROD converted Allotment 19 from year-round to seasonal grazing to meet water quality objectives. Grazing was removed from Allotment 19 (adjacent to Tomales Bay) in 2021. Any future authorizations will only allow seasonal grazing.
- In May 2021, NPS required cessation of operations at Genazzi Ranch (Allotment 20 comprising 436 acres) due to sustained overgrazing and failure to meet residual dry matter requirements. Because this allotment has an expansive invasion of distaff thistle, the NPS is monitoring conditions to determine when it may be appropriate to authorize another lessee to conduct seasonal or year-round grazing within this allotment.
- The Stewart Ranch (Allotment 28 comprising 2,188 acres) ceased grazing operations in summer 2021. The NPS will evaluate measures to maintain grazing on this allotment through both seasonal and year-round grazing authorizations to maintain important grassland habitat and moderate fire risk in the Olema Valley consistent with the GMPA and Succession Policy.
- NPS managers are currently using the ranch specific zoning maps and mitigations in Appendix F of the GMPA/FEIS to modify ongoing authorized activities such as invasive plant mowing and dairy manure spreading where necessary. These changes would be incorporated into interim and future lease agreements.

#### Longer Term Actions

- As part of future ROAs, the NPS will evaluate additional grazing pastures within allotments for conversion to seasonal grazing. Additional allotments that are converted to seasonal grazing will be identified in annual reports.

## **Component 4: Establishment of Mandatory Conditions for Ranch Operating Agreements on Beef and Dairy Ranches**

As discussed during the April 2021 hearing, the GMPA/FEIS preferred alternative assumed that issuance of long-term permits would facilitate voluntary investment in Management Activities to meet water and air quality objectives. Based on further consideration after the hearing, the NPS determined that it was appropriate to make these operational considerations and recommended Management Activities be mandatory elements of lease/permits issued under the GMPA, and the NPS adopted this approach in the GMPA ROD. In doing so, the NPS is addressing the core concerns raised during the April 2021 hearing, specifically how would the NPS be able to ensure intended improvements would occur. By requiring investment in infrastructure and operational changes as a condition of GMPA lease/permits, the NPS will be able to demonstrate progress towards the intended improvement objectives. Shifting these from guidelines to mandatory conditions will effectively accelerate the implementation of the Management Activities and maintenance requirements and will result in meaningful and demonstrable changes.

The NPS has initiated conversations with ranch operators and will continue these discussions over the next year to inform the requirements of future ROAs. The next annual version of the Water Quality Strategy will provide more details on the specific Management Activities that will be implemented on individual ranches.

Some infrastructure actions are currently underway. Inspections of septic systems on residential and ranch work areas are currently being conducted in coordination with Marin County - Environmental Health Services. Results of inspections will inform any immediate management actions necessary to protect resource conditions. Based on these inspections, the NPS and ranch operators are currently installing temporary septic system upgrades at two ranches in the planning area.

### **Dairy Operations**

- For future ROAs, the NPS and dairy operators would evaluate infrastructure conditions and identify necessary measures for the operator to undertake to modernize manure management infrastructure and practices. If the operator is unable to commit to invest the necessary resources to meet this requirement, the dairy operation would cease within two years but could convert to beef.
  - o NPS initiated site visits with ranch operators following issuance of the ROD. Based on these reviews, the NPS identified highly variable infrastructure conditions which would necessitate additional assessment to make any infrastructure need determinations. Should operators remain committed to continued dairying, operational and condition assessments will inform development of dairy specific dairy infrastructure needs. These discussions are ongoing.
  - o As noted above, Regional Board staff conducted site visits to each of the park dairy operations in February 2022. Inspection reports will be delivered to dairy operators and the NPS and incorporated into requirements under the WDR for Confined Animal Facilities and future leasing agreements as appropriate,

including timelines for completing improvements. The NPS and Regional Board staff will continue coordination to ensure dairy operations conform to Regional Board WDR conditions.

- ROAs will include a schedule for implementation of modernization requirements to ensure resource protection outcomes related to water quality are realized as promptly as possible. The NPS will use the ROA process to regularly document and evaluate implementation of water quality improvement practices, monitoring, Manure and Nutrient Management, and grazing management.

### **Beef Operations**

- For ROAs, the NPS and beef operators will identify priority Management Activities to restrict cattle from sensitive riparian, freshwater wetland, and estuarine habitats to mitigate for potential water quality impacts from their operations. These commitments and a schedule for their prompt implementation will be included in future ROAs.
  - o NPS will continue to work with beef ranch operators to identify implementation priorities for individual ranches.
  - o Initial priority activities will be the development or maintenance of fencing that excludes cattle from the identified Resource Protection Subzone areas. NPS staff have already begun work on planning and compliance documents to implement these exclusion fences on a ranch-by-ranch basis.

Current authorizations, interim lease extensions and longer-term permits issued under the GMPA require that operators meet existing Regional Board standards. Within the Tomales Bay watershed, ranch operators continue to conduct inspections and update management as necessary. NPS will continue to work with lessees to ensure they meet these requirements, including annual reporting consistent with the Tomales Bay TMDL ([Tomales Bay Grazing Waiver Order No. R2-2018-0046 \(ca.gov\)](#)).



## **Annual Water Quality Strategy Reporting**

As part of the Water Quality Strategy, the NPS will produce an annual report containing the following information:

### **Component 1: Water Quality Monitoring and Assessment**

Monitoring Program 1 – Coastal Watershed Monitoring: Results from the previous year of Coastal Watershed monitoring will be presented, compared to the water quality benchmarks presented in Table 3, and tied to changes in monitoring and recommendations for implementation of site-specific actions. Reports will include a brief background, objectives, identification of monitoring area, sample regime, sample parameters, results and discussion, notable events, conclusions, and appendices with detailed description of methods and previous Coastal Watershed monitoring results collected under this Water Quality Strategy.

- Evaluation of long-term monitoring trends will occur periodically consistent with Monitoring Programs 5 and 6, with an expected minimum of five years of data. Results will be used to inform updates to annual monitoring (e.g. add assessment location, drop monitoring constituent due to lack of detections) and the Water Quality Strategy as appropriate.

Monitoring Program 2 – Short-Term Assessment Monitoring: monitoring results from this program will be integrated into the report as a standalone section describing additional sampling and include the relevant sections from the main report based on the sampling that occurred.

- This monitoring program will not include evaluation of long-term trends. Data will primarily be utilized to make management recommendations and inform future short-term and long-term actions (see below).

Monitoring Program 3 – Dairy Regulatory Monitoring: reports from the group monitoring program will be compared to the water quality benchmarks presented in Table 4 incorporated as an appendix to the main report.

- This monitoring program will not include evaluation of long-term trends. Data will primarily be utilized to make short-term management changes and inform future long-term management actions (see below). Any short-term changes implemented as a result of the annual monitoring will also be reported in this section.

Monitoring Program 4 – Beach Recreational Monitoring: monitoring results from this program will be integrated into the report as a standalone section describing additional sampling and include the relevant sections from the main report based on the sampling that occurred. Posting of health advisories based on results will be documented in this section.

- Evaluation of long-term monitoring trends will occur periodically consistent with Monitoring Programs 5 and 6, with an expected minimum of five years of data. Results will be used to inform updates to annual monitoring and the Water Quality Strategy as appropriate.

Monitoring Program 5 - Tomales Bay watershed Monitoring: monitoring reports published by the NPS San Francisco Bay Area Network Inventory and Monitoring Program will be included as an appendix to the main report. Interim actions taken based on monitoring results from this program will be documented in the Implementation Report (see below).

- Evaluation of long-term monitoring trends will occur periodically consistent with the NPS San Francisco Bay Area Network Freshwater Quality Monitoring Protocol, with an expected minimum of five years of data. Results will be used to inform updates to annual monitoring and the Water Quality Strategy as appropriate.

Monitoring Program 6 – Olema Creek Regulatory Monitoring: monitoring results will be compared to the Tomales Bay TMDL water quality benchmark for fecal coliform presented in Table 3 and integrated into the main report as a standalone section.

- This monitoring program will not include evaluation of long-term trends. Data will primarily be utilized to make short-term management changes and inform future long-term management actions (see below). Any short-term changes implemented as a result of the annual monitoring will also be reported in this section.

### **Implementation Report (Components 2, 3 and 4)**

A standalone report documenting actions taken and planned to address identified water quality issues will be prepared to cover reporting on the implementation components (Components 2, 3, and 4) of the Water Quality Strategy. This report will include a summary of annual progress related to all Components listed above, including the following information:

- 1) Progress on short-term actions identified under Component 2: Reduction in Dairies, Reduced Forage Production, and Adjustment to Diversification Activities until these activities have been completed.
- 2) Progress on short-term and long-term actions identified under Component 3: GMPA Zoning Framework, including changes to grazing on allotments to protect water quality (e.g. conversion from year-round to seasonal grazing).
- 3) A list of Management Activities implemented in the previous year (e.g., miles of fencing installed or repaired, number of stream crossings constructed or improved) and a watershed-scale map of all completed project locations.
- 4) Information from enforcement of ROAs to protect water quality, including monitoring and maintenance of fencing protecting streams, wetlands, and waterbodies.
- 5) Annual certification of completion of regulatory reporting requirements including the General WDR for Confined Animal Facilities Tomales Bay Grazing Waiver, with lists of reports & inspections completed and any management activities completed in response to observed conditions.
- 6) Additional proposed actions (e.g., number of planned actions on ranches, responsible entities, funding, timing and schedule), referencing relevant water quality results from the monitoring report where applicable (e.g. results from Monitoring Program 2). This section will also include the mandatory improvements identified on ranches and timelines for implementation as described above in Component 4: Establishment of Mandatory Conditions for Ranch Operating Agreements on Beef and Dairy Ranches.

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