



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
NORTH COAST REGION  
ORDER NO. R1-2026-0035**

**GENERAL WASTE DISCHARGE REQUIREMENTS  
FOR  
COMMERCIAL LILY BULB OPERATIONS IN THE  
SMITH RIVER PLAIN**



**Order R1-2026-0035**

**General Waste Discharge Requirements for Commercial Lily Bulb Operations in  
the Smith River Plain**

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**NORTH COAST**  
**REGIONAL WATER QUALITY CONTROL BOARD**  
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**GENERAL WASTE DISCHARGE REQUIREMENTS FOR COMMERCIAL LILY BULB**  
**OPERATIONS IN THE SMITH RIVER PLAIN**

The California Regional Water Quality Control Board, North Coast Region finds:

**I. Findings**

**A. Background and Purpose**

- 1) The purpose of Order R1-2026-0035 General Waste Discharge Requirements (WDRs) for Commercial Lily Bulb Operations in the Smith River Plain, (hereinafter Order or General Order), is to provide a water quality regulatory structure to minimize discharges of waste and to prevent adverse impacts to water resources from agricultural activities associated with lily bulbs and other similar bulb crops (hereinafter Commercial Lily Bulb Operations) on private lands within the Smith River Plain Hydrologic Subarea<sup>1</sup> and coastal terraces between Pyramid Point and the Oregon border (hereinafter Smith River Plain). The Smith River Plain is a low gradient coastal plain of about 63 square miles located in far northwest California and is drained by the lower Smith River corridor, tributaries, estuarine sloughs, and estuary (see Figure 1 in Appendix II).
- 2) As of the 2024-2025 growing season, there are approximately 1,000 acres of land in rotation for lily bulb farming in the Smith River Plain (as shown in Figure 1) with the potential to discharge wastes to surface waters and groundwater and to affect related controllable water quality factors such as riparian shade. Cultivation of lily bulbs is typically part of a three to five-year rotation<sup>2</sup> with grass-clover, which is used as grazing forage and for hay crops. The fields are used as forage for livestock for two to four years and for lily bulbs for one year. Some field preparations are done in the year prior to planting bulbs. Accounting for this crop rotation, about 160 acres are planted to lilies each year, with another 160 acres in a given year are being prepared to receive the following year's plantings.
- 3) Commercial lily bulb farming in the Smith River Plain involves soil disturbance and use of agricultural chemicals, both of which can generate discharges of waste (e.g., sediment, nutrients, pesticides<sup>3</sup>, and temperature). If not properly managed, these discharges can degrade water quality, cause or contribute to pollution and nuisance conditions, and adversely affect beneficial uses of waters of the state. These effects can occur through the loss of riparian shade (a controllable factor) and discharges from stormwater runoff flowing from agricultural lands, percolation, and runoff resulting from operational spills.
- 4) The Smith River Plain provides habitat to numerous threatened and endangered aquatic species and serves as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. A more

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thorough discussion of beneficial uses of the Smith River Plain is located in Section G.1 of these Findings.

- 5) The State Water Resources Control Board (State Water Board) and nine regional water quality control boards (regional water boards) are the principal state agencies (collectively the Water Boards) with primary responsibility for the coordination and control of water quality for the health, safety, and welfare of the people of the state pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, codified in Water Code Division 7). The legislature, in the Porter-Cologne Act, directed the state, through the Water Boards, to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation and to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible, and considering precipitation, topography, population, recreation, agriculture, industry, and economic development (Wat. Code §13000).
- 6) Section 303(d) of the federal Clean Water Act requires that states identify water bodies that do not meet water quality standards and the pollutants that impair them. In 2018, Tillas Slough and Delilah Creek (tributaries to the Smith River estuary) were added to the 303(d) list as impaired for copper. In 2026, Delilah Creek was added as impaired for diuron, one of the herbicides used in lily bulb cultivation.
- 7) On August 18, 2010, North Coast Water Board staff, in coordination with the California Department of Fish and Wildlife (CDFW), conducted a one-time surface water and sediment sampling event at Rowdy Creek and Delilah Creek in response to a complaint. Samples were collected upstream and downstream of lily bulb cultivation areas and analyzed for dissolved and total copper. Sediment toxicity tests and aquatic toxicity tests were performed at the CDFW Aquatic Toxicity Laboratory. No acute toxicity to freshwater organisms was observed in any samples collected above, below, or outside the cultivation drainage areas. While there was no chronic toxicity observed in three of the four samples, the sample from the downstream Delilah Creek site showed evidence of chronic reproductive toxicity. However, this test result may have been influenced by low water hardness. The sample contained 3.99 µg/L of dissolved copper, which exceeds both the acute and chronic California Toxics Rule (CTR) criteria. Sediment samples from all sites showed no statistically significant toxicity relative to control samples.
- 8) The North Coast Regional Water Quality Control Board's (North Coast Water Board's) efforts to address potential impacts of lily bulb agricultural discharges in the Smith River Plain began in 2011 with a series of stakeholder meetings to inform the development of a region-wide Agricultural Lands Discharge Program. In 2013, the Board shifted to a commodity- and subregion-specific regulatory approach and directed staff to conduct water quality monitoring in the Smith River Plain to guide the next steps for regulating lily bulb agricultural discharges. A Surface Water

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Ambient Monitoring Program (SWAMP) study conducted from 2013-2015 found pesticide concentrations – including copper fungicides – in surface waters that exceeded US EPA aquatic life benchmarks and other applicable water quality criteria. (Smith River Plain Surface Water and Sediment Monitoring Report 2013-2015, issued January 2018 (2018 SWAMP Report))<sup>4</sup>.

- 9) In response, the North Coast Water Board directed staff to develop a targeted, collaborative water quality management strategy. The Smith River Plain Water Quality Management Plan (2021 Management Plan)<sup>5</sup> was developed and finalized in 2021 by a Watershed Stewardship Team composed of the lily bulb growers, regulatory agencies (e.g., NOAA Fisheries, CA Department of Fish and Wildlife, CA Department of Pesticide Regulation), local stakeholders (e.g., Del Norte Resource Conservation District, Agricultural Commissioner, the Smith River Alliance), academic partners, and the Tolowa Dee-ni' Nation. The 2021 Management Plan outlines voluntary grower participation in annual management practice reporting, North Coast Water Board inspections, ongoing surface water quality monitoring, and an adaptive management framework to guide iterative improvement based on monitoring results. The tracking and monitoring of the broad range of BMPs identified in the 2021 Management Plan has provided invaluable information in the development of this Order.
- 10) As part of the Adaptive Management Monitoring Program outlined in the 2021 Management Plan, a new Smith River Plain Water Quality Study was initiated in 2021 to better understand surface water quality conditions and to help inform development of the Lily Bulb Order. The Smith River Plain Surface Water Monitoring Report 2021-2024, issued September 2025 (2025 SWAMP Report)<sup>6</sup> and subsequently amended by a 2025 SWAMP Report Updates Memo released in July 2026 (Updates Memo)<sup>7</sup> found that diuron and imidacloprid were frequently detected downstream of lily bulb fields, usually below water quality criteria but sometimes exceeding them at Lower Delilah Creek and Tillas Slough during storms. That pattern was not observed in sampling locations upstream of lily bulb agriculture. Dissolved copper levels were consistently higher downstream and during the storm season, periodically reached potentially toxic levels using instantaneous water quality criteria generated from the Biotic Ligand Model (BLM). Findings from the 2025 SWAMP Report and Updates Memo supported a series of recommendations for the Lily Bulb Order. A more detailed discussion of the 2025 SWAMP Report findings and recommendations can be found in Section I.E of these Findings.
- 11) In 2019, the State Water Resources Control Board received a petition from the Environmental Law Foundation, the Pacific Coast Federation of Fishermen's Associations, and the Institute for Fisheries Resources to develop a regulatory mechanism for discharges associated with lily bulb farming operations in the Smith River Plain. The petitioners agreed to hold the petition in abeyance pending the adoption of an Order to regulate discharges from lily bulb farming operations. Since

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2019, North Coast Water Board staff have convened regular meetings with the petitioner group to keep them apprised of activities associated with the 2021 Management Plan and Lily Bulb Order development.

**B. Public Participation**

- 12) Development of the Lily Bulb Order was initiated in 2023 with the formation of a Technical Advisory Group (TAG). Between July 2024 and November 2025, the TAG met every other month in Del Norte County to review provisional regulatory language and provide feedback. TAG meetings were open to the public and included agendaized time for public input at every meeting. TAG membership includes all 2021 Management Plan Watershed Stewardship Team members (lily bulb growers, regulatory agencies, local stakeholders, academic partners, and the Tolowa Dee-ni' Nation), with additional environmental nonprofit groups, partnering agencies, community organizations, and interested members of the public.
- 13) In addition to 7 public TAG meetings, staff presented information at three additional public meetings in Del Norte County to inform the community about the Lily Bulb Order and hear community concerns. On October 21, 2024, staff presented an Order development update and heard public input at a community meeting in Smith River, California, which was attended by over 80 people. On October 22, 2024, staff presented similar information to the Del Norte County Board of Supervisors at a regular Board of Supervisors meeting. Staff also presented similar information at the CEQA Scoping Meeting in Crescent City on October 22, 2024.
- 14) Many community concerns raised during 10 public meetings held between July 2024 and October 2025 extended beyond the regulatory authority of the North Coast Water Board. Accordingly, staff referred those concerns—such as pesticide application practices and air quality—to the appropriate CalEPA agencies, including the Office of Environmental Health Hazard Assessment and the California Department of Pesticide Regulation. Through a Management Agency Agreement established in 2019, the North Coast Water Board has also drawn on the CA Department of Pesticide Regulation's expertise to help develop science-based recommendations for the Lily Bulb Order. In parallel, staff have coordinated with NOAA Fisheries, the CA Department of Fish and Wildlife, the CA Coastal Commission, and the US Fish and Wildlife Service through a natural resource agency workgroup to address technical questions related to Order development.
- 15) On October 10, 2024, the North Coast Water Board published a Notice of Preparation and an Initial Study to begin soliciting input related to environmental review for the California Environmental Quality Act (CEQA), in preparation for developing a draft Environmental Impact Report (EIR). A 30-day public comment period was held for the Notice of Preparation and Initial Study. On October 22, 2024, North Coast Water Board staff held a public CEQA scoping meeting in

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person and virtually. Input received during the public comment period and public scoping meetings has been considered in the development of the draft EIR.

- 16) On October 8, 2025, the North Coast Water Board held an information item in Crescent City to present findings from the 2025 SWAMP Report<sup>8</sup> ([Smith River Plain Surface Water Monitoring Study 2021-2024](#)) and provide an update on development of the Lily Bulb Order. Following the staff presentation, the Board heard public comment. Flyers for this meeting were developed in English, Spanish, and Hmong and distributed throughout the community. Live interpretation in Spanish was available.
- 17) On January 30, 2026, the North Coast Water Board published the draft Order and draft EIR and began a 45-day public comment period. A public workshop with the North Coast Water Board was held on February 18, 2026 in Crescent City. At the public workshop, the North Coast Water Board heard oral comments from the public on the draft Order and draft EIR and directed staff to extend the public comment period from 45 days to 60 days. The public comment period closed on March 30, 2026.
- 18) The North Coast Water Board, in a public hearing held on August 6, 2026, has heard and considered all comments pertaining to the discharge and proposed Order. After considering all comments pertaining to this General Order during the August public hearing, this Order was found consistent with the Findings in Section I of this Order.
- 19) Any person aggrieved by this action of the North Coast Water Board may petition the State Water Board to review the action in accordance with California Water Code section 13320 and title 23 California Code of Regulations sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., within 30 calendar days of the date of adoption of this Order at the following address, except if the thirtieth day following the date of adoption falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day:

State Water Resources Control Board  
Office of Chief Counsel  
P.O. Box 100, 1001 I Street  
Sacramento, CA 95812-0100  
Or by email at [waterqualitypetitions@waterboards.ca.gov](mailto:waterqualitypetitions@waterboards.ca.gov)

For [instructions on how to file a petition](#), see  
([http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality/wqpetition\\_instr.shtml](http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml))

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**1. Assembly Bill 2108**

- 20) Assembly Bill 2108 (Statutes of 2022, Chapter 347) requires State and North Coast Water Boards to address issues of environmental justice and social equity as early as possible in North Coast Water Board permit and policy planning processes. AB 2108 specifies that North Coast Water Boards engage in equitable, culturally relevant community outreach to meaningfully involve disadvantaged and tribal communities that may be disproportionately impacted by proposed discharges of waste and ensure that outreach and engagement shall continue throughout the review and permitting processes. (Wat. Code, § 189.7, subd. (a).)
- 21) AB 2108 further requires the Water Boards when, among other actions, adopting general waste discharge requirements to make findings on anticipated water quality impacts in disadvantaged or tribal communities as a result of a permitted activity or facility, any environmental justice concerns within the Water Boards' authority that are raised regarding those water quality impacts, and available measures within the Boards' authority to address those water quality impacts. (Wat. Code, § 13149.2.)
- 22) This Order regulates commercial cultivation of lily bulbs, discharges from which may impact disadvantaged and tribal communities, including the Tolowa Dee-ni' Nation and Smith River Rancheria.
- 23) The North Coast Water Board publicly noticed the Order and provided opportunities for public comment. Public notice was provided to interested persons and public agencies in the Smith River Plain. The North Coast Water Board conducted outreach in potentially affected disadvantaged and tribal communities in the form of distributed flyers in English, Spanish, and Hmong, meetings with community organizing groups such as True North Organizing, regular meetings with the natural resources staff of the Tolowa Dee-Ni' Nation, tribal consultations, and public meetings regarding order development and the Draft Order.
- 24) The North Coast Water Board has satisfied the outreach requirements set forth in Water Code section 189.7 by conducting outreach in affected disadvantaged and tribal communities.
- 25) Pursuant to Water Code section 13149.2, the North Coast Water Board reviewed readily available information and information raised to the Board by interested persons concerning anticipated water quality impacts in disadvantaged or tribal communities resulting from adoption of this Order. The Board also considered environmental justice concerns within the Board's authority and raised by interested persons regarding those impacts.
- 26) This Board anticipates that discharges regulated under this Order may result in water quality impacts within the scope of the Board's authority. Commercial lily bulb farming in the Smith River Plain has the potential to affect water quality through soil



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disturbance and use of agricultural chemicals. The Smith River Plain provides habitat to numerous threatened and endangered aquatic species and serves as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation and Smith River Rancheria. In particular, pesticide discharges may adversely impact sensitive aquatic species and tribal and fishing communities connected thereto, and discharges of pesticides and nitrates to drinking water may pose a human health risk. While commenters noted additional potential health concerns associated with exposure to pesticide application, such as through spray drift, these impacts are outside the North Coast Water Board's authority to regulate. This Order addresses potential adverse impacts to water quality by, among other things, requiring Enrollees to implement management practices related to sediment and erosion control to prevent, minimize, or eliminate discharges; implement streamside area setbacks; comply with applicable discharge prohibitions and receiving water limitations, within a time schedule; monitor surface and groundwater quality to evaluate the effectiveness of management practices; and, where appropriate, engage in an adaptive management process to comply with water quality objectives (WQOs).

**2. Assembly Bill 52**

- 27) Assembly Bill 52 (Statutes of 2014, Chapter 532), which went into effect on July 1, 2015, requires that lead agencies under CEQA, prior to release of a negative declaration, mitigated negative declaration, or environmental impact report, consult with California Native American tribes that have requested in writing to be notified of a proposed project, that are traditionally and culturally affiliated with the geographic area of a proposed project, and have requested consultation. Under the same bill, Public Resources Code section 21084.2 specifies that a project with an effect that may cause a substantial adverse change in the significance of a Tribal Cultural Resource is a project that may have a significant effect on the environment.
- 28) In April 2024, North Coast Water Board staff contacted six Tribes that were identified by the California Native American Heritage Commission as having current or historic lands in or near the Project Area that had requested notification of this project under AB 52. The North Coast Water Board staff identified two additional Tribes that had not requested AB 52 notification but could be affected by the Order to solicit consultation if desired.
- 29) Of the eight Tribes notified by the North Coast Water Board, three separate tribes responded to the notice. One tribe updated their contact information and a separate Tribe deferred to the Tolowa Dee-Ni' Nation. The Tolowa Dee-Ni' Nation requested formal consultation in May 2024.

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- 30) The North Coast Water Board and the Tolowa Dee-Ni' Nation initiated formal consultation in July 2024. The North Coast Water Board and the Tolowa Dee-ni' Nation continued consultation in 2025 and through mid-2026.

**3. North Coast Water Board Racial Equity Resolution**

- 31) On November 16, 2021, the State Water Board adopted Resolution No. 2021-0050, Condemning Racism, Xenophobia, Bigotry, and Racial Injustice and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access, and Anti-Racism. On February 2, 2023, the North Coast Water Board adopted Resolution No. R1-2023-0001, Condemning Racism, Xenophobia, Bigotry, and Racial Injustice and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access, and Anti-Racism in the North Coast Region (Racial Equity Resolution). The Racial Equity Resolution committed the North Coast Water Board to develop a Racial Equity Action Plan to identify and address systems that perpetuate racial inequities and to advance equitable outcomes in the Board's programs and decision-making. Staff presented the North Coast Region's Racial Equity Action Plan to the Board on April 1, 2025.
- 32) The requirements of this Order are consistent with the commitments in these resolutions. The Order is designed to protect and restore water quality and beneficial uses in the Smith River Plain, including the cultural, ceremonial, and subsistence uses of the Tolowa Dee-ni' Nation and the drinking water and other uses relied upon by disadvantaged community members in the Project Area. The development of the Order has emphasized equitable, culturally relevant, and accessible community engagement consistent with the resolutions' commitments.
- 33) North Coast Water Board staff conducted extensive outreach during development of the Order, including two Board workshops; seven staff-led Technical Advisory Group meetings, whose members include tribal representatives, local stakeholders, members of the public, and community organizations; a community meeting in Smith River; a presentation at a regular meeting of the Del Norte County Board of Supervisors; and a CEQA scoping meeting. Outreach materials, including meeting flyers, were developed in English, Spanish, and Hmong, and live Spanish interpretation was provided at public meetings. Staff also broadly circulated the Draft Order and Draft EIR for written public comment. Consistent with the Board's commitment to meaningful engagement with California Native American tribes, staff has engaged in formal tribal consultation with the Tolowa Dee-ni' Nation pursuant to AB 52, and the Tolowa Dee-ni' Nation participated directly in the environmental review, including through a subcontract with Montrose Environmental, under which the Tolowa Dee-ni' Nation developed the tribal cultural resources analysis for the EIR (the Tolowa Dee-ni' Nation's submittal is included as Attachment F to the EIR). This direct participation by the affected tribe in the analysis of impacts to its own cultural resources reflects the engagement and equity commitments of the racial equity resolutions.

**C. Scope of Order**

- 34) This Order regulates discharges of waste from farming activities associated with Commercial Lily Bulb Operations within the Smith River Plain Hydrologic Subarea coastal terraces between Pyramid Point and the Oregon border (Smith River Plain).
- 35) Definitions and endnotes are included in this Order to clarify terms, provide references, and supply supplemental information relevant to the requirements. Appendix I contains all acronyms, definitions, and endnotes.
- 36) For the purposes of this Order, a Commercial Lily Bulb Operation refers to land used for planting lily bulbs during any portion of the previous 5 years together with associated farm roads and agricultural structures, where at least one of the following conditions applies: (1) the landowner or operator holds a current Operator Identification Number/Permit Number for pesticide use reporting; (2) the crop and/or its product is sold; or (3) the federal Department of Treasury Internal Revenue Service form 1040 Schedule F Profit or Loss from Farming is used to file federal taxes.
- 37) Discharges from Commercial Lily Bulb Operations regulated by this Order include discharges to surface water and groundwater, through mechanisms such as stormwater runoff flowing from agricultural lands and farm roads, irrigation return flows, tailwater, and runoff resulting from operational spills. These discharges can contain wastes that could affect the quality of waters of the state and impair beneficial uses. This Order also regulates the removal or degradation of riparian vegetation resulting in the potential loss or degradation of instream beneficial uses.
- 38) This Order does not limit North Coast Water Board authority to inspect, and/or evaluate regulatory status, water quality impacts, or regulatory requirements of Commercial Lily Bulb Operations. If the North Coast Water Board determines that due to site-specific conditions a Commercial Lily Bulb Operation is not eligible for coverage under this General Order, or enrollment will not be protective of water quality, the North Coast Water Board may issue site-specific, individual WDRs.
- 39) This Order applies to landowners and operators of Commercial Lily Bulb Operations from which there could be discharges of waste or activities that could affect the quality of any surface water or groundwater or result in the impairment of beneficial uses. Either the owner or operator may enroll a Commercial Lily Bulb Operation under this Order. The owners or operators that enroll the respective Commercial Lily Bulb Operation are considered Enrollees under this Order and are responsible for complying with the conditions of this Order.
- 40) The Enrollee is required to provide written notice to the non-Enrollee owner or operator (if applicable) that the farm has been enrolled under the Order.

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- 41) The North Coast Water Board will hold both landowners and operators of Commercial Lily Bulb Operations liable for noncompliance with this Order, regardless of whether the landowner or the operator is the party enrolled under this Order. Enforcement action by the North Coast Water Board for non-compliance related to an enrolled Commercial Lily Bulb Operation may be taken against both the owner and operator.
- 42) This Order does not preclude the need for additional permits that may be required by other governmental agencies, nor does it supersede any requirements, ordinances, or regulations of any other regulatory agency. This Order does not authorize violation of any federal, state, or local law or regulation.
- 43) This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§2050 to 2097) or the Federal Endangered Species Act (16 US Code §§1531 to 1544). If a "take"<sup>9</sup> will result from any action authorized under this Order, the Grower shall obtain authorization for an incidental take prior to construction or operation of the project. The Enrollee shall be responsible for meeting all requirements of the applicable Endangered Species Act.
- 44) This Order does not exempt Enrollees from complying with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges to storm drain systems or other infrastructure under their jurisdiction.
- 45) Enrollees may be required to seek additional permitting from the State Water Resources Control Board or North Coast Water Board for activities not explicitly covered under this Order. Those could include, but are not limited to:
  - a) State Water Board Construction General Permit for Discharges of Storm Water Associated with Construction Activities (Construction General Permit, 2009-0009-DWQ) for construction activities associated with new land development.
  - b) Order No. R1-2019-0001, General WDRs for Dairies
  - c) State Water Board Order No. WQ 2020-0012-DWQ, General WDRs for Commercial Composting Operations.
  - d) Clean Water Act section 401 water quality certification or alternative WDRs for dredge and fill activities occurring within surface waters.
  - e) A valid water right from the State Water Board Division of Water Rights for a surface water diversion.

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- 46) The North Coast Water Board acknowledges that it will take time to: (1) approve a Third-Party Grower Coalition (Coalition) as defined in Attachment C: Coalition Requirements that facilitates compliance with this Order; (2) develop online reporting tools and templates, and (3) conduct compliance education to help Enrollees become familiar with Order requirements. The Order considers this by deferring the enrollment deadline to **March 1, 2027**.

**D. Agricultural Practices and Pesticide Use**

- 47) The California Department of Pesticide Regulation (CDPR) maintains pesticide applicator data that is submitted by Enrollees through the Del Norte County Department of Agriculture. The North Coast Water Board analyzed CDPR Pesticide Use Report (PUR) data collected between 2012-2021 for trends in pesticide use associated with lily bulb production in the Smith River Plain. The PUR data showed a decrease from an average of 14,126 lbs. of applied copper<sup>10</sup> per year between 2012-2017 to an average of 5,842 lbs. per year between 2018-2021. The PUR data also indicated a phase out of copper sulfate in favor of copper hydroxide from 2015-2018. Because these figures represent elemental copper rather than the weight of the copper-containing product applied, and because copper hydroxide contains a substantially higher proportion of elemental copper per pound than copper sulfate pentahydrate, the total weight of product applied likely declined even more sharply than the elemental copper figures indicate. From 2018 through 2021, the amount of total copper applied per year has been relatively stable, if slightly increasing. See Table I.1 for pesticide use data for lily bulbs in the Smith River Plain.

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**Table I.1: Top Ten Agricultural Chemicals by Pounds Applied on Lily Bulbs 2012-2021**

| Chemical (excluding Copper)   | 2012        | 2013        | 2014        | 2015        | 2016        | 2017        | 2018        | 2019        | 2020        | 2021        | Grand Total        |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| 1,3-DICHLORO PROPENE          | 114,325     | 122,499     | 75,474      | 79,929      | 106,794     | 98,497      | 86,742      | 105,117     | 184,217     | 133,087     | 1,106,679          |
| METAM-SODIUM CHLOROTHALONIL   | 129,373     | 120,283     | 117,649     | 102,882     | 35,719      | 95,393      | 75,993      | 86,461      | 66,357      | 55,719      | 885,829            |
| PHORATE                       | 3,424       | 5,318       | 2,454       | 4,654       | 3,997       | 2,845       | 3,650       | 3,174       | 3,061       | 1,970       | 34,547             |
| ETHOPROP                      | 1,964       | 1,787       | 1,992       | 1,876       | 2,003       | 1,874       | 1,702       | 1,442       | 1,340       | 1,185       | 17,166             |
| DIURON                        | 1,531       | 1,141       | 2,160       | 1,047       | 1,298       | 1,309       | 1,226       | 1,264       | 1,007       | 905         | 12,887             |
| GLYPHOSPHATE, SUM             | 1,172       | 1,534       | 744         | 1,135       | 803         | 1,002       | 1,252       | 1,494       | 1,359       | 1,268       | 11,765             |
| NAPROPAMIDE                   | 584         | 1,093       | 397         | 1,038       | 474         | 698         | 886         | 676         | 410         | 860         | 7,116              |
| IPRODIONE                     | 2,412       | 439         | 436         | 445         | 190         | 504         | 314         | 763         | 387         | 400         | 6,289              |
|                               | 214         | 57          | 23          | 28          | 828         | 481         | 326         | 376         | 563         | 214         | 3,110              |
| <b>Copper-Based Chemicals</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>Grand Total</b> |
| COPPER HYDROXIDE              | 27,711      | 24,251      | 12,953      | 20,163      | 10,610      | 9,904       | 5,973       | 9,233       | 10,090      | 7,129       | 138,016            |
| COPPER SULFATE                | 5,029       | 23,030      | 11,992      | 7,287       | 30          | 2,297       | -           | -           | 36          | -           | 49,701             |
| COPPER OXYCHLORIDE            | -           | -           | -           | -           | 276         | 198         | 288         | 604         | 414         | 298         | 2,077              |
| COPPER DDC                    | 852         | 832         | 369         | 1,705       | 5,075       | 1,569       | 1,502       | 617         | 2,129       | 117         | 14,767             |

- 48) Copper is the active ingredient in fungicides applied to control fungal diseases (e.g., Botrytis) on newly emergent and growing lily bulb plants. Lily bulb plants emerge from the ground during the early winter and are sprayed with copper-based fungicides during both the wet and dry seasons as new growth appears on plants. The discharge of copper-based products applied on lily bulbs is of particular concern because low levels of dissolved copper can cause toxicity to aquatic life.
- 49) In 2024, Dr. Matthew Hurst, Logan Wolfe, and Preston Selby from California State Polytechnic University, Humboldt released findings from a study<sup>11</sup> which investigated the effectiveness of vegetative barriers in reducing copper and sediment in stormwater runoff from lily bulb fields in the Smith River Plain. The research aimed to support lily bulb growers in implementing best management practices to protect water quality, particularly to safeguard the federally threatened Coho salmon inhabiting the Smith River watershed. Over two years, the study

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sampled stormwater runoff from lily bulb fields with vegetative filter strips installed between the field and an agricultural ditch where the samples were taken. The study compared fields with filters strip to fields without a filter strip with all other management methods kept the same among the fields. The study found that grass filter strips reduced total suspended solids and total copper in runoff by about 20%, on average with a standard deviation of +/-20%. The filter strips were ineffective at reducing dissolved copper in field runoff, which is the more toxic form to aquatic life. The effectiveness of filter strips in the study diminished during December and January when soils were saturated. The study also found that copper primarily leaves fields bound to sediment particles (particulate copper), and that dissolved organic carbon (DOC) in runoff can decrease the bioavailability of copper and the associated risk of toxicity to aquatic life. The study found that conversion of lily bulb fields to pasture significantly reduced copper transport to waterways. The results of the study, in general, highlight the need for further research on effective mitigation strategies to improve water quality runoff, such as inter-row seeding, grassed waterways, or more robust filter strips.

- 50) The scientific literature consistently identifies vegetated buffer width between watercourses and agriculture as a key determinant of pollutant reduction, with wider vegetated buffers providing greater and more reliable water-quality benefits. Reviews commonly cite effective buffer widths in the range of 10–30 m (approximately 33–100 ft)<sup>12</sup>, particularly because wider buffers enhance removal of dissolved pollutants while also trapping sediment-bound contaminants. Cole et al. (2020)<sup>13</sup> report that narrower buffers of approximately 7.5 m (~25 ft) are effective at reducing sediment and sediment-associated pollutants, whereas wider buffers of 15 m (~50 ft) or greater are more effective for reducing soluble pollutants, with performance influenced by soils, slope, and hydrology.
- 51) Under the 2021 Management Plan, all lily bulb growers agreed to voluntarily implement a suite of water quality management practices designed to reduce pesticide and nutrient runoff, erosion, and direct discharge of pollutants to surface waters. These practices fall into three general categories: source reduction, source control, and pollutant interception. Source reduction includes Integrated Pest Management (IPM) plans, selection of low-risk pesticides, pesticide sampling and analysis, pesticide mixing/loading setbacks, and timing applications considering weather forecasts to minimize runoff potential. Source control practices include soil amendments to bind pesticides, use of cover crops, contour farming, precision land forming to improve drainage, and maintenance of vegetated filter strips and riparian buffers. Pollutant interception involves practices such as field isolation and installation of flow dissipaters and grade stabilization structures to reduce erosion.
- 52) Under the 2021 Management Plan, growers self-monitor and report on the implementation and effectiveness of these practices through an annual reporting program. North Coast Water Board staff conduct periodic on-farm inspections and review grower documentation to verify compliance and provide feedback.

### **E. Monitoring and Reporting**

- 53) This Order requires the implementation of a Monitoring and Reporting Program (MRP) pursuant to Water Code section 13267 that is intended to determine the effects of waste discharges on water quality; to verify the adequacy and effectiveness of the Order's conditions; to evaluate Enrollee compliance with the terms and conditions of the Order; to initiate adaptive management as needed; and to support an assessment of the long-term effectiveness of the Order.
- 54) This Monitoring and Reporting Program conforms to the goals of the Nonpoint Source (NPS) Policy as outlined in The Plan for California's Nonpoint Source Pollution Program by: (1) tracking, monitoring, assessing, and reporting program activities; (2) ensuring consistent and accurate reporting of monitoring activities; (3) targeting NPS Program activities at the tributary watershed level; (4) coordinating with public and private partners; and (5) tracking implementation of management practices to improve water quality and protect beneficial uses.
- 55) An Enrollee covered under this Order must comply with Attachment A: Monitoring and Reporting Program. For Individual Enrollees, water quality monitoring under this Order assesses the individual's compliance with this Order's requirements. For Enrollees in a Coalition, water quality monitoring assesses compliance at a larger scale. However, adaptive management in response to exceedances of Water Quality Benchmarks<sup>14</sup> is required individually by each Enrollee.
- 56) The monitoring and evaluation required in this Order is not intended to determine the individual sources of pollutants causing an exceedance of a Water Quality Benchmark. When an exceedance occurs, this Order requires Enrollees to implement adaptive management to establish individual compliance with the Order as described in Section II.H. As necessary, the Executive Officer may issue site-specific monitoring and reporting requirements pursuant to Water Code section 13267 to better identify the source(s) of a Water Quality Benchmark exceedance. Additionally, Enrollees may elect to perform site-specific edge-of-field monitoring to demonstrate individual compliance. If monitoring results show there are no exceedances of a Water Quality Benchmark, the applicable fields are not required to implement adaptive management requirements to establish individual compliance.

### **Pesticides in Surface Water**

- 57) Between August 2013 and June 2015, the North Coast Water Board's Surface Water Ambient Monitoring Program (SWAMP) sampled surface water and sediment in the Smith River Plain for standard water quality parameters, nutrients, pesticides, dissolved copper and zinc, and toxicity to assess impacts from Commercial Lily Bulb Operations<sup>15</sup>. Sampling stations were located upstream and downstream of agricultural operations. A total of 17 pesticides (including isomers



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and degradants) were detected in downstream monitoring stations in the Smith River Plain. Pesticide concentrations from the surface water samples from this study exceeded water quality thresholds at two of the five downstream monitoring sites. In March 2015, diuron exceeded USEPA Office of Pesticide Programs (OPP) Freshwater Aquatic Life Benchmarks for Pesticide Registration in Delilah Creek<sup>16</sup>. Imidacloprid and permethrin were also detected in concentrations exceeding the USEPA's Office of Pesticide Programs Aquatic Life Benchmarks<sup>17</sup> in a sample that had a positive toxicity test result<sup>18</sup>. Additionally, dissolved copper was detected in every surface water sample with 6 of 27 sample results exceeding the California Toxics Rule (CTR) Freshwater Aquatic Life Criteria for dissolved copper concentrations<sup>19</sup>. The results of this study demonstrate that agricultural pesticide active ingredients are present in surface waters of the Smith River Plain.

Toxicity testing documenting the survival (acute toxicity) and reproductive capacity (chronic toxicity) of the test species *Ceriodaphnia dubia* in surface water samples was performed on samples collected from six locations in the Smith River Plain from 2013-2015. In 10 of 25 samples, these tests demonstrated statistically significant reductions in reproductivity (positive for chronic toxicity), including three tests in which the "control" location upstream of lily bulb agriculture (Upper Rowdy Creek) was positive for chronic toxicity. In another 2 samples, a positive acute toxic response was documented, with 1 of the samples demonstrating no test species survival.

To determine the cause of the 2015 observed acute toxic response, three samples that exhibited chronic or acute toxicity were further tested utilizing a toxic identification evaluation (TIE). The TIEs uncovered a confounding result in the toxicity test results. The prevalence of positive chronic toxicity results (10 of 25) in samples collected throughout the study area (except Tillas Slough, which has higher conductivity) including the control site, suggests that the extremely low water hardness and conductivity in the tributaries are interfering with the ability of the test species to reproduce, producing false positives, or toxic responses when toxic conditions do not exist. For example, TIE evaluations of the reduced reproduction observed in upper Rowdy Creek and lower Delilah Creek on June 23, 2015, pointed to low conductivity and low hardness as a contributor of toxicity with no suggestion of other toxicants.

Low conductivity and low hardness water such as that in the tributaries of the Smith River Plain can negatively affect the reproduction rates of *C. dubia* in the testing environment. When the test species are reared in water with conductivity and hardness levels that are greater than the sample water, their reproductive rates can be adversely affected. Toxicity testing procedures for evaluating the toxicity of surface water must take into consideration the conductivity and hardness of the source water and its effect on the test species.

A TIE was conducted as a follow up to positive acute toxicity results in the

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March 11, 2015 sample from lower Delilah Creek. The TIE identified the presence of both a metal and a non-polar organic compound (pesticide) as the drivers behind the acute toxic response in which there was no test species survival. Chemical analysis of the surface water sample associated with the acute toxic response in 2015 documented that two current use pesticides, imidacloprid and permethrin, were detected in concentrations exceeding the USEPA's Office of Pesticide Programs Aquatic Life Benchmarks and that dissolved copper concentrations exceeded the CTR Freshwater Aquatic Life Criteria for acute toxicity.

- 58) In 2018, the National Marine Fisheries Service and the California Department of Fish and Wildlife prepared the Smith River Plain Dissolved Copper Monitoring Report 2017–2018<sup>20</sup>, which documented dissolved copper concentrations in tributaries downstream of lily bulb cultivation areas in the Smith River Plain. The study sampled dissolved copper above and below lily bulb fields during a fall first-flush event and a spring storm event. Downstream concentrations were consistently higher than upstream, with hot spots at Delilah Creek, the Morrison Creek backwater (peaking at 15 µg/L), and Tillas Slough. Every downstream detection exceeded the levels known to cause olfactory and lateral-line damage in juvenile coho salmon, and of the 14 downstream samples tested against the California Toxics Rule, 50% exceeded the chronic criterion and 43% the acute criterion, while none of the upstream controls exceeded either criterion. Based on these findings, the report confirmed the Board's 2013–2015 conclusion that lily bulb farming is a significant source of dissolved copper in the tributaries, while also noting that low-level copper detected at some upstream sites indicated a secondary background source. The report recommended continued monitoring of copper and other pesticides together with collaborative development and implementation of best management practices for lily bulb production involving the National Marine Fisheries Service, the lily bulb producers, the Tolowa Dee-ni' Nation, the Natural Resources Conservation Service, the California Department of Fish and Wildlife, the North Coast Water Board, the California Department of Pesticide Regulation, and the Del Norte Resource Conservation District.
- 59) In 2022, Dr. Matthew Hurst and colleagues from the Chemistry and Geology Departments at Cal Poly Humboldt released findings from a study<sup>21</sup> that investigated the bioavailability and speciation of copper in the Smith River Plain. The research aimed to assess copper levels in waterways affected by agricultural runoff from the Easter lily bulb industry and their potential impact on juvenile Coho salmon, a federally threatened species reliant on these habitats. The study found that copper concentrations were elevated downstream of agricultural fields compared to upstream and background levels in the Smith River, indicating that current lily bulb cultivation practices increase copper in tributaries. Physical speciation revealed a significant portion of copper in particulate form, especially in Delilah Creek, likely due to sediment runoff. Importantly, bioavailability measurements showed that the toxic form of copper ( $\text{Cu}^{2+}$ ) remained well below

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thresholds known to impair salmon olfactory function and behavior, primarily because dissolved organic carbon (DOC) and other ligands in the water bind copper and reduce its bioavailability. The study also found high dissolved copper concentrations were usually accompanied with high DOC concentrations, which would work to reduce the bioavailability of copper and reduce its toxicity. However, low DOC levels during dry seasons may reduce this buffering capacity, potentially increasing copper toxicity risk.

- 60) Dissolved copper can have an acutely toxic effect on fish through exposure of the gill. Even at low levels, dissolved copper can inhibit or destroy neuron (nerve) cells and impair two important sensory and behavioral response systems: olfaction (sense of smell)<sup>22</sup> and the lateral line<sup>23</sup>. Fish use their sense of smell to identify predators and prey, assess potential mates, avoid pollutants, detect migratory cues, and navigate to their natal streams from the ocean. The lateral line is the visible line along the side of a fish consisting of a series of sense organs, which fish use to detect movement, pressure, and vibration in the surrounding water. When these senses are impaired, fish growth suffers and may lead to mortality. Water chemistry can affect the toxicity of copper when metal ions (e.g.,  $\text{Ca}^{2+}$ ) compete with copper for binding sites on gills and other cells, or when other inorganic and organic constituents bind to copper ions reducing their bioavailability. The toxicity of copper is closely related to water hardness, alkalinity, pH and dissolved organic carbon (DOC) in the water. Water hardness refers to the presence of dissolved metal ions such as calcium and magnesium. Hardness in the Smith River is generally quite low, based on samples taken by the North Coast Water Board. Low hardness increases the bioavailability of copper and copper toxicity to aquatic life because there are fewer calcium and magnesium ions to compete with copper for binding sites on the gills and other biological surfaces, allowing more free copper ions to be absorbed by aquatic organisms.
- 61) As part of the Smith River Plain Water Quality Management Plan, North Coast Water Board staff in the Surface Water Ambient Monitoring Program (SWAMP) sampled surface waters between 2021–2024. Analytes were selected based on their known use in lily bulb production, toxicity profiles, prior study results<sup>24</sup>, and input data needs for the US EPA endorsed Biotic Ligand Model (BLM) – a metal bioavailability model that uses receiving water body characteristics and monitoring data to develop site-specific water quality criteria. This report, the Smith River Plain Surface Water Monitoring Study 2021–2024 (2025 SWAMP Report)<sup>25</sup> was released in September 2025.
- 62) After the release of the 2025 SWAMP Report, staff conducted targeted follow-up investigations that resulted in updates to portions of the data, modeling results, and analyses. On July 21, 2026, staff memorialized those updates in a 2025 SWAMP Report Updates Memo (Updates Memo.)<sup>26</sup> The Updates Memo summarized revisions to the data tables and Biotic Ligand Model (BLM) results presented in Attachment A to the 2025 SWAMP Report and re-analyzed the water quality data

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using constituent-specific, planting-cycle-based accounting periods, which staff used to determine the placement of fields in this Order's Adaptive Management Program. The exceedance statistics and BLM results relied upon in this Order reflect the 2025 SWAMP Report as revised in part by the Updates Memo.

- 63) The 2025 SWAMP Report as revised by the Updates Memo found that dissolved copper concentrations at the six downstream monitoring stations ranged from 0.17 to 14.8 µg/L across all samples collected between 2021 and 2024. The BLM predicted potential copper toxicity (toxicity unit greater than 1.0) at every downstream station at least once, with chronic exceedances in 24 of 79 qualifying samples (30 percent) and acute exceedances in 12 of 79 qualifying samples (15 percent) — predicted chronic toxicity thus occurring approximately twice as frequently as predicted acute toxicity. Predicted toxicity was most frequent at Lower Delilah Creek (10 chronic exceedances, 56 percent of 18 samples; and 6 acute exceedances, 33 percent of 18 samples) and Tillas Slough (4 chronic, 44 percent of 9 freshwater samples; and 2 acute, 22 percent of 9 freshwater samples), followed by Lower Ritmer Creek (6 chronic, 33 percent of 18 samples; and 3 acute, 17 percent of 18 samples). Lower Mello Creek recorded exceedances in both of its two qualifying samples (2 chronic, 100 percent; 1 acute, 50 percent), and Lower Morrison Creek and Lower Rowdy Creek each recorded one chronic exceedance and no acute exceedances (7 percent of 14 samples and 6 percent of 18 samples, respectively). Copper exceedances were concentrated in the 2022–23 planting cycle, which accounted for 14 of the 24 chronic and 8 of the 12 acute exceedances region-wide. The model results were driven by elevated dissolved copper and depressed pH, and the highest risk of toxicity predicted by the BLM was in samples collected during the storm season. Predicted chronic toxicity closely tracked normalized copper application rates<sup>27</sup>, with Delilah Creek exhibiting both the highest copper use and the most frequent toxicity predictions.
- 64) For synthetic pesticides, the 2025 SWAMP Report and Updates Memo found that exceedances occurred only at Lower Delilah Creek (13 total: 10 chronic imidacloprid, 2 chronic diuron, and 1 chronic ethoprop) and Tillas Slough (4 total: 3 chronic imidacloprid and 1 chronic diuron) monitoring stations; no synthetic pesticide exceedances were recorded at Lower Ritmer, Lower Rowdy, Lower Morrison, or Lower Mello Creek. Of the 17 synthetic pesticide exceedances over the study period, 13 were imidacloprid. The pattern of synthetic pesticide concentrations found in the dataset seem to align with typical environmental fate and transport expectations for these pesticides. Diuron and imidacloprid concentrations downstream of lily bulb fields rise sharply during major storm events (typically October–May), peaking early in overland flow before diluting as streamflow increases. Following storms, moderate levels likely persist due to continued shallow groundwater discharge, with low detections year-round indicating ongoing baseflow transport. Imidacloprid exceedances align with

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imidacloprid application rates, and both pesticides show strong correlations with large storm events.

- 65) The Updates Memo revised the accounting period used by staff to evaluate exceedances of water quality benchmarks. The 2025 SWAMP Report defined a benchmark exceedance as one (acute or chronic) that occurs within a Water Year (October 1 – September 30). While a Water Year is loosely aligned with the crop production cycle from planting through harvest, it does not align with the pattern of pesticide applications, essentially splitting a single crop year's pesticide application history across two accounting periods. This Water Year accounting partially obscured the relationship between an exceedance and the fields most likely responsible for it, particularly for copper and imidacloprid, which are not typically applied until spring. For example, under the Water Year accounting method, a copper exceedance detected in December would implicate fields newly planted to lily bulbs the previous fall, even though those fields had not yet received any copper. The fields most likely responsible would instead be the most recently harvested fields, which last received copper the preceding summer. Accordingly, the Updates Memo aligned the accounting period with each constituent's pesticide application cycle: February–January for copper and imidacloprid, November–October for diuron, and September–August for ethoprop. This Order utilizes those accounting periods, and attributes exceedances to the fields whose planting status and application history correspond to the constituent detected and the timing of the detection. Furthermore, this Order defines a benchmark exceedance as any one acute or two chronic exceedances that occur within an accounting period. Staff re-analyzed the 2021–2024 monitoring data set on this basis, as presented in Updates Memo Tables 2 through 5, to determine the fields that the existing monitoring record demonstrates recently contributed to a benchmark exceedance. Those fields, identified in Table II.2 in Section II.H of this Order, are required to implement the Adaptive Management Program upon enrollment.
- 66) On September 26, 2024, as part of the 2021-2024 SWAMP study, North Coast Water Board staff sampled two locations north of the Smith River Plain on the coastal terrace near Highway 101 at locations that receive runoff from lily bulb fields. One set of samples was collected in Gilbert Creek at Highway 101, and another set was collected in a small coastal drainage that runs to the ocean at Clifford Kamph Memorial Park. While these locations are outside of the Smith River Plain proper, they are both within the Smith River Plain hydrologic subarea and therefore within the scope of this Order. Gilbert Creek runs east to west to the north of this small lily bulb growing area, while the other drainage is to the south and receives most of the surface runoff. There are about six fields that are used for lily bulb cultivation in this area and at the time of the sampling event in September 2024, four of those fields were planted to lilies.
- 67) Both sets of samples were analyzed for the same set of parameters as the rest of the samples collected as part of the SWAMP study. The analysis included a suite

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of current use pesticides, general field parameters, dissolved copper, and a complete set of BLM input parameters. At the time of sampling, flow in Gilbert Creek was estimated between 1-5 cubic feet per second (cfs) and flow in the coastal drainage at Clifford Kamph Memorial Park was estimated between 0.1-1 cfs. There was no precipitation in the preceding 24 hours. Only one pesticide, diuron, was detected out of all the pesticide sample results at a concentration of 0.054 ug/L at the Clifford Kamph Memorial Park site. This concentration is well below the chronic Water Quality Benchmark of 0.83 ug/L for diuron. Dissolved copper was measured at 0.44 ug/L at the Gilbert Creek location and at 1.47 ug/L at the Clifford Kamph Memorial Park location. The results for dissolved copper and the BLM parameters were input into the BLM model to generate acute and chronic instantaneous water quality criteria to compare to the dissolved copper results. Both sample results for dissolved copper were below the BLM generated chronic criteria of 1.94 ug/L (Gilbert Creek) and 5.14 ug/L (Clifford Kamph Memorial Park).

- 68) Staff's analysis of water quality data from the 2025 SWAMP Report and Updates Memo suggests a strong association between both rate of pesticide application and occurrence of major storm events with predicted bioavailability of dissolved copper and synthetic pesticide exceedances of water quality criteria.
- 69) Based on these findings from the 2025 SWAMP Report and Updates Memo, North Coast Water Board staff recommends reducing diuron, imidacloprid, and copper application rates in watersheds with exceedances of water quality criteria and predicted copper toxicity; identifying and implementing management practices that reduce synthetic pesticide and copper transport (e.g., increasing soil organic carbon content); and investigating mechanisms that contribute to depressed pH in receiving waters near lily bulb cultivation areas. Staff recommended that surface water monitoring should remain focused on storm-season sampling, with emphasis on capturing both initial overland flow and post-storm baseflow periods, particularly in tributaries with elevated application rates and exceedances of relevant water quality criteria. These recommendations were incorporated into the Surface Water Monitoring Program in the Monitoring and Reporting Program.
- 70) This Order requires surface water monitoring for diuron, imidacloprid, ethoprop, and dissolved copper, as specified in Attachment A: Monitoring and Reporting Program (MRP). Except for diuron and imidacloprid, the Water Quality Benchmarks used to drive adaptive management and measure compliance with surface water Receiving Water Limitations in this Order are consistent with the values applied in analyzing the dataset presented in the 2025 SWAMP Report<sup>28</sup>. A detailed discussion of these Water Quality Benchmarks, including the use of the Biotic Ligand Model (BLM) for dissolved copper, is provided in Section G.1 of these Findings.

### **Nutrients in Surface Water**

- 71) The North Coast Water Board's SWAMP Program implemented monitoring in the Smith River Plain in 2013 and 2015 to evaluate water and sediment quality conditions, which included analysis of samples for nutrients. The results for nutrients were compared to USEPA guidance criteria. The nutrient criteria guidance is grouped by 'ecoregions' for the entire country that states may use as a starting point for the criteria for their water quality standards. The criteria are called Ecoregional Nutrient Criteria for Rivers and Streams. Ecoregion II includes most of the great mountain ranges that are located west of the Great Plains. This large, disjunct region is characterized by forests, high relief terrain, steep slopes, perennial streams, and a general lack of cropland agriculture. While the Smith River Plain is included in this ecoregion, it does not match the characteristics of the ecoregion in general. However, water quality results from 2013-2015 were compared to these guidance criteria as a benchmark to provide some context. The comparison showed that nitrogen levels exceeded the ecoregional nutrient criteria in every sample collected in Delilah and Morrison Creeks and Tillas Slough. Phosphorus exceeded the criteria in one instance in Delilah Creek and in three of six samples in Tillas Slough.
- 72) According to a response to a 2018 Water Code Section 13267 Order, lily bulb growers indicated that nitrogen is applied at planting, during the spring, and through the manure of grazing cattle. This Order monitors the potential for discharge of nitrogen to surface water primarily through irrigation and nutrient management reporting and certified Irrigation and Nutrient Management Plans, as part of adaptive management, which requires Enrollees to (1) report nitrogen application; (2) sample soil and irrigation water for nitrate concentrations; and (3) identify management practices to minimize or prevent discharge of excess nitrogen to surface or groundwater. This Order requires certification of the INMP for Enrollees who have an increasing trend of nitrate concentration over three years in a Groundwater Trend Monitoring Well or Drinking Water Supply Well<sup>29</sup> on their enrolled parcel.
- 73) Phosphorus is used as a fertilizer in Commercial Lily Bulb Operations. Phosphates sorb to positively charged surfaces in soil so controlling and monitoring for the discharge of phosphorus in this Order is achieved through sediment and erosion management practices.

### **Pesticides in Groundwater**

- 74) CDPR maintains a Groundwater Protection List in sections 13144, 13145, and 13149 of the California Food and Agricultural Code. Pesticides labeled for agricultural, outdoor institutional or outdoor industrial use that are designated as having the potential to pollute groundwater and have been detected in groundwater

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or soil pursuant to section 13149 of the Food and Agricultural Code are on the CDPR 6800(a) list.

- 75) The CDPR Human Health Assessment Branch (HHAB) has developed Human Health Reference Levels (HHRLs) for pesticides on the 6800(a) list. Residues measured in groundwater exceeding these reference levels indicate a health concern and should be sent to HHA for further evaluation.
- 76) The CDPR Groundwater Protection Program (GWPP) obtains groundwater monitoring data for pesticides and their degradates through its own sampling program and from sampling conducted by other public agencies. Between 2012 and 2021, the GWPP has reported one unconfirmed detection of a 6800(a) listed pesticide (Simazine) on the Smith River Plain. However, Simazine use was not reported in CDPRs Pesticide Use Report data in the previous five years.
- 77) The North Coast Water Board released a report in 2015 for the Smith River Plain which included groundwater monitoring results from seven sites to evaluate the extent and concentration of contaminants in shallow groundwater that may be attributed to agricultural applications. These samples were analyzed for dissolved copper, and 328 pesticides and pesticide residues. Among the 328 pesticides analyzed are those that were previously detected in groundwater (e.g., 1,2-Dichloropropene), those identified as pesticides of concern (e.g., Methyl Isothiocyanate, which is a break down product of metam sodium), and those commonly used in high quantities in Del Norte County between 2010 and 2013 (e.g., 1,3-Dichloropropene). The analysis of dissolved copper resulted in one detection of dissolved copper (5.7 ug/L) which was well below the US Environmental Protection Agency's and California Department of Public Health's drinking water standard (1,300/1,000 µg/L, respectively). Analysis for the 328 pesticides and pesticide residues only documented two detections of 1,2-Dichloropropane (1,2-D) which was below the US Environmental Protection Agency's and California Department of Public Health's drinking water standard of 5 µg/L. See page 10 of the Smith River Plain 2015 Groundwater Interim Monitoring Report for tabulated results<sup>30</sup>.
- 78) In April 2025, North Coast Water Board staff sampled 9 private domestic wells within the current and historic lily bulb cultivation area in the Smith River Plain. In October 2025, North Coast Water Board staff sampled two public water supply wells serving the Smith River Community Services District, well samples were analyzed for 94 pesticide residues utilizing a well sampling program offered by the CA Department of Pesticide Regulation. North Coast Water Board staff worked with the lily bulb growers, the Technical Advisory Group for the Lily Bulb Order development, and local community groups to identify volunteers for well sampling. Within the private domestic wells, pesticides were detected at trace levels in 6 of the 9 wells sampled. Of the eight pesticides detected, all but one – used in forestry and highway rights-of-way – had been applied on lily bulbs between 2012 and



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2023. The pesticides detected include diuron, imidacloprid, mefenoxam, napropamide, thiamethoxam, ACET, simazine, and tebuthiuron. Four pesticides (diuron, imidacloprid, napropamide, and mefenoxam) were reported as being used on lily bulbs in the most recent Pesticide Use Reports from 2023. Within the public supply wells, two herbicides (prometon and tebuthiuron) were detected at trace levels and are associated with use in highway rights-of-way and not lily bulbs. Three quarters of all pesticide detections (75%) were reported at trace concentrations<sup>31</sup> and none exceeded established human health levels<sup>32</sup>.

- 79) This Order requires monitoring of pesticides in groundwater through: (1) Groundwater Trend Monitoring to evaluate agricultural impacts on groundwater; (2) adaptive management in response to exceedances of pesticide Water Quality Benchmarks in groundwater; and (3) Drinking Water Well sampling to notify well users of exceedances of a human health level with respect to pesticides. Pesticides included in groundwater monitoring in this Order were all current-use lily bulb pesticides that were detected during the April 2025 domestic well sampling effort (diuron, imidacloprid, napropamide, and mefenoxam). These requirements are located within Attachment A: Monitoring and Reporting Program.

**Nitrate in Groundwater**

- 80) Elevated levels of nitrate in drinking water can have significant negative health effects on sensitive individuals. The nitrate water quality objective for groundwater is the maximum contaminant level (MCL) of 10 mg/L (milligrams per liter) for nitrate plus nitrite as nitrogen (or 45 mg/L of nitrate as nitrate) established by the California Department of Public Health (Cal. Code Regs. tit. 22, § 64431). The MCL was set to protect the most at-risk groups – infants under six months old and pregnant women. Sources of nitrate in groundwater can include leaching of excess fertilizer, confined animal feeding operations, septic systems, and wastewater discharge to land (e.g., domestic, commercial, and industrial). Besides infiltration, pathways of nitrate to groundwater may also include unprotected well heads, improperly abandoned wells, and lack of backflow prevention on wells.
- 81) The North Coast Water Board released a 2015 Groundwater Monitoring Report for the Smith River Plain which included monitoring results from seven sites within the lily bulb growing area to evaluate the extent and concentration of contaminants in shallow groundwater that may be attributed to agricultural applications. Samples collected in a one-time sampling event from the seven wells were analyzed for nitrate (as nitrogen). Nitrate concentrations in the groundwater ranged from 4.8 mg/L to 12.7 mg/L across all wells tested. Three irrigation wells exceeded the California Department of Public Health MCL of 10 mg/L for nitrate. Nitrate concentrations in the three Drinking Water Supply Wells ranged from 4.7 mg/L to 6.72 mg/L. See page 9 of the Smith River Plain 2015 Groundwater Monitoring Interim Report for tabulated results<sup>33</sup>.

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- 82) In April 2025, North Coast Water Board staff sampled nine (9) private domestic wells within the current and historic lily bulb cultivation area in the Smith River Plain using a domestic well sampling program offered through the California Department of Pesticide Regulation. Nitrate concentrations in these wells ranged from 1.8 mg/L – 5.9 mg/L.
- 83) This Order requires monitoring of nitrate in groundwater through: (1) individual groundwater trend monitoring to evaluate agricultural impacts on groundwater and (2) drinking water well sampling to notify well users of exceedances of the nitrate MCL of 10 mg/L. These requirements are located within Attachment A: Monitoring and Reporting Program.

**F. Coalitions**

- 84) The North Coast Water Board encourages Enrollees to participate in Coalitions or programs (e.g., certification program, watershed group, water quality coalition, monitoring coalition, or other third-party effort) to facilitate and document compliance with this Order. Third-party programs (hereinafter Coalitions) can be used to manage fee payments to the State Water Board, implement compliance education, monitoring and reporting, management practices and/or water quality improvement projects. This Order authorizes the use of grower Coalitions for the above efforts. Specific Coalition requirements can be found in Attachment C: Coalition Requirements.
- 85) This Order requires Enrollees to provide the Coalition with contact information of the person(s) authorized to provide access to the enrolled property for inspections. This requirement provides a procedure to enable North Coast Water Board staff to contact Enrollee representatives so that it may more efficiently monitor compliance with the provisions of this Order.

**G. Regulatory Framework**

- 86) This Order requires Enrollees to comply with all applicable state and federal water quality standards, plans, and policies, and to prevent nuisance conditions. These standards are established through state and federal regulations, including the North Coast Water Board Basin Plan, which identifies the specific Water Quality Objectives (WQOs), beneficial uses, and implementation plans applicable to discharges of waste and the waterbodies that receive such discharges. The State Water Board has also adopted additional plans and policies that may apply to discharges of waste to surface waters or groundwater from Commercial Lily Bulb Operations.

## **1. North Coast Water Board Plans and Policies**

### **Basin Plan**

- 87) The Basin Plan is the North Coast Water Board's water quality control planning document. It designates beneficial uses and WQOs for waters of the state, including surface waters and groundwater. The Basin Plan was duly adopted by the North Coast Water Board and approved by the State Water Board, the Office of Administrative Law, and the USEPA, as necessary. The Basin Plan includes plans and policies, including TMDLs . The latest version of the Basin Plan can be found on the North Coast Water Board's website ([https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/basin\\_plan/](https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/)).

### **Beneficial Uses**

- 88) Pursuant to the Basin Plan, Board plans and policies (including State Water Board Resolution No. 88-63 Sources of Drinking Water Policy), and consistent with the Clean Water Act, Table I.2 shows the existing and potential beneficial uses of surface waters in the Smith River Plain:

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**Table I.2: Existing and Potential Beneficial Uses in the Smith River Plain**

| <b>Beneficial Use</b>                            | <b>Abbreviation</b> | <b>Project Area Except Rowdy Creek</b> | <b>Rowdy Creek Watershed</b> |
|--------------------------------------------------|---------------------|----------------------------------------|------------------------------|
| Agricultural Supply                              | AGR                 | Existing                               | Existing                     |
| Aquaculture                                      | AQUA                | Potential                              | Potential                    |
| Commercial and Sport Fishing                     | COMM                | Existing                               | Existing                     |
| Cold Freshwater Habitat                          | COLD                | Existing                               | Existing                     |
| Native American Culture                          | CUL                 | Existing                               | Existing                     |
| Estuarine Habitat                                | EST                 | Existing                               | -                            |
| Subsistence Fishing                              | FISH                | Existing                               | Existing                     |
| Freshwater Replenishment                         | FRSH                | Existing                               | Existing                     |
| Industrial Service Supply                        | IND                 | Existing                               | Existing                     |
| Marine Habitat                                   | MAR                 | Existing                               | -                            |
| Migration of Aquatic Organisms                   | MIGR                | Existing                               | Existing                     |
| Municipal and Domestic Supply                    | MUN                 | Existing                               | Existing                     |
| Navigation                                       | NAV                 | Existing                               | Existing                     |
| Hydropower Generation                            | POW                 | -                                      | Potential                    |
| Industrial Process Supply                        | PRO                 | Potential                              | Potential                    |
| Rare, Threatened, End. Species                   | RARE                | Existing                               | Existing                     |
| Non-Contact Water Recreation                     | REC-2               | Existing                               | Existing                     |
| Water Contact Recreation                         | REC-1               | Existing                               | Existing                     |
| Spawning, Reproduction, and/or Early Development | SPWN                | Existing                               | Existing                     |
| Wildlife Habitat                                 | WILD                | Existing                               | Existing                     |

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- 89) The beneficial use most sensitive to groundwater degradation in the Smith River Plain is Municipal and Domestic Supply, while the beneficial uses most sensitive to surface water degradation are Cold Freshwater Habitat and Native American Culture. This Order uses Water Quality Benchmarks that are protective of these most sensitive beneficial uses and, therefore, protective of all beneficial uses of water within the Smith River Plain. A more thorough discussion of Water Quality Benchmarks is located in Section G.1 of these Findings.
- 90) The tributaries of the Smith River Plain contain much of the Smith River watershed's habitat with high intrinsic potential for coho salmon, supporting both natal and non-natal rearing. Tributaries and sloughs near the estuary provide critical refuge for juveniles and fry displaced during high-flow events, increasing survival, productivity, and life-history diversity. Because the middle and upper Smith River watershed is dominated by steep gradients and high flows, the low-gradient tributaries near the estuary and within the lily bulb cultivation area play a disproportionate role in supporting coho salmon resilience and recovery. Although estuarine and coastal-plain habitats represent a small portion of the overall watershed area, they are vital to the productivity of anadromous fish populations, as all salmonids utilize estuarine environments prior to ocean entry.
- 91) At least 26 species of fish have been observed in the Smith River Plain and estuary. The Smith River Plain provides habitat to threatened and endangered species including coho salmon, eulachon, tidewater goby, and longfin smelt<sup>34</sup>. Spring- and fall-run Chinook Salmon, Coho Salmon, and Coastal Cutthroat Trout utilize the lower Smith River, its coastal tributaries, sloughs, and estuary throughout the year. One or more of these species is typically present in areas potentially affected under this Order at any given time. Low-gradient freshwater and brackish habitats such as sloughs, backwaters, off-channel ponds, and tidal wetlands are among the most productive rearing areas for juvenile salmonids in the Pacific Northwest, including within the Smith River Plain.
- 92) The 2014 Coho Salmon Final Recovery Plan from NOAA identified Rowdy Creek, Ritmer Creek, Delilah Creek, Yontocket Slough, and Morrison Creek in the Smith River Plain as some of the highest intrinsic potential habitat for coho salmon in the 762 square mile Smith River watershed<sup>35</sup>. These tributaries are designated essential fish habitat (EFH) under the Magnuson-Steven Fishery Conservation and Management Act (MSFCMA) for Pacific salmon (Chinook and coho), and the estuary is designated EFH for Pacific salmon and Pacific groundfish. EFH is designated for species managed in Fishery Management Plans and is defined as the habitat necessary for managed fish to complete their life cycles. Estuaries, including the Smith River Estuary, are considered Habitat Areas of Particular Concern and are high priorities for EFH conservation<sup>36</sup>. Preserving high-quality water and improving degraded water quality in the Smith River Plain is essential to the support and recovery of threatened and endangered species.

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- 93) The National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) has classified the Smith River population of coho salmon as a core, functionally independent population, which is considered at a high risk of extinction and likely below the depensation threshold.
- 94) On December 17, 2018, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA NMFS) issued a letter to the four lily bulb growers remaining at that time that addressed pesticide impacts on Southern Oregon Northern California Coast (SONCC) coho salmon related to lily bulb agricultural operations in the Smith River Plain. The letter communicated concerns regarding elevated concentrations of dissolved copper and other pesticides detected in streams below lily bulb fields, which exceed U.S. Environmental Protection Agency (EPA) Aquatic Life Benchmarks. The letter referenced the Endangered Species Act (ESA) (16 U.S.C. § 1531 et seq.) and NMFS regulations at 50 CFR 223.203 under section 4(d) of the ESA, which prohibit the unlawful "take" of threatened species, including harm defined as acts that significantly impair essential behavioral patterns of listed fish. NOAA NMFS directed the lily bulb growers to implement best management practices such as increasing no-spray buffers and restoring riparian zones to reduce pesticide runoff into tributaries critical for coho salmon habitat. The letter further encouraged cooperative development of a Smith River Plain Water Quality Management Plan and Safe Harbor Agreements to facilitate regulatory compliance and contribute to species recovery.
- 95) The U.S. Fish and Wildlife Service (USFWS) adopted the Tidewater Goby Recovery Plan<sup>37</sup> (Recovery Plan) in 2005, outlining key actions for improving the species' status sufficiently to warrant downlisting from endangered to threatened, and ultimately delisting. The Recovery Plan includes the Smith River estuary in its North Coast Recovery Unit, noting that the Smith River estuary contains roughly 500 acres of potentially suitable habitat with historical and recent observations of tidewater goby presence, particularly in Tillas Slough. The Recovery Plan recommended, in part, regular monitoring of tidewater goby populations and habitat conditions to track status and hydrologic changes, management of estuarine and lagoon hydrology to preserve brackish conditions essential for goby breeding and survival, and the re-establishment of Tillas Slough populations from Lake Earl.
- 96) The Smith River and its estuary serve as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. These uses include, but are not limited to, fishing, boating, river access, training, swimming and diving, prayer and meditation, religious ceremony and medicinal doctoring, plant gathering, basketry, eeling, shellfish gathering, and food preparation.

Water Quality Objectives

- 97) Water Code section 13241 provides that the North Coast Water Board is

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responsible for establishing water quality objectives which, in the North Coast Water Board's judgment, are necessary for the reasonable protection of the beneficial uses and for the prevention of nuisance. Establishing water quality objectives involves first, designating beneficial uses; and second, selecting the water quality constituents or characteristics and limits or levels on those constituents and/or characteristics necessary to protect the beneficial uses. These objectives can be expressed in numeric (measurable limits or concentrations of a pollutant) or narrative (the desired condition of the waterbody in qualitative terms) form.

When it is necessary to derive numeric values in order to develop discharge limitations that implement narrative water quality objectives or to evaluate compliance with narrative water quality objectives, the Board may consider "all relevant and scientifically valid evidence", including site-specific data, scientific peer-reviewed literature, and numeric values established in other state or federal laws, regulations, plans, policies, or guidelines, or developed and published by other governmental or non-governmental agencies and organizations. (Basin Plan, Section 3.5.1.) "When water quality objectives are established in a basin plan in narrative form, it is appropriate for a regional water board to exercise its professional judgment, relying on scientific studies, to establish numeric limits." (State Water Board, Order WQ 2023-0081, p. 28.)

- 98) Section 3 of the North Coast Water Board's Basin Plan contains water quality objectives for groundwater and surface waters. These include objectives for chemical constituents, which incorporate promulgated maximum contaminant levels (MCL); pH; sediment; turbidity; and, in relevant part, the following narrative water quality objectives for pesticide and toxicity:

***"Pesticides.*** Waters shall not contain any individual pesticide or combination of pesticides in concentrations that cause nuisance or adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations in bottom sediments or aquatic life that cause nuisance or adversely affect beneficial uses. In no case shall waters designated for use as domestic or municipal supply (MUN) contain concentrations of pesticides in excess of the numeric limits established in title 22 and as prospectively incorporated in 3.3.3 Chemical Constituents."

***"Toxicity"***<sup>38</sup>. Waters shall not contain toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the synergistic effect of multiple substances."

- 99) The USEPA has adopted the National Toxics Rule and the California Toxics Rule (CTR), which, when combined with the Basin's Plans beneficial use designations, constitute water quality standards that apply to certain inland surface waters or enclosed bays and estuaries within the state. The CTR contains federal water

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quality criteria for priority pollutants, including for copper. The CTR aquatic life criteria for copper varies based on hardness and are expressed as dissolved concentrations.

- 100) The Biotic Ligand Model (BLM) is the current EPA recommended method for determining copper concentrations protective of aquatic life on a site-specific basis and has been adopted by the State of Idaho Department of Environmental Quality and the State of Oregon Department of Environmental Quality to develop state-wide, site-specific water quality criteria for copper. The BLM predicts metal toxicity to aquatic life by estimating how much of a dissolved metal actually binds to sensitive biological sites (biotic ligands) such as fish gills or invertebrate membranes. The model calculates the concentration of a metal at the biotic ligands by simulating how site-specific water chemistry factors influence the chemical form and bioavailability of the metal. The BLM represents a refinement of the hardness-based CTR criteria.

In California, the State Water Board is developing a proposed water quality control policy to establish methods, protocols, and procedures for Regional Water Quality Control Boards to develop, adopt, and implement site-specific water quality objectives for copper and zinc based on the BLM. The BLM uses a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO<sub>4</sub>), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature.

Using these ten parameters, the BLM generates an Instantaneous Water Quality Criterion (IWQC). The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a Toxicity Unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. Exceedances of the IWQC mean that dissolved copper bioavailability was predicted to occur at a potentially toxic level for the sample in question. Due to the unique water chemistry of the Smith River Plain, risk of toxicity is predicted to occur at a lower dissolved copper concentration by the BLM compared to the hardness-based CTR at the monitoring stations downstream of lily bulb agriculture. Use of this scientifically-valid and more sensitive method is appropriate in this Order to drive the Adaptive Management Program and evaluate compliance with Receiving Water Limitations, given the particular beneficial uses to be protected in the Smith River Plain, the water quality objectives reasonably required for that purpose; the need to prevent nuisance; and the provisions of Section 13241, including environmental characteristics in the Smith River Plain, and economic considerations, discussed in further detail in Section I.H of the Findings. (Wat. Code, § 13263, subd. (a).)

- 101) This Order establishes Water Quality Benchmarks for both surface water and groundwater, which are based on water quality objectives. Water Quality



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Benchmarks for surface water are established for both acute and chronic exposure conditions. Exceedance of a Water Quality Benchmark for surface water is determined by considering both concentration and frequency within a calendar year. An acute Water Quality Benchmark is exceeded when the acute concentration is exceeded once within a calendar year, and a chronic Water Quality Benchmark is exceeded when the chronic concentration is exceeded twice within a calendar year.

- 102) Water Quality Benchmarks for groundwater are also established for both acute and chronic exposure, where water quality values are available.
- 103) The Water Quality Benchmarks are either equivalent to the applicable Basin Plan numeric water quality objective or a numeric interpretation of the pesticide and toxicity narrative water quality objectives for surface water and the toxicity narrative quality objective for groundwater. Non-exceedance of a Water Quality Benchmark demonstrates attainment of the corresponding water quality objective and compliance with Receiving Water Limitations in Section II.C of this Order. Conversely, exceedance of a Water Quality Benchmark indicates that discharges may be causing or contributing to an exceedance of a water quality objective. As discussed in Section II.H of this Order, exceedance of a Water Quality Benchmark triggers the Adaptive Management Program; following the time schedule under the Adaptive Management Program, further exceedances may indicate that discharges are causing or contributing to an exceedance of a water quality objective in violation of the Receiving Water Limitations, which may result in further investigative action and/or progressive enforcement.
- 104) Water Quality Benchmarks for surface water and groundwater monitoring pesticide parameters were determined by reviewing all available pesticide water quality values, including U.S. EPA aquatic life benchmarks, and, exercising best professional judgment consistent with scientific evidence, selecting the most protective (i.e., lowest) values for relevant beneficial uses. In general, the most sensitive beneficial uses for surface waters were Cold Freshwater Habitat and Native American Culture and for groundwater was drinking water. The Water Quality Benchmarks that staff determined were appropriate to drive adaptive management are generally consistent with the State Water Board's numeric guidelines for listing impaired waters under Section 303(d) of the Clean Water Act used to assess data where only narrative water quality objectives have been adopted. Tables I.3 and I.4 present relevant Water Quality Benchmarks for required water quality monitoring constituents for this Order as well as conditions for determining whether an exceedance of an acute or chronic Water Quality Benchmark has occurred.

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**Table I.3 Water Quality Benchmarks for Surface Water, Benchmark Exceedances, Beneficial Uses Protected, and Sources**

| <b>Parameter</b>                   | <b>Water Quality Benchmark (ug/L)</b> | <b>Water Quality Benchmark Exceedance</b>                                                                    | <b>Use Protected</b>                   | <b>Source or Reference<sup>39</sup></b>                                                       |
|------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------|
| Diuron<br>(salinity < 1 ppt)       | Acute: 87.5<br>Chronic: 0.83          | Two exceedances of the chronic Benchmark in a calendar year -OR- a single exceedance of the acute Benchmark. | Cold Freshwater Habitat                | USEPA Aquatic Life Benchmarks                                                                 |
| Diuron<br>(salinity ≥ 1 ppt)       | Acute: 600<br>Chronic: 3.08           | Two exceedances of the chronic Benchmark in a calendar year -OR- a single exceedance of the acute Benchmark. | Estuarine Habitat                      | USEPA Aquatic Life Benchmarks                                                                 |
| Ethoprop<br>(salinity < 1 ppt)     | Acute: 22.0<br>Chronic: 0.37          | Two exceedances of the chronic Benchmark in a calendar year -OR- a single exceedance of the acute Benchmark. | Cold Freshwater Habitat                | Acute: USEPA Aquatic Life Benchmarks<br>Chronic: USEPA Chronic Non-cancer HHBs for Pesticides |
| Ethoprop<br>(salinity ≥ 1 ppt)     | Acute: 3.15<br>Chronic: 2.0           | Two exceedances of the chronic Benchmark in a calendar year -OR- a single exceedance of the acute Benchmark. | Estuarine Habitat                      | USEPA Aquatic Life Benchmarks                                                                 |
| Imidacloprid<br>(salinity < 1 ppt) | Acute: 0.385<br>Chronic: 0.01         | Two exceedances of the chronic Benchmark in a calendar year -OR- a single exceedance of the acute Benchmark. | Cold Freshwater Habitat                | USEPA Aquatic Life Benchmarks                                                                 |
| Imidacloprid<br>(salinity ≥ 1 ppt) | Acute: 16.5                           | A single exceedance of the acute Benchmark.                                                                  | Estuarine Habitat                      | USEPA Aquatic Life Benchmarks                                                                 |
| Dissolved Copper                   | Toxicity Unit<1 (acute and chronic)   | Two exceedances of the chronic BLM-IWQC in a calendar year -OR- a single exceedance of the acute BLM-IWQC.   | Cold Freshwater and Estuarine Habitats | Biotic Ligand Model                                                                           |

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**Table I.4 Water Quality Benchmarks for Groundwater, Beneficial Uses Protected, and Sources**

| Parameter    | Benchmark (ug/L)             | Use Protected            | Source or Reference <sup>40</sup>                                                                                                                              |
|--------------|------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Diuron       | Acute: 1,028<br>Chronic: 2.0 | Municipal Drinking Water | <u>Chronic</u> : USGS Health Based Screening Level (HBSL) for one-in-a-million cancer risk estimate<br><u>Acute</u> : CDPR Human Health Reference Level (HHRL) |
| Imidacloprid | Acute: 283                   | Municipal Drinking Water | DPR Human Health HHRL <sup>41</sup>                                                                                                                            |
| Mefenoxam    | Acute: 3,000<br>Chronic: N/A | Municipal Drinking Water | USEPA One-Day or Acute HHBP                                                                                                                                    |
| Napropamide  | Chronic: 710                 | Municipal Drinking Water | USEPA Chronic or Lifetime HHBP                                                                                                                                 |
| Nitrate      | 10 (mg/L)                    | Municipal Drinking Water | USEPA Maximum Contaminant Level (MCL)                                                                                                                          |

Assessment of Cumulative and Synergistic Effects of Pesticide Mixtures

105) The Basin Plan's narrative toxicity objective requires that waters "shall not contain toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life" and specifies that "[t]his objective applies regardless of whether the toxicity is caused by a single substance or the synergistic effect of multiple substances." The narrative pesticide objective similarly addresses "any individual pesticide or combination of pesticides in concentrations that cause nuisance or adversely affect beneficial uses." These objectives require the Order to consider the cumulative and synergistic effects of pesticide mixtures. Cumulative effects can be quantitatively evaluated using established scientific methods, while no validated scientific method currently exists to directly quantify potential synergistic effects of pesticide mixtures. Accordingly, this section evaluates cumulative effects using the best available science and explains how this Order addresses potential synergistic effects through its conservative benchmark framework and adaptive management provisions.

106) In 2026, North Coast Water Board staff prepared an internal technical memorandum entitled "Review of the USGS Pesticide Toxicity Index Tool for Assessing Potential Toxicity of Pesticide Mixtures to Freshwater Aquatic

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Organisms” (Zabinsky, 2026)<sup>42</sup> to evaluate the cumulative toxicity of pesticide mixtures in the Smith River Plain. The memorandum reviews the USGS Pesticide Toxicity Index (PTI), a peer-reviewed screening tool developed by Nowell et al. (2014)<sup>43</sup> that assesses potential aquatic toxicity of pesticide mixtures using a Concentration Addition (CA) model. The PTI uses the CA model to estimate the combined toxicity of all detected pesticides in a sample. The CA model sums toxic units (TUs) for all pesticides detected in a sample, where each TU is the ratio of the measured concentration to a toxicity concentration derived from compiled laboratory studies, to produce a cumulative index of potential acute toxicity risk. The memorandum and the underlying USGS study are incorporated into the administrative record for this Order.

- 107) Staff applied the Sensitive PTI, which uses the 5th percentile of compiled toxicity values (the Sensitive Toxicity Concentration, or STC) for the benthic invertebrate taxonomic group, to the 2021–2024 SWAMP monitoring dataset (as revised by the 2025 SWAMP Report Updates Memo described in Findings #62-65). The STC values for the three primary synthetic pesticides are: diuron (160 µg/L), ethoprop (43.9 µg/L), and imidacloprid (0.65 µg/L). A Sensitive PTI of 1.0 or greater indicates significant risk of over 50% mortality for the 5th percentile most sensitive benthic invertebrate species.
- 108) The CA model assumes toxicity is strictly additive and does not model synergistic or antagonistic interactions. For pesticides with different modes of action, the CA model tends to overestimate combined risk. Diuron (photosynthesis inhibitor), ethoprop (acetylcholinesterase inhibitor), and imidacloprid (nicotinic acetylcholine receptor agonist) all have different modes of action. The USGS study found that even for pesticides with different modes of action, the CA model is usually within 2-to-3 times observed toxicity. Because the CA model assumes additive toxicity even when pesticides act through different biological mechanisms, it generally provides a conservative estimate of cumulative toxicity for the pesticide mixtures observed. For the Smith River Plain, this additive assumption provides a built-in margin of safety that addresses the concern for potential synergistic interactions.
- 109) The highest cumulative Sensitive PTI in the entire 2021–2024 dataset was 0.12 (12% of the 1.0 threshold), recorded at Lower Delilah Creek on March 5, 2023, during the largest documented storm-driven pesticide pulse. At Tillas Slough, the highest value was 0.105 (10.5%) on the same date. No sample at any station approached the 1.0 threshold, indicating that even the highest observed cumulative pesticide mixture remained well below the level associated with significant acute toxicity risk. The only sample where all three pesticides were co-detected at meaningful concentrations, November 5, 2023 at Lower Delilah Creek (diuron 0.094 µg/L, ethoprop 2.0 µg/L, imidacloprid 0.028 µg/L), produced a cumulative PTI of 0.089, with ethoprop and imidacloprid each contributing approximately half the total. This demonstrates the PTI's cumulative assessment capability: no pesticide exceeded its benchmark, but the combined mixture's additive risk is captured.

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- 110) A comparison of the freshwater USEPA acute benchmarks and the Sensitive PTI confirms that the USEPA acute benchmarks are structurally more conservative for each individual pesticide. The USEPA acute benchmarks apply a 2× safety factor to the lowest available acute toxicity test result, producing thresholds approximately half the STC values: diuron at 87.5 µg/L versus 160 µg/L, ethoprop at 22.0 µg/L versus 43.9 µg/L, and imidacloprid at 0.385 µg/L versus 0.65 µg/L. The USEPA acute benchmarks produced a higher percent-of-threshold than the cumulative Sensitive PTI in 100% of samples at Lower Delilah Creek and 94% at Tillas Slough. The PTI's cumulative addition partially narrows this gap but does not overcome the structural difference at observed concentration levels. Accordingly, compliance with this Order's individual USEPA acute benchmarks is generally more protective than compliance with the cumulative Sensitive PTI, even after accounting for additive mixture toxicity.
- 111) The PTI assesses acute toxicity risk only and does not directly evaluate chronic effects. While no validated quantitative tool exists to assess chronic synergistic effects of pesticide mixtures, the Order's chronic benchmark framework and other features provide substantial margins of safety that address potential chronic mixture effects:
- a) The chronic benchmarks are derived using intentionally conservative methods. The imidacloprid benchmark (0.01 µg/L) is based on a (No-Observed-Adverse-Effect Concentration) NOAEC that is an artifact of the test concentrations chosen — 0.03 µg/L was the EC10 and 0.01 µg/L was simply the next concentration tested below it. The diuron benchmark (0.83 µg/L) applies an Acute-to-Chronic Ratio of 210 borrowed from a different taxonomic group, when the median ACR for pesticides is only 10. Both methods produce values well below demonstrated chronic effect concentrations.
  - b) These chronic benchmarks are applied to instantaneous grab samples, including storm samples capturing peak concentrations on the rising limb, rather than the multi-day averages the 7-to-21-day chronic tests were designed to evaluate. This temporal mismatch creates additional margin for potential synergistic interactions.
  - c) The Order requires two chronic exceedances within a planting cycle to trigger adaptive management, ensuring the system responds to a pattern rather than a single result.
- 112) At observed concentrations where cumulative acute risk reached only 12 percent of the protective threshold, the magnitude of potential synergistic chronic effects is expected to be small relative to the compounding margins of safety in the chronic benchmarks. The adaptive management framework is iterative: if chronic effects occur despite individual benchmark compliance, monitoring data will identify

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concentration trends that inform whether additional action is warranted.

- 113) The Order addresses copper and pesticides through separate but complementary frameworks. Dissolved copper is assessed using the Biotic Ligand Model (BLM), which generates site-specific criteria accounting for water chemistry parameters that influence copper bioavailability. Both copper and pesticide toxicity risk are assessed independently for each sampling event, and adaptive management responds to exceedances of either. This reflects the different toxicological mechanisms and regulatory criteria applicable to metals and pesticides. While the Order does not model copper-pesticide interactions, the use of conservative benchmarks for both provides a protective approach for co-occurring contaminants.
- 114) These waters are necessarily high quality for synthetic pesticides under State Water Board Resolution No. 68-16 because these compounds were not present prior to their agricultural introduction. The Proposed Order's use of USEPA chronic benchmarks, which are structurally more conservative than the Sensitive PTI, as adaptive management triggers within an iterative framework is consistent with the Board's obligation to maintain the highest water quality consistent with maximum benefit to the people of the State. The cumulative effects of pesticide mixtures have been quantitatively evaluated using the best available scientific methodology, which demonstrates that observed pesticide mixtures remained well below levels associated with acute toxicity. Although no validated scientific method currently exists to directly quantify potential synergistic effects of pesticide mixtures, this Order addresses those potential effects through the layered approach of individual pesticide benchmarks, the cumulative PTI assessment, BLM-derived copper criteria, the two-exceedance adaptive management trigger for chronic exposures, and ongoing monitoring that informs whether additional action is warranted. Accordingly, this Order adequately addresses the Basin Plan's narrative toxicity and pesticide objectives, including their application to the synergistic effect of multiple substances.

Temperature Policy

- 115) The Basin Plan includes the Policy for the Implementation of the Water Quality Objectives for Temperature in the North Coast Region (Temperature Policy), which specifies that activities resulting in water temperature increases shall be addressed on a case-by-case basis to reduce impairments and prevent further impairment. The Temperature Policy directs staff to examine and address temperature when developing regulatory orders or permits. At a minimum, any program or permit shall take actions to achieve temperature objectives and implement temperature TMDLs, including EPA-established TMDLs. To attain and maintain the water quality objectives for temperature, The North Coast Water Board and its staff implement programs and collaborate with others in such a manner as to prevent, minimize, and mitigate temperature alterations associated with sediment discharges and controllable water quality factors. Controllable water quality factors affecting water

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temperature include any anthropogenic activity which results in the removal of riparian vegetation, sediment discharges, impoundments and other channel alterations, reduction of instream summer flows, and the reduction of cold-water sources. The Temperature Policy directs the North Coast Water Board to implement actions to achieve Water Quality Objectives using all available tools, including WDRs.

- 116) This Order implements the Temperature Policy through requirements and prohibitions within Streamside Areas which: (1) allow the natural establishment and abundance of native riparian vegetation; (2) allow sufficient native riparian vegetation to minimize and control discharge of sediment, nutrients, and pesticides to surface waters; (3) install and/or maintain a minimum width of riparian vegetation and vegetated buffers to achieve site-specific potential effective shade and prevent discharges of sediment, nutrients and pesticides to surface waters; and (4) allow essential functions supporting beneficial uses (e.g., sediment filtering, woody debris recruitment, streambank stabilization, nutrient cycling, pollutant filtering, and shading).

Groundwater Protection

- 117) The Policy Statement for Groundwater Protection in the North Coast Region, Resolution No. R1-2022-0040, acknowledges the North Coast Water Board is committed to the protection of high-quality groundwater and the restoration of degraded groundwater to support all beneficial uses now and in the future, especially given increasing reliance on groundwater in the North Coast Region. Groundwater supplies in the Smith River Plain are currently beneficially used for: (1) drinking water, sanitation, and hygiene consistent with the Human Right to Water described in North Coast Water Board Resolution No. R1-2019-0024; (2) agriculture and industry which are major economic drivers in the region, (3) Native American ceremonies and traditions; (4) aquaculture operations; and (5) replenishment of flows to streams (e.g., contribution to instream flows) to maintain beneficial uses of surface water, especially cold freshwater habitat, migration of aquatic specifics, wildlife habitat, and spawning, reproduction, and early development of fish.

- 118) This Order is consistent with the Policy Statement for Groundwater Protection in the North Coast Region by requiring compliance with Receiving Water Limitations, implementation of groundwater protection management practices, groundwater monitoring, and adaptive management where current practices are not adequate to control, minimize, or eliminate agricultural discharges to groundwater.

Other North Coast Water Board Policies

- 119) This Order is consistent with the approach and best practices identified in Basin Plan policies for the control of excess sediment discharge and delivery by requiring

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Enrollees to inventory sediment discharge sites on the Commercial Lily Bulb Operation, implement sediment and erosion control management practices, monitor management practice effectiveness, and implement adaptive management where current practices are not adequate to control, minimize, or eliminate excessive sediment discharge.

**2. Water Code Considerations**

- 120) The California Water Code (Water Code) grants authority to the State Water Board with respect to state drinking water, water rights and water quality regulations and policy, and establishes nine North Coast Water Boards with authority to regulate discharges of waste that could affect the quality of waters of the state and to adopt water quality regulations and policy.
- 121) Water Code section 13260(a) requires that any person, citizen, or domiciliary discharging waste or proposing to discharge waste, other than into a community sewer system, that could affect the quality of the waters of the state, file a report of waste discharge (ROWD) to obtain coverage under WDRs or a waiver of WDRs. Waste, person, citizen, and domiciliary are defined in Water Code section 13050. For purposes of this Order, the eNOI is considered a ROWD.
- 122) Water Code section 13263(a) requires waste discharge requirements to implement any relevant water quality control plans that have been adopted and to take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241. Relevant plans and policies are discussed throughout. See Section G.1 of these Findings for a discussion of beneficial uses and water quality objectives.
- 123) Water Code section 13241 requires North Coast Water Boards to consider several factors, including “economic considerations” when establishing water quality objectives to ensure the reasonable protection of beneficial uses and prevent nuisance. Economic Considerations Findings are included below.
- 124) Pursuant to Water Code section 13263(g), no discharge of waste into the waters of the state, whether or not the discharge is made pursuant to WDRs, shall create a vested right to continue to discharge. All discharges of waste into waters of the state are privileges, not rights.
- 125) Pursuant to Water Code section 13263(i), the North Coast Water Board may prescribe general WDRs for a category of discharges if the discharges are produced by the same or similar operations, involve the same or similar types of waste, require the same or similar treatment standards, and are more appropriately regulated under general WDRs than individual WDRs. Discharges from Farming have certain common characteristics, such as similar land disturbing activities, use



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of nutrients and pesticides, agricultural practices, and agricultural road networks that require similar best management practices to control, minimize, and/or prevent discharges of waste. These types of discharges are more appropriately regulated under general WDRs.

- 126) This Order is consistent with Water Code section 13267 through the Monitoring and Reporting Program and through provisions of the Order that allow access via inspections. Water Code section 13267 states in relevant part:

*“(b)(1) In conducting an investigation..., the North Coast Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or, discharging, or who proposes to discharge waste within its region... shall furnish, under penalty of perjury, technical or monitoring reports which the North Coast Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the North Coast Water Board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports.*

*(b)(2) when requested by the person furnishing a report, the portions of a report that might disclose trade secrets or secret processes may not be made available for inspection by the public but shall be made available to governmental agencies... However, these portions of a report shall be available for use by the state or any state agency in judicial review or enforcement proceedings involving the person furnishing the report.*

*(c) In conducting an investigation..., the North Coast Water Board may inspect the facilities of any person to ascertain whether... waste discharge requirements are being complied with. The inspection shall be made with the consent of the owner or possessor of the facilities or, if consent is withheld, with a warrant issued pursuant to... Title 13 (commencing with §1822.50) of Part 3 of the Code of Civil Procedure.”*

- 127) Water Code section 13268 provides that any person who fails to furnish a technical or monitoring program or who falsifies any information provided in a technical or monitoring report, pursuant to Water Code section 13267, may be subject to administrative civil liability in an amount not to exceed \$1,000 per day of violation. If the matter is referred to the Attorney General for judicial enforcement, a higher liability of \$5,000 per day of violation may be imposed. Higher penalties may also be imposed for any person that knowingly commits any violation in section 13268 of the Water Code.

- 128) Water Code section 13350 provides that any person who discharges waste in violation of WDRs may be (1) subject to administrative civil liability imposed by the

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North Coast Water Board or State Water Board in an amount of up to \$5,000 per day of violation, or up to \$10 per gallon of waste discharged; or (2) subject to civil liability imposed by a court in an amount of up to \$15,000 per day of violation, or up to \$20 per gallon of waste discharged. The actual calculation and determination of administrative civil penalties must be consistent with the State Water Board Water Quality Enforcement Policy (Enforcement Policy) and the Porter-Cologne Act.

### **3. Nonpoint Source Policy**

129) The State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program adopted on May 20, 2004 (NPS Policy) requires regulation of nonpoint source pollution<sup>44</sup> in California through WDRs, waivers of WDRs, or discharge prohibitions (Water Code §13146; Gov. Code §11353).

130) The federal Clean Water Act (CWA) requires states to develop a program to protect the quality of water resources from the adverse effects of nonpoint source (NPS) water pollution. The NPS Policy is the State Water Board framework for addressing NPS pollution and requires each of the nine North Coast Water Boards to regulate NPS pollution, including agricultural discharges, via WDRs, Waivers of WDRs, or a prohibition. The NPS Policy states that North Coast Water Board implementation programs for NPS pollution control must include five key elements, as follows:

Key Element 1: An NPS control implementation program's ultimate purpose shall be explicitly stated. Implementation programs must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements.

Key Element 2: An NPS control implementation program shall include a description of the management practices and other program elements that are expected to be implemented to ensure attainment of the implementation program's stated purpose(s), the process to be used to select or develop management practices, and the process to be used to ensure and verify proper management practices implementation. The North Coast Water Board must be able to determine that there is a high likelihood that the program will attain water quality requirements. This will include consideration of the management practices to be used and the process for ensuring their proper implementation.

Key Element 3: Where the North Coast Water Board determines it is necessary to allow time to achieve water quality requirements the NPS control implementation program shall include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements.

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Key Element 4: An NPS control implementation program shall include sufficient feedback mechanisms so that the North Coast Water Board, Enrollees, and the public can determine whether the program is achieving its stated purpose(s) or whether additional or different management practices or other actions are required.

Key Element 5: Each North Coast Water Board shall make clear, in advance, the potential consequences for failure to achieve an NPS control implementation program's stated purpose.

131) This Order constitutes an NPS Implementation Program for discharges regulated by this Order. This Order is consistent with all key elements of the NPS Policy as described below:

- a) The ultimate purpose of this Order is explicitly stated in Section I: Background and Purpose. This Order includes requirements to meet applicable water quality objectives and beneficial uses, including any applicable State Water Board Resolution 68-16 (Antidegradation Policy) requirements. Further, discussion of this Order's implementation of antidegradation requirements is given below. This Order is consistent with Key Element 1.
- b) The North Coast Water Board is generally restricted by Water Code section 13360 from prescribing the particular manner of compliance with an order requirement. However, it may set forth receiving water limitations and performance standards and require Enrollees to report on what practices they have or will implement to meet those receiving water limitations and performance standards. Examples of the types of practices that Commercial Lily Bulb Operations may implement to meet program goals and objectives have been described and evaluated in the Environmental Impact Report. This Order requires each individual operation to develop a Farm Evaluation that will describe its management practices in place to protect surface water and groundwater quality. This Order also requires Enrollees to comply with an Adaptive Management Program in response to: (1) exceedances of a Water Quality Benchmark or Receiving Water Limitation, (2) where management practices are not properly implemented, or (3) as directed by the Executive Officer. The Adaptive Management Program includes iterative adaptive management for improved management practices to address Water Quality Benchmark or Receiving Water Limitation exceedances. The requirements of this Order are consistent with Key Element 2.
- c) The North Coast Water Board acknowledges that, given existing water quality conditions and the time needed to develop and implement actions to address discharges, it may be necessary to allow time to achieve Receiving Water Limitations in this Order. The Adaptive Management Program

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required by this Order includes a time schedule and specific quantifiable milestones for implementing required management practices and meeting Receiving Water Limitations as soon as practicable. The Adaptive Management time schedule requirements in this Order are consistent with Key Element 3.

- d) To provide feedback on whether program goals are being achieved, this Order requires surface and groundwater quality monitoring to evaluate the effectiveness of implemented management practices. This feedback will allow iterative implementation of practices to ensure that program goals are achieved. The North Coast Water Board finds the level of surface and groundwater quality monitoring required by this Order will result in sufficient data collection and reporting to allow for meaningful feedback on the effectiveness of management practices, while also avoiding unwarranted or excessive time and costs on Enrollees. The feedback mechanisms required by this Order are consistent with Key Element 4.
- e) This Order establishes the following consequences where requirements are not met: (1) Enrollees will be required, in an iterative process, to conduct additional monitoring and/or implement management practices where water quality objectives are not being met; (2) Enrollees will be required, where the Coalition fails to meet the requirements of this Order, to enroll in the Order individually, and (3) the North Coast Water Board will initiate progressive enforcement action through its Enforcement Policy where the iterative management practices process is unsuccessful, program requirements are not met, or time schedules are not met. Section II of this Order describes the consequences for failure to meet requirements through the North Coast Water Board's Enforcement Policy and is consistent with Key Element 5.

**4. Statement of Policy with Respect to Maintaining High Quality Waters in California (Antidegradation Policy)**

132) Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal antidegradation policy. In 1968, the State Water Board adopted the Statement of Policy with Respect to Maintaining High Quality of Waters in California, Resolution No. 68-16 (Antidegradation Policy).<sup>45</sup> The State Antidegradation Policy is deemed to incorporate the Federal Antidegradation Policy where the federal policy applies under federal law.<sup>46</sup> The State Antidegradation Policy establishes a state policy to regulate the granting of permits and licenses for the disposal of wastes into the waters of the state so as to achieve the highest water quality consistent with maximum benefit to the people of the State.<sup>47</sup> The federal and state policies generally require that the existing quality of water bodies be maintained, unless degradation is justified through specific findings.<sup>48</sup>

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133) The Antidegradation Policy, by its terms, applies only to high-quality waters of the state. High quality waters are those surface waters or areas of groundwater that have a baseline water quality better than required by water quality control plans and policies. The baseline water quality considered in making the appropriate findings is generally the best quality of the water since 1968, the year of the adoption of the Antidegradation Policy.<sup>49</sup> This determination is made on a waterbody-by-waterbody and constituent-by-constituent basis. In the context of diffuse discharges regulated by a general order, the State Water Board provided the following guidance on determining whether a discharge impacts high quality waters:

*“When assessing baseline water quality for a general order, we find a general review and analysis of readily available data is sufficient. . . . North Coast Water Boards should not delay the implementation of a regulatory program in order to conduct a comprehensive baseline assessment and analysis—especially where, as here, the general order imposes essentially the same iterative approach for management practices and other requirements regardless of whether or not the receiving water is high quality<sup>50</sup>.”*

134) If a discharge will degrade high quality water, the discharge is allowable if there is a finding that any change in water quality (1) will be consistent with maximum benefit to the people of the State, (2) will not unreasonably affect present and anticipated beneficial uses of such water, and (3) will not result in water quality less than that prescribed in state policies. Maximum benefit determinations should be made on a case-by-case basis, with consideration given to various factors, including economic and social costs, tangible and intangible, of the proposed discharge, as well as the environmental aspects of the proposed discharge, including benefits to be achieved by enhanced pollution controls, and implementation of feasible alternative treatment or control methods. Both costs to the discharger and affected public must be considered.<sup>51</sup>

135) Additionally, the Board must find that any activities that result in discharges to such high-quality waters are required to use the best practicable treatment or control of the discharge necessary to avoid pollution or nuisance and to maintain the highest water quality consistent with the maximum benefit to the people of the State. Best practicable treatment or control (BPTC) determinations should consider relative benefits of proposed treatment or control methods to proven technologies; performance data; alternative methods of treatment or control; methods used by similarly situated dischargers; and/or promulgated best available technology or other technology-based standards. The costs of the treatment or control should also be considered and would be considered in determining the “maximum benefit to the people of the State.”<sup>52</sup>

136) North Coast Water Board staff completed a general baseline water quality assessment for surface and groundwater in the Smith River Plain based on readily

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available data. The primary constituents of concern for groundwater include nitrates and pesticides. The primary constituents of concern for surface water include nutrients, pesticides (synthetic compounds and dissolved copper), and turbidity. Focusing on these constituents of concern, the North Coast Water Board evaluated water quality using all available data from multiple data sources maintained in the following management systems: CEDEN, GeoTracker, CDPR's SURF database, CDPR's well testing program, and GAMA<sup>53</sup>. Existing water quality in the Smith River Plain is outlined in the Findings above. This Order accounts for the fact that at least some surface water and groundwaters in the Smith River Plain are considered high-quality for one or more constituents of concern per the Antidegradation Policy.

- 137) Commercial lily bulb farming in the Smith River Plain involves soil disturbance and use of agricultural chemicals, both of which can generate discharges of waste. If not properly managed, these discharges can degrade water quality, cause or contribute to pollution and nuisance conditions, and adversely affect beneficial uses of waters of the state. The North Coast Water Board anticipates that the requirements of this Order will prevent degradation of high-quality waters over time. Since implementation of the 2021 Management Plan, in which all lily bulb growers agreed to voluntarily implement a suite of water quality management practices designed to reduce pesticide and nutrient runoff, erosion, and direct discharge of pollutants to surface waters, concentrations of synthetic pesticides and dissolved copper have decreased. Additional measures required under this Order, such as Receiving Water Limitations and the Adaptive Management Program, management practice requirements, prohibitions, and Streamside Area requirements, are anticipated to further reduce discharge pollutant loadings over time. The North Coast Water Board cannot find, however, that there will be no degradation of high-quality waters under the requirements of this Order. In particular, the North Coast Water Board anticipates degradation of some high-quality waters during the period of time that Dischargers are working to achieve compliance with receiving water limitations via the iterative implementation of management practices. As appropriate controls and management practices are implemented, the degradation is expected to be limited and, in many cases, decreasing. The Order authorizes degradation only up to the level of the objectives and requires implementation of controls such that discharges will not cause or contribute to exceedances of those objectives within a discrete time schedule. While the North Coast Water Board makes findings authorizing degradation of high-quality waters under this Order, it will, wherever feasible, require controls to prevent and reverse degradation by working with dischargers and third parties to ensure controls are implemented in an iterative manner as technology evolves and advances.
- 138) The North Coast Water Board finds that any limited degradation that may occur from discharges to high-quality surface and groundwater water bodies even following implementation of all applicable management practices designed to

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control discharges is to the maximum benefit of the people of the State. In setting the requirements of this Order, the Board has considered the social and economic significance of the commercial lily bulb industry in the Smith River Plain, including its contribution to agricultural production and associated economic activity in Del Norte County. For instance, the total gross production value of the commercial lily bulb industry is estimated to be \$7,069,000 according to the 2024 Del Norte County Crop Report. Additionally, the industry supports local employment in Del Norte County. At the same time, the Board recognizes that Tribal representatives and other community members have stated that the commercial lily bulb industry does not broadly support the local community and that the economic benefits are not shared equitably. Some of the benefits are externalized, relative to where the lily bulbs are grown and environmental and cultural impacts occur.

- 139) The North Coast Water Board also recognizes the social and environmental costs associated with the commercial lily bulb industry, including impacts on aquatic life, tribal uses, recreational uses, and local residents. The North Coast Water Board also acknowledges impacts to water quality from discharges separate from agricultural discharges from lily bulb agriculture, such as impacts from dairy operations. As discussed in the above Findings and EIR, the Smith River Plain provides habitat to numerous threatened and endangered aquatic species, such as coho salmon, eulachon, tidewater goby, and longfin smelt, and serves as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. Additionally, species utilizing the estuary habitat are of recreational and commercial importance. The above Findings discuss potential toxicity impacts to aquatic life from pesticide discharges and effects on reproductive health and sensory and behavioral response systems. Improperly controlled discharges may adversely impact the aquatic species themselves and connected tribal, fishing, and recreational interests. Additionally, the above Findings note the potential health concerns from pesticide or nitrates in drinking water, particularly on sensitive populations. Once pesticides or nitrate reach groundwater used for municipal and domestic supply, they are persistent and difficult to remove. Treating or replacing a contaminated drinking water source is technically challenging and costly, particularly for the small systems and private domestic wells that rely on the shallow aquifer in the Smith River Plain. As a result, preventing the discharge is substantially more practicable than remediating the source after contamination occurs. As stated above, any degradation (i.e., change in water quality from baseline conditions) from discharges regulated by this Order is expected to be limited following implementation of stringent Order provisions.
- 140) This Order minimizes these social and environmental costs by, among other provisions, requiring compliance with Receiving Water Limitations through the Adaptive Management framework and robust surface water monitoring to verify compliance. The water quality improvements expected to occur as a result of implementing the Lily Bulb Order are expected to create social and economic

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benefits for residents of the State, members of the Tolowa Dee-Ni' Nation, tourists, business, and the local community. Although these benefits are difficult to quantify, they include: (1) protection of municipal and domestic water supply, which are sensitive to nitrate contamination; (2) protection of the Smith River's cold freshwater habitat beneficial uses, which support recreational, commercial, and subsistence fishing of Chinook salmon, coho salmon, and steelhead; (3) reduction in copper, pesticide, and nutrient loading to ecologically sensitive receiving waters including Tillas Slough and Delilah Creek; and (4) support for the long-term recovery of threatened and endangered species including Southern Oregon/Northern California coho salmon, tidewater goby, and eulachon, which are culturally significant to the Tolowa Dee-ni' Nation.

- 141) This permitting approach is consistent with the maximum benefit to the people of the state. In reaching this determination, the North Coast Water Board considered alternative regulatory approaches, including immediate compliance with Receiving Water Limitations and the imposition of additional discharge prohibitions. Immediate compliance or a prohibition-based approach could result in the cessation of commercial lily bulb cultivation in the Smith River Plain, because there is no demonstrated management practice that would achieve immediate and complete attainment of Receiving Water Limitations particularly for copper, which persists in field soils from decades of prior application and mobilizes during storm events regardless of current application rates. The cessation of this agricultural activity would eliminate the economic and social benefits associated with the industry and would forgo the water quality improvements achievable through a structured, enforceable, and iterative regulatory program.

At the same time, the North Coast Water Board finds that a less stringent approach would not be consistent with maximum benefit given the documented condition of the receiving waters. The receiving waters of the Smith River Plain support cold freshwater habitat, spawning and rearing habitat for federally and state-listed salmonids, Native American Culture and subsistence uses, and municipal and domestic supply. Monitoring documented in the 2025 SWAMP Report and Updates Memo demonstrates persistent exceedances of Water Quality Benchmarks, including predicted copper toxicity in approximately 30 percent of samples and repeated synthetic pesticide exceedances at Lower Delilah Creek and Tillas Slough. The sensitivity of these beneficial uses and the documented history of exceedances justify the stringency of the controls imposed by this Order, including the Streamside Area requirements, Receiving Water Limitations based on the most protective available water quality values, mandatory monitoring, and an Adaptive Management Program that escalates management practice requirements when monitoring demonstrates that initial practices are not achieving water quality objectives.

The North Coast Water Board therefore finds that the level of control imposed by this Order represents the approach most consistent with the maximum benefit to



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the people of the state. This approach is expected to reduce pollutant loading from baseline conditions, particularly with respect to copper, while preserving the beneficial uses of the receiving waters and the economic and cultural values dependent upon them.

- 142) The Board finds this Order and the requirements herein to be, on balance, supportive of environmental and water quality benefits, local employment, and the community. For these reasons, any limited degradation that may occur as a result of Commercial Lily Bulb Operations, despite implementation of measures required by this Order, is consistent with the maximum benefit to the people of the state.
- 143) As detailed in above Findings, the Basin Plan assigns 20 beneficial uses to surface and ground water in the Smith River Plain. This Order protects beneficial uses by meeting water quality objectives, at a minimum, which is set as the floor of the Antidegradation Policy. Waste discharges must be reduced and water quality improved to achieve water quality objectives and protect beneficial uses. Waste discharges must not cause or contribute to exceedances of water quality objectives either immediately or through a specific time schedule.
- 144) The North Coast Water Board further finds that the permitted discharges will be controlled by BPTC. The North Coast Water Board cannot dictate the manner of compliance with water quality orders (Wat. Code, section 13360), and no single set of management practices is appropriate for every field. Rather, BPTC must be implemented through a combination of practices that sometimes may be site specific that will ensure that discharges meet water quality objectives and eliminate unreasonable degradation. This Order requires Farm Evaluations, Irrigation and Nitrogen Management Plans, management practice tracking, and surface and groundwater water quality monitoring and reporting that are designed to ensure that degradation is prevented or minimized and that management practices are protective of water quality. The Order relies on implementation of practices and treatment technologies that constitute BPTC/best efforts, based to the extent possible on existing data. Management measures and monitoring may be modified as data are assessed and reported and whenever site evaluations show that measures need to be improved to meet water quality standards.

## **5. Sources of Drinking Water Policy**

- 145) The Sources of Drinking Water Policy (Policy) (SWRCB Resolution No. 88-63) established the principle that all surface and ground waters within the State are considered suitable or potentially suitable for the municipal and domestic supply ("MUN") beneficial use with certain exceptions. Exceptions applicable to groundwater include: where there is contamination (unrelated to the pollution incident) that cannot reasonably be treated for domestic use; where groundwater contains total dissolved solids ("TDS") exceeding 3,000 milligrams per liter and is not reasonably expected to supply a public water system; and where there is

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insufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

- 146) The Policy acknowledges North Coast Water Boards have discretion to separately evaluate whether bodies of water are presently or potentially suitable for MUN designation. North Coast Water Boards shall also assure that the beneficial uses of municipal and domestic supply are designated for protection wherever those uses are presently being attained, and assure that any changes in beneficial use designations for waters of the State are consistent with all applicable regulations adopted by the Environmental Protection Agency

## **6. Human Right to Water**

- 147) On February 16, 2016, and April 23, 2019, the State Water Board and the North Coast Water Board adopted resolutions (Resolution No. 2016-0010 and R1-2019-0024, respectively) identifying the human right to water as a top priority and core value of the State Water Board and Regional Water Quality Control Boards (collectively the Water Boards) in association with Water Code section 106.3. The resolutions stated the Water Boards will work “to preserve, enhance, and restore the quality of California’s water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations.” This Order promotes that policy by requiring the Enrollees to meet water quality objectives, as applicable, designed to protect human health and ensure that water is safe for domestic uses.

## **7. Statewide Precedential Order**

- 148) The State Water Board Irrigated Lands Regulatory Program sets forth precedential requirements for all Regional Irrigated Lands in DWQ 2018-0002 In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Enrollees Within the Eastern San Joaquin River Watershed (Statewide Precedential Order).
- 149) Lily bulb cultivation is irrigated agriculture; therefore, Enrollees regulated under this Order are part of the State and North Coast Water Board Irrigated Lands Regulatory Program and subject to the Statewide Precedential Order requirements that the State Water Board designated as precedential. This Order maintains consistency with the Statewide Precedential Order requirements by including conditions related to Enrollee education events, Farm Evaluations, sediment and erosion control requirements, irrigation and nitrogen management, record keeping, groundwater quality monitoring for Enrollees, and the option for grower coalition(s). Additionally, this Order requires monitoring and reporting to verify and provide feedback on the degree and effectiveness of implementation of these precedential requirements.

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150) Specifically, this Order implements Statewide Precedential Order requirements through requiring: (1) irrigation and nutrient management; (2) Drinking Water Supply Well monitoring; (3) Groundwater Trend Monitoring; (4) compliance education; and (5) Groundwater Protection Plans that include Groundwater Protection Targets as described in Section II.H of this Order.

Groundwater Protection

151) The North Coast Water Board adopted the Groundwater Basin Evaluation and Prioritization Resolution No. R1-2021-0006<sup>5</sup> which identifies priority groundwater basins having a relatively high threat from salts and nutrients and that would benefit from salt and nutrient management planning. The North Coast Water Board is required to update these priority basins every five years per the State Water Board Resolution No. 2009-0011, Recycled Water Policy. The Smith River Plain is categorized as a Priority 2 groundwater basin under the Groundwater Basin Evaluation and Prioritization Resolution.

152) In 2000, in response to Executive Order D-5-99, State Water Board staff created a map where published hydrogeologic information indicates soil or rock conditions that may be more vulnerable (or susceptible) to groundwater contamination: “Hydrogeologically Vulnerable Areas<sup>54</sup>.” The map was created using Department of Water Resources (DWR) and US Geological Survey (USGS) data to identify areas where geologic conditions are more likely to allow recharge at rates substantially higher than in lower permeability or confined areas of the same groundwater basin. The Smith River Valley Groundwater Basin was included in this 2000 map.

153) The Statewide Precedential Order allows for risk-based designations, such as high and low vulnerability groundwater areas, to inform differentiation and prioritization of requirements, as opposed to uniform requirements. The Statewide Precedential Order requires certain groundwater protection provisions for areas that the North Coast Water Board designates as “high vulnerability” areas or a similar risk-based designation. These provisions include the determination of statistical outliers based on nitrogen applied and removed reporting to drive adaptive management and the certification of Irrigation and Nutrient Management Plans. Similarly, the Statewide Precedential Order requires application of a methodology designed to determine targets for nitrogen loading within high priority areas, defined as “those areas where the Executive Officer determines that irrigated agriculture may be causing or contributing to exceedances of water quality objectives or a trend of degradation of groundwater that may threaten applicable basin plan beneficial uses.” The Statewide Precedential Order, recognizing that implementation approaches may need to be adapted to the specific conditions and scale of a given regulatory program, allows regional water quality control boards “with considerable discretion to design reasonable frameworks for differentiation and prioritization,” as well as discretion in defining geographic areas and determining appropriate methodologies.

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- 154) The Statewide Precedential Order amended a Central Valley Irrigated Lands Program, which covers 3,000 agricultural operations utilizing approximately 540,000 acres of irrigated lands supporting a wide diversity of crops. In contrast, lily bulb agriculture in the Smith River Plain currently encompasses a single crop, three growers, on fewer than 1,000 acres in rotation (with 160 acres planted in any one year). The groundwater protection framework of the Statewide Precedential Order relies on aggregated statistics requiring a critical mass of growers and are specifically designed to consider a diversity of crops. A/R ratio outlier methodology, township-scale Groundwater Protection Formulas/Values/Targets, and adaptive management (e.g., INMP certification) that is driven by outlier identification cannot be feasibly applied to 160 farmed acres per year and three growers. Instead, this Order sets a framework that tailors direction in the Statewide Precedential Order to a more granular scale while still achieving the State Board's water quality protection intentions. Specifically, the certification of INMPs and the development of Groundwater Protection Plans and Groundwater Protection Targets are based on groundwater monitoring data on the individual scale demonstrating high risk (i.e., those areas that irrigated agriculture may be causing or contributing to exceedances of water quality objectives or a trend of degradation of groundwater that may threaten applicable basin plan beneficial uses) rather than reported A/R data and associated statistical methodologies used to establish groundwater protection targets at a broader landscape-scale.
- 155) The Statewide Precedential Order further grants regional water boards the discretion "to determine that some or all growers...will have alternative requirements" with respect to reporting nitrogen removed. The Statewide Precedential Order establishes three conditions that must be met for this determination: growers must (1) operate in areas with evidence of no or very limited nitrogen impacts to surface water or groundwater; (2) have minimal nitrogen inputs; and (3) have difficulty measuring yield. Growers meeting these conditions may be required to report only Nitrogen Applied rather than Nitrogen Removed:
- a) Regarding the first condition (evidence of no or very limited nitrogen impacts), the limited groundwater sampling data from the 2015 Smith River Plain Groundwater Interim Monitoring Report does not establish that lily bulb agriculture is a confirmed contributor to nitrate exceedances. The three samples exceeding the 10mg/L nitrate MCL have not been attributed specifically to lily bulb operations, and the Smith River Plain supports multiple land uses and potential nitrogen sources. In April 2025, North Coast Water Board staff sampled nine (9) private domestic wells within the current and historic lily bulb cultivation area in the Smith River Plain using a domestic well sampling program offered through the California Department of Pesticide Regulation. None of the sampled wells exceeded the 10 mg/L nitrate MCL and ranged from 1.8 mg/L – 5.9 mg/L. The available evidence

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does not demonstrate that lily bulb cultivation is causing or contributing to widespread or confirmed nitrogen impacts to groundwater.

- b) Regarding the second condition (minimal nitrogen inputs), lily bulb cultivation involves a single crop on a 3-5 year rotation with irrigated pasture. Any given lily bulb field will receive between 150-200 lb./acre of nitrogen every 3-5 years with irrigated pasture in the intervening years. Given this 160-acre annual cultivated footprint within the 1000 acres in rotation, the annualized nitrogen application across the entire lily bulb cultivation area is closer to 30-40 lbs/acre. The nitrogen inputs associated with lily bulb agriculture on approximately 160 planted acres are minimal in both absolute terms and in comparison to the scale of operations contemplated by the Statewide Precedential Order.
- c) Regarding the third condition (difficulty measuring yield), lily bulb crops present inherent challenges in accurately measuring yield for calculating nitrogen removed due to the nature of bulb harvesting and the variability of bulb sizes. Bulbs are planted each year, but only some get harvested each year. Bulbs will typically get replanted until they are sized appropriately for commercial sale.

The North Coast Water Board finds that lily bulb agriculture in the Smith River Plain meets all three conditions for alternative requirements under the Statewide Precedential Order. Accordingly, this Order requires an alternate framework to reporting Nitrogen removed.

Other Precedential Requirements

- 160) The Statewide Precedential Order states “the requirement for implementation of sediment and erosion control practices by growers with the potential to cause erosion and discharge sediment that may degrade surface waters shall be precedential for irrigated lands regulatory programs statewide; however, the regional water boards shall continue to have discretion as to how these practices are documented and reported.” This Order is consistent with this precedential requirement by requiring all Enrollees to implement sediment and erosion control management practices on Farm Areas and Appurtenant Agricultural Roads. These practices are reported annually as part of the Annual Compliance Report.
- 161) Consistent with the Statewide Precedential Order’s continued support for third-party (Coalition) approaches to regulating agricultural discharges, this Order authorizes a Coalition to serve as the third-party intermediary between the North Coast Water Board and the Enrollees, performing the core functions the Statewide Precedential Order recognizes as appropriate to that role, including fee collection and remittance, grower outreach, data management, and entry of surface water quality data into CEDEN and groundwater quality data into GeoTracker. Consistent

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with the precedential direction that growers retain the option not to participate in a third party, this Order allows growers to enroll individually and assume the corresponding monitoring and reporting obligations directly. The Order also preserves the data-transparency commitments the Statewide Precedential Order made precedential: management practice and monitoring data, sufficient to verify the program's progress, are reported to the North Coast Water Board; and the North Coast Water Board retains the authority to require the identity or location of individual Enrollees where it determines that information is necessary. The Order tailors the scale of the Coalition's required qualifications and the Coalition selection process to a program involving a single crop and a small number of growers. This scaling of requirements is consistent with the Statewide Precedential Order's recognition that aspects of that order, which are precedential only for full third-party programs serving large regional coalitions, do not apply to programs structured around a more limited set of third-party functions, and with the discretion the Statewide Precedential Order leaves to regional water boards to design reasonable, appropriately scaled frameworks.

**8. California Environmental Quality Act**

162) For the purpose of adoption of this Order, the North Coast Water Board is the lead agency pursuant to the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 et seq.).

163) On October 10, 2024, the North Coast Water Board sent a Notice of Preparation (NOP), which included an Initial Study, to public agencies and persons with potential interest in the project. Copies of the NOP and Initial Study were available for review at the North Coast Water Board Santa Rosa office. Additionally, the NOP and attached Initial Study were posted at the North Coast Water Board's webpage (<http://www.waterboards.ca.gov/northcoast/>) and an announcement of its availability was sent to individuals that subscribed to electronic mailing lists relevant to the proposed Lily Bulb Order. The NOP and the attached Initial Study are available online at: <https://ceqanet.lci.ca.gov/2024100484>

164) On October 22, 2024, the North Coast Water Board held a hybrid scoping meeting to solicit input from agencies and interested parties on issues to be addressed in the EIR. The scoping meeting included a description of the meeting purpose, proposed requirements, presented an overview of the environmental review process and preparation of the EIR, and included a public comment period.

165) During the public comment period for the Initial Study the North Coast Water Board received written and oral comments from Northcoast Environmental Center, California Farm Bureau, California Department of Fish and Wildlife, California Coastal Commission, Save California Salmon, Lily Bulb Growers (Rob Miller, Matthew Westbrook, Don Crockett), Sharon Tanner and Brian McNaughton, Native American Heritage Commission, Phoebe Lenhart, Richard Blair, Alicia Williams, Gil

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Vargas, Carl Page, John Roberts, Janelle Kobalt, Josefina Barrantes (Environmental Protection Information Center), Regina Chichizola (Save California Salmon), Andrew Orahoske, Katie Rian (California Department of Fish and Wildlife), and Candice Vargas.

- 166) Prior to the adoption of this Order, and after considering public comment, the North Coast Water Board certified a Final Environmental Impact Report (EIR) that identifies the potential environmental impacts associated with this Order and identifies mitigation measures to reduce the potential environmental impacts.
- 167) This Order relies on the environmental impact analysis contained in the Final EIR to satisfy the requirements of CEQA. The Final EIR identified, disclosed, and analyzed the potential environmental impacts of the Order. The potential compliance activities undertaken by the regulated Enrollees in response to this Order fall within the range of compliance activities identified and analyzed in the Final EIR. Therefore, all potentially adverse environmental impacts of this Order have been identified, disclosed, and analyzed in the Final EIR. If it is determined that an Enrollee filing for coverage under this Order could create impacts not identified in the Final EIR, individual WDRs would be prepared for that Enrollee and additional CEQA analysis performed, which would likely tier off the Final EIR as necessary. (See Cal. Code Regs., tit.14 §15152).
- 168) The Final EIR evaluated the potential environmental impacts of the Order, including the implementation of reasonably foreseeable Management Practices that Enrollees could undertake to comply with the Order, together with a reasonable range of alternatives to the Project requirements that present a significant impact to Agriculture and Forestry Resources. The North Coast Water Board is the lead agency for the Project under CEQA. The Final EIR consists of the Draft EIR, revisions to the Draft EIR, the comments received on the Draft EIR during the public review period, and the North Coast Water Board's written responses to those comments. (Cal. Code Regs., tit. 14, § 15132.)
- 169) The Final EIR determined that implementation of the Order would result in either no impact, a less-than-significant impact, or a less-than-significant impact with mitigation incorporated, to all environmental resource areas analyzed except Agriculture and Forestry Resources. For impacts to Biological Resources, Cultural Resources, and Tribal Cultural Resources, the Final EIR identified mitigation measures, including construction timing restrictions, avoidance of sensitive habitats and historical resources, design standards for runoff control features, invasive species management, and coordination with resource agencies, that reduce the potential impacts of constructing and installing Management Practices to less than significant. These mitigation measures are set forth in Attachment E: CEQA Mitigation Measures and are incorporated as requirements of this Order.

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- 170) The Final EIR determined that implementation of the Streamside Area requirements of the Order would result in a significant and unavoidable impact to Agriculture and Forestry Resources through the potential conversion of Prime Farmland to non-agricultural use and the potential conflict with existing Del Norte County zoning for agricultural use. This impact results because the Streamside Area requirements, consisting of a Riparian Vegetation Area in which native riparian vegetation is allowed to establish through natural succession and a Vegetated Buffer, may remove land within the setback footprint from lily bulb cultivation. The Final EIR estimated that approximately 28 acres of the Baseline Cultivation Area and approximately 132 acres of the broader Potential Cultivation Area (Prime Farmland) within the Project Area could be converted to non-agricultural use as a result of the Streamside Area requirements.
- 171) The Final EIR evaluated a reasonable range of alternatives to the Project requirement that results in the significant impact to Agriculture and Forestry Resources, including the No Project Alternative and the Reduced Streamside Area Setback Alternative. The No Project Alternative would avoid the agricultural conversion impact but would not meet the Project objectives of protecting and restoring beneficial uses and achieving water quality objectives. The Reduced Streamside Area Setback Alternative would lessen but not eliminate the impact to Agriculture and Forestry Resources, and would not achieve the same level of sediment and temperature protection as the Project and, therefore, would not fully comply with the Riparian Management provisions of the North Coast Water Board's Temperature Policy. The Final EIR determined that no alternative would both avoid the significant and unavoidable impact to Agriculture and Forestry Resources and fully achieve the basic objectives of the Project.
- 172) The Project was modified to lessen the significant and unavoidable impact to Agriculture and Forestry Resources by including a Riparian Vegetation Area Restoration Alternative. Under this alternative, an Enrollee may avoid converting the full Streamside Area to non-agricultural use by mitigating only the incremental difference between existing riparian conditions and the Riparian Vegetation Area required under the Order through the restoration and long-term protection of riparian vegetation at an alternative location within the same HUC-12 watershed. While this measure reduces the impact, it does not reduce the impact to a less-than-significant level, and no feasible mitigation is available that would both reduce the impact to less than significant and achieve the Project's water quality objectives.
- 173) Because implementation of the Order would result in a significant and unavoidable impact to Agriculture and Forestry Resources for which no feasible mitigation or alternative is available that would also achieve the basic objectives of the Project, the North Coast Water Board has adopted a Statement of Overriding Considerations pursuant to California Code of Regulations, title 14, sections 15092 and 15093, set forth in Resolution No. R1-2026-0036. The North Coast Water



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Board has determined that the benefits of the Project, including the protection and restoration of water quality and beneficial uses of the Smith River Plain, the protection of cold freshwater and estuarine habitat for threatened and endangered species, and the protection of the tribal cultural, ceremonial, and subsistence uses, outweigh the significant and unavoidable impact to Agriculture and Forestry Resources.

- 174) The North Coast Water Board has independently reviewed and considered the information contained in the Final EIR and the entire administrative record. The Final EIR reflects the independent judgment and analysis of the North Coast Water Board. The North Coast Water Board certified the Final EIR as adequate and complete under CEQA, as set forth in Resolution No. R1-2026-0036. (Cal. Code Regs., tit. 14, § 15090.) The findings therein are incorporated into, and constitute, Findings for this Order.

#### **H. Cost Considerations**

- 175) Water Code section 13241 requires the North Coast Water Board to consider certain factors, including economic considerations, in the adoption of water quality objectives. Water Code section 13263 requires the North Coast Water Board to take into consideration the provisions of Water Code section 13241 in adopting waste discharge requirements. The following Findings discuss the anticipated cost of compliance with the Order<sup>55</sup>. Several assumptions were required to be made for these analyses and there are several inherent limitations and uncertainties, discussed below.
- 176) When establishing monitoring and reporting requirements under Water Code section 13267, the North Coast Water Board must ensure that the burden, including costs, of the reports bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. Many of the costs considered below are costs associated with the monitoring and reporting requirements of this Order. Enrollees can reduce their costs by joining a Third-Party Program for water quality monitoring and reporting in lieu of individual monitoring and reporting.
- 177) The monitoring and reporting requirements of this Order allows the North Coast Water Board to identify agricultural waste discharges with a higher risk of degrading water quality so that those discharges may be promptly minimized or prevented. Monitoring and reporting of nitrogen application and groundwater quality, protect human health by informing the North Coast Water Board of discharges that may affect the quality of water designated as municipal and domestic supply and by allowing assessment of the extent to which the water quality objectives are being met.

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178) The North Coast Water Board needs these reports to document and ensure compliance with this Order. The North Coast Water Board finds that the burden of the requirements of the Order bears a reasonable relationship to the benefits of the requirements.

**1. Cost of Compliance with the Order**

179) The cost of compliance with the Order under existing conditions includes the costs associated with water quality fees, monitoring and reporting, and any management practices that may need to be implemented pursuant to the Order requirements. These costs are described further below.

**Water Quality Fees**

180) The State Water Board sets a Water Quality Fee Schedule, which includes agricultural and Irrigated Lands Regulatory Programs throughout the state, as specified in California Code of Regulations, title 23, section 2200.6. All enrolled Commercial Lily Bulb Operations must pay the State Water Board fees on an annual basis. Although the State Water Board fees may change from year to year, the fee categories/schedule for the 2025/2026 fiscal year are shown below.

- a) If an Enrollee is a member of a group that has been approved by the North Coast Water Board or North Coast Water Board's Executive Officer to manage fee collection and payment, then the annual fee shall be \$1.50 per acre for all enrolled parcels.
- b) If an Enrollee is not a member of a group that has been approved by the North Coast Water Board or North Coast Water Board's Executive Officer to manage fee collection and payment, then the annual fee shall be: \$37.40 per acre up to 300 acres plus \$18.71 per acre over 300 acres with a minimum fee of \$710.

181) In regions that have implemented Irrigated Lands Orders with Third-Party Programs or Grower Coalitions, most Enrollees have elected to enroll through those entities. Coalitions in Irrigated Lands Regulatory Programs manage fee collection, conduct representative surface and groundwater monitoring, provide compliance education, and assist Enrollees with general Order requirements. The North Coast Water Board anticipates that most Enrollees under this Order will also elect to enroll through a Coalition.

**Compliance with Order Requirements**

182) All Enrollees must comply with requirements to implement and adapt management practices related to sediment and erosion control; irrigation, pesticide, and nutrient management; and Streamside Area setbacks. This Order provides Enrollees

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flexibility in selecting management practices and requires Enrollees to monitor and report discharges and implement management practices to minimize or prevent discharges of waste.

- 183) Enrollees may be required to implement improved or additional management practices, as necessary, and report on the water quality-related outcomes of their management practice implementation. Enrollees must, ultimately, implement management practices that result in compliance with the Order.
- 184) Management practices associated with irrigation, nutrient and pesticide use, and sediment and erosion control are already being implemented by lily bulb growers in the Smith River Plain. This may be due to requirements imposed by other regulatory agencies (e.g., pesticide tracking and reporting by the Department of Pesticide Regulation and Agricultural Commissioners) and through voluntary actions supported by the 2021 Management Plan.
- 185) Implementation of management practices may also have direct net cost benefits to a Commercial Lily Bulb Operation (e.g., irrigation and nutrient management can result in less fertilizer costs and reduced water/pumping costs for irrigation; sediment and erosion management minimize or prevent erosion of valuable topsoil).
- 186) The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has developed standard agricultural management practices to address irrigation and nutrient management, pesticide management, and sediment and erosion control management, some of the more common of which are discussed below. Implementation of many of these practices would result in compliance with multiple requirements of the Order. Table I.5 provides estimated costs of management practices/scenarios Enrollees may implement to meet the requirements in the Order, as reported by USDA, NRCS.
- a) Grassed Waterway– involves installing a shaped or graded channel with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. Runoff is conveyed from terraces, diversions, or other water concentrations without causing erosion or flooding. Water quality is protected and/or improved. Costs range between \$2,000 and \$3,000 per acre.
  - b) Contour Farming – this practice is installed on the entire field. A survey is completed by trained and certified Federal, State, local personnel or consultant to determine and "stake" contour row arrangement. Permanent row markers are established to ensure that this practice is maintained for the life of this practice. All field operations including disking, bedding, planting, and cultivation are performed on the contour which is near perpendicular to the field slope. Costs range between \$15 to \$20 per acre.

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- c) Filter Strip – involves establishing a strip or area of herbaceous vegetation that removes contaminants from overland flow. Filter strips can be established anywhere environmentally sensitive areas need to be protected from sediment, or other suspended solids, and dissolved contaminants in runoff. Costs range between \$200 to \$300 per acre.
- d) Integrated Pest Management (IPM) program – involves implementing a site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies. An IPM approach seeks to prevent or mitigate offsite pesticide risks to water quality from leaching, solution runoff and adsorbed runoff losses; and prevent or mitigate on-site pesticide risks to pollinators and other beneficial species through direct contact; among other goals. Costs range between \$50 and \$100 per acre.
- e) Nutrient Management – involves managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments. The practice is implemented to minimize agricultural nonpoint source pollution of surface waters and groundwater, among other reasons. Costs associated with this practice include soil testing, analysis, and implementation of the nutrient management plan and recordkeeping. Costs range between \$10 and \$320 per acre.
- f) Riparian Vegetation Buffer – involves establishment of an area of predominantly trees and/or shrubs located adjacent to and up-gradient from waterbodies. The practice may be implemented to reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow groundwater flow; reduce pesticide drift entering the waterbody; restore riparian plant communities; create shade to lower or maintain water temperatures to improve habitat for aquatic organisms; or to provide other benefits. Costs vary based on whether riparian buffer vegetation is established through seeding, cuttings, bare-root plantings, or small or large containers. For scenarios where land is taken out of production to establish the riparian vegetation buffer, foregone income is considered. Costs range between \$3,000 to \$5,500 per acre.
- g) Retention/Detention Basin – involves constructing a basin with an engineered outlet, formed by excavating a dugout, constructing an embankment, or a combination of both. The purpose of the retention/detention basin is to capture and detain pollutant-laden runoff, or other debris for a sufficient length of time to allow it to settle out in the basin. Costs are estimated between \$6,000 to \$13,000 per basin.
- h) Vegetated Treatment Area – involves permanent herbaceous vegetative area or channel installed down slope from a Planted Area. Stormwater

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runoff is directed into the VTA to capture dissolved pollutants. This practice addresses water quality degradation due to uncontrolled pesticide runoff that can flow into surface waters or leach into ground water. Costs are estimated between \$10,000 and \$12,000 per acre.

187) These potential costs were considered when the water quality protection requirements were developed for the Order.

**Table I.5: Estimated Costs<sup>56</sup> of Management Practices/Scenarios for Water Quality Protection**

| Management Practice                            | Typical Scenario Size | Unit Cost              | Total Cost (low) | Total Cost (High) |
|------------------------------------------------|-----------------------|------------------------|------------------|-------------------|
| Grassed Waterway (412)                         | 1 acre                | \$2000-\$3000/acre     | \$2,000          | \$3,000           |
| Contour Farming (330)                          | 10 acres              | \$15-\$20/acre         | \$150            | \$200             |
| Filter Strip (393)                             | 1 acre                | \$200-\$300/acre       | \$200            | \$300             |
| Integrated Pest Management (IPM) program (595) | 40 acres              | \$50-\$100/acre        | \$2,000          | \$4,000           |
| Nutrient Management (590)                      | 40 acres              | \$10-\$320/acre        | \$400            | \$12,800          |
| Riparian Vegetation Buffer (391)               | 1.5 acres             | \$3,000-5,000/acre     | \$4,500          | \$7,500           |
| Retention Basin (638)                          | Basin                 | Each                   | \$6,000          | \$13,000          |
| Vegetated Treatment Area (635)                 | 1 acre                | \$10,000-\$15,000/acre | \$10,000         | \$15,000          |

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Monitoring and Reporting

188) All Enrollees are required to conduct surface water and groundwater monitoring and reporting either individually or as part of a Coalition effort. All Enrollees are required to report management practice implementation annually in their Farm Evaluation. Refer to Attachment A for monitoring and reporting requirements and Tables I.6-I.8 for estimated costs.

**Table I.6: Estimated Cost of Surface Water Monitoring Requirements**

| Parameter                     | Cost per Sampling Event (Analytical + Materials and Labor) | Events per Year | Annual Cost per Station |
|-------------------------------|------------------------------------------------------------|-----------------|-------------------------|
| Dissolved Copper              | \$100                                                      | 3               | \$300                   |
| BLM Field Parameters          | \$50                                                       | 3               | \$150                   |
| BLM Lab Parameters (optional) | \$200                                                      | 3               | \$600                   |
| Imidacloprid                  | \$300                                                      | 2-3*            | \$600-\$900             |
| Diuron                        | \$300                                                      | 2               | \$600                   |
| Ethoprop                      | \$300                                                      | 1               | \$300                   |

*\*Imidacloprid is sampled three times per year if fields tributary to the monitoring station are in adaptive management for imidacloprid.*

Table I.6 estimates the total annual cost of surface water monitoring requirements (per monitoring site) given a sampling frequency specified in Attachment A: MRP. Collecting BLM lab parameters are **optional**; Enrollees, or the Coalition, may instead use tributary-specific default values for BLM Analysis given in Table A.6 in Attachment A: Monitoring and Reporting Program. Assuming five monitoring stations, the estimated total cost for surface water monitoring is **\$9,750 per year**. If the default BLM lab parameters are not used, and instead BLM lab parameters are collected, the total cost is estimated to be **\$10,200 per year** across all Enrollees.

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**Table I.7: Estimated Cost of Groundwater Monitoring Requirements**

| Parameter                                                     | Annual Cost per Sampling Event (Analytical + Materials and Labor) for Groundwater Trend or Drinking Water Supply Well |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Nitrate                                                       | \$110                                                                                                                 |
| Pesticides (diuron, imidacloprid, mefenoxam, and napropamide) | \$300 per pesticide                                                                                                   |

Table I.7 estimates the cost of Groundwater Monitoring Requirements on a per well basis. Each Enrollee selects one representative well for Groundwater Trend Monitoring and all Drinking Water Supply wells that are on an enrolled parcel. Nitrate must be monitored annually at each well for three years, after which, frequency may be reduced to once every three years. Enrollees must also analyze for pesticides that have been applied on enrolled parcels in the last five years. Assuming that all three Groundwater Trend Monitoring Wells and at least two additional Drinking Water Supply Wells will need to monitor for at least two pesticides, the estimated total cost of Groundwater Monitoring Requirements is **\$3,550 per year** across all Enrollees.

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Technical Reports and Planning Documents

189) As part of Order compliance, Individual Enrollees and Coalitions on behalf of their enrolled members are required to submit an Annual Compliance Report which includes annual management practice reporting and annual water quality monitoring results. For Fields in the Adaptive Management Program, the Order requires additional planning documents such as Certified Water Quality Management Plans and Groundwater Protection Plans. The estimated costs of Reporting and Planning documents are included in Table I.8:

**Table I.8: Estimated Annualized Technical Reports and Planning Document Costs Over Five Years**

| <b>Task</b>                                            | <b>Cost Estimate</b>                   | <b>Requirements</b>                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annual Compliance Report                               | \$12,500 per year                      | Includes annual management practice reporting and annual water quality monitoring results.                                                                                                                                                                                                                                                                              |
| Water Quality Management Plan (WQMP) for Surface Water | \$10,000-\$20,000 per plan             | Enrollee or Coalition must submit a WQMP as part of Adaptive Management requirements that quantifiably demonstrate that practices implemented will meet Receiving Water Limitations of Order. Note: cost estimate includes WQMP development only. See Table I.5 for estimates of implementing management practices for water quality protection.                        |
| Groundwater Protection Plan                            | \$10,000-\$20,000 per plan             | Enrollee or Coalition must submit a Groundwater Protection Plan as part of Adaptive Management requirements that quantifiably demonstrate that practices implemented will meet Receiving Water Limitations of Order. Note: cost estimate includes WQMP development only. See Table I.5 for estimates of implementing management practices for water quality protection. |
| Hydrogeological Evaluation of Groundwater Impacts      | \$10,000-\$20,000 per technical report | Enrollee or Coalition must submit a determination of parcels that may be causing or contributing to exceedance of Receiving Water Limitations in groundwater monitoring well.                                                                                                                                                                                           |



### **I. Enforcement for Noncompliance**

- 190) It is the policy of the State Water Board that every violation results in the appropriate enforcement response consistent with the priority of the violation established in accordance with the State Water Board Water Quality Enforcement Policy. This Policy acknowledges that enforcement prioritization enhances the Water Boards' ability to leverage their scarce enforcement resources and to achieve the general deterrence needed to encourage the regulated community to anticipate, identify, and correct violations. To that end, the Water Boards rank violations, then prioritize cases for discretionary enforcement action to ensure the most efficient and effective use of available resources.
- 191) The first step in enforcement prioritization is to determine the relative significance of each violation or series of violations at a particular facility. Significance should be determined by analyzing the severity of impacts to beneficial uses, the level of disregard for regulatory program requirements, and deviation from applicable water quality control plan standards or permit or order conditions. Class A priority violations are those violations that potentially pose an immediate and substantial threat to beneficial uses and/or that have the potential to cause significant detrimental impacts individually or cumulatively to human health or the environment.
- 192) The second step in enforcement prioritization involves establishing case priorities for discretionary enforcement actions against specific individual entities, and determining the appropriate remedial tool. Discharges identified as Class A will be further analyzed for the extent of impact to beneficial uses when regional water boards prioritize cases and determine whether and how to proceed with enforcement.

The State Water Board Water Quality Enforcement Policy re-affirms the principle of progressive enforcement. Progressive enforcement is an escalating series of actions that allows for the efficient and effective use of enforcement resources to: (1) assist cooperative Enrollees in achieving compliance; (2) compel compliance for repeat violations and recalcitrant violators; and (3) provide a disincentive for noncompliance. Progressive enforcement may begin with notification of violations and compliance assistance, followed by enforcement orders compelling compliance, culminating in a complaint for civil liabilities. Progressive enforcement is not appropriate in all circumstances and is not considered a requirement when swift or immediate enforcement is needed or justified to address a particular violation.

- 193) Any instance of noncompliance with this Order constitutes a violation of the Water Code. Such noncompliance is grounds for enforcement action, and/or termination of coverage for waste discharges under this Order, subjecting the Enrollee to enforcement under the Water Code for further discharges of waste to surface or

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groundwater. Possible violations of Water Code section 13260 include failure to obtain required regulatory coverage. Possible violations of this Order include but are not limited to: failure to implement Order requirements; failure to implement adaptive management; failure to comply with receiving water limitations within the discrete time schedule; falsifying information or intentionally withholding information required by applicable laws, regulations, or an enforcement order; failure to monitor or provide complete and accurate information as required; failure to pay annual water quality fees; or failure to submit required reports on time.

**J. General Findings**

- 194) Failure to prevent conditions that create or threaten to create pollution or nuisance will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.
- 195) Water Code section 13260 subdivision (d) requires persons subject to waste discharge requirements to pay any annual fee established by the State Water Board.
- 196) The Executive Officer may make non-substantive changes to this Order to correct typographical errors or to maintain consistency within this Order or between the Order and its Attachments, e.g., to conform changes made during this Order development process that were inadvertently not carried through this entire Order. The Board will provide public notice of the non-substantive changes.
- 197) The Findings of this Order and the administrative record of the North Coast Water Board relevant to the General Waste Discharge Requirements for Lily Bulb Cultivation, were considered in establishing these waste discharge requirements.

## **II. Requirements**

IT IS HERBY ORDERED that pursuant to Water Code sections 13260, 13263, and 13267, the Enrollee, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

Enrollees shall comply with all prohibitions, specifications, provisions, and other requirements described below unless otherwise noted.

### **A. Coverage Requirements**

#### **Requirements for Coverage**

- 1) These General WDRs apply to discharges or potential discharges of waste from Commercial Lily Bulb Operations in the Smith River Plain (defined as the Smith River Hydrologic Subarea and the coastal terraces between Pyramid Point and the Oregon border) as described in Section I: Findings. Owners and/or operators of Commercial Lily Bulb Operations in the Smith River Plain are required to seek coverage under this Order.
- 2) An Enrollee may obtain coverage under this Order either individually or by enrolling in an approved Coalition. By joining a Coalition, the Enrollee agrees to be represented by the Coalition. Any Order requirements not fulfilled by the Coalition are the responsibility of the Enrollee. Consistent with the Water Board's Policy for Implementation and Enforcement of the NPS Policy, Enrollees are ultimately responsible for Order compliance, independent of the status of compliance measures being taken by Coalitions.

#### **Obtaining Coverage and Electronic Notice of Intent**

- 3) Owners or Operators meeting the Coverage Requirements above are required to submit an electronic Notice of Intent (eNOI) (see Attachment F: Forms and Templates) pursuant to Water Code section 13260 to enroll in this Order. Submittal of all other technical reports pursuant to this Order is required pursuant to Water Code section 13267. Failure to submit technical reports or the attachments in accordance with the timeframes established by this Order, applicable Monitoring and Reporting Program (MRP) documents, or failure to submit a complete technical report (i.e., of sufficient technical quality to be acceptable to the Executive Officer); may subject the Enrollee to enforcement action pursuant to Water Code sections 13261, 13268, or 13350. Enrollees and Coalitions must submit technical reports in the format specified by the Executive Officer.
- 4) To obtain coverage under these General WDRs, Enrollees must submit an eNOI form with all required information including but not limited to: Assessor Parcel

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Numbers (APNs) covered by enrollment; Landowner(s); Operator(s); Contact information; and Coalition membership, if applicable.

- 5) eNOIs shall be updated within 30 days of a change in property ownership, Enrollee contact information, email contact information, or change in the parcels farmed by an Enrollee.
- 6) Property owners or operators shall complete an eNOI and enroll in the Order either individually or through an approved Coalition by **March 1, 2027**. If the North Coast Water Board determines that coverage under this Order is not appropriate for any property owner or operator, the Executive Officer will inform the party in writing and may request that the party submit a Report of Waste Discharge (ROWD) to obtain an individual permit for the discharge of waste.
- 7) Coverage under this Order is not transferable to any person except after the completion of a new eNOI and submittal to the North Coast Water Board, and written approval by the North Coast Water Board's Executive Officer.
- 8) This Order regulates both landowners and operators but does not require enrollment by both parties. If the Enrollee is not the landowner, the Enrollee shall provide written notice of the Order and its requirements to any landowner whose parcel is covered by this Order. Both landowners and operators are responsible for complying with the requirements of this Order, regardless of whether the landowner or the operator is the enrolled party.

**Termination of Coverage**

- 9) Enrollees may terminate coverage under this Order by providing a 30-day written notice to the North Coast Water Board's Executive Officer and, if applicable, notice to the Coalition. At a minimum, the written notice must include the reason for terminating coverage (e.g., transfer of ownership, Enrollee applied for and obtained individual WDRs, discharge was discontinued, etc.). The Enrollee shall continue to comply with this Order until the North Coast Water Board notifies the Enrollee in writing that coverage has been terminated. Termination of coverage must occur prior to **July 1<sup>st</sup>** of each year to avoid billing in the next fiscal year.
- 10) For Enrollees enrolled through a Coalition, coverage under this Order is automatically terminated if confirmation of membership in the Coalition is not received from the Coalition during the annual Participant List submittal required by Attachment A: MRP, or if the Coalition indicates that the Enrollee is no longer enrolled through the Coalition. To obtain individual coverage, the Enrollee shall re-submit an eNOI.
- 11) Any instance of noncompliance with this Order is grounds for enforcement action, and/or termination of coverage for waste discharges under this Order, subjecting

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the Enrollee to enforcement under the Water Code for subsequent discharges of waste to surface or groundwater.

**Fees**

- 12) Enrollees shall pay an annual water quality fee to the State Water Board in compliance with the WDRs fee schedule set forth in California Code of Regulations, title 23, section 2200.6. The Coalition is responsible for collecting these fees from their enrolled members and submitting fees to the State Water Board.
- 13) A Coalition may require its enrolled Members to pay any relevant fees necessary to comply with monitoring and reporting conditions of this Order or comply with monitoring and reporting requirements individually.

**B. Prohibitions**

- 1) Discharge of waste from Commercial Lily Bulb Operations in a manner or location other than that described in the Findings of this Order or the Notice of Applicability (NOA) is prohibited.
- 2) Discharge of waste classified as “hazardous,” as defined in California Code of Regulations, title 23, section 2521, or classified as “designated,” as defined in Water Code section 13173, is prohibited.
- 3) The discharge of waste (e.g., fertilizers, fumigants, pesticides) into groundwater via backflow through a water supply well or down a groundwater well casing is prohibited.
- 4) Discharge of debris, soil, silt, sand, bark, plant waste, sawdust, rubbish, refuse, oil or petroleum products, or other organic/earthen material or solid waste from any Commercial Lily Bulb Operation in quantities that are deleterious to beneficial uses or that violate Receiving Water Limitations is prohibited. Additionally, none of the materials listed above shall be stockpiled within the Streamside Area, or where wastes could be discharged into surface waters.
- 5) The use of soil amendments containing septage, liquid waste oil, grease, hazardous waste, or municipal solid waste, except for biodegradable waste meeting the definition of “compost” as defined in Public Resources Code section 40116 is prohibited.

**C. Receiving Water Limitations**

- 1) Wastes discharged from Commercial Lily Bulb Operations in the Smith River Plain, including sediment, pesticides, and nutrients, shall not cause or contribute to an exceedance of applicable water quality objectives for surface waters or

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groundwater, unreasonably affect applicable beneficial uses, or cause or contribute to a condition of pollution, contamination, or nuisance (as defined in Water Code §13050). Applicable water quality objectives include but are not limited to objectives for chemical constituents, including promulgated maximum contaminant levels (MCLs), pH, sediment, turbidity, and narrative objectives for pesticide and toxicity<sup>57</sup>. The Basin Plan narrative water quality objectives for toxicity and pesticides are implemented through numeric interpretations established by the Water Quality Benchmarks for surface water and groundwater set forth in Tables I.3 and I.4 of these Findings.

- 2) Receiving Water Limitations are effective immediately except where an Enrollee is implementing an approved Water Quality Management Plan or Groundwater Protection Plan under the Adaptive Management Program for a specified parameter in accordance with an approved time schedule authorized pursuant to Section H of this Order.

**D. Management Practice Requirements**

- 1) Enrollees shall implement Management Practices to prevent, minimize, or eliminate the discharge of waste to surface waters and groundwater and to achieve compliance with Receiving Water Limitations of this Order (Section II.C). Management Practices may be implemented on an individual farm, Enrollee, or Field<sup>58</sup> basis, or collectively over multiple farms or Fields to serve multiple Enrollees discharging to a common location.
- 2) All Enrollees shall, at a minimum, implement Management Practices necessary to:
  - a) Prevent, minimize, or eliminate erosion and sediment discharge from all farm areas and appurtenant roads;
  - b) Prevent, minimize or eliminate the discharge of all agricultural <sup>59</sup> pollutants to surface waters and groundwater;
  - c) Prevent, minimize, or eliminate overapplication of nitrogen and the percolation of nitrogen into groundwater;
  - d) Protect wellheads from surface water intrusion; and
  - e) Implement proper handling, storage, disposal, and management of fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals.

Enrollees may refer to Attachment B: Management Practices for a representative menu of applicable Management Practices to achieve the water quality management goals outlined above. Alternatively, Enrollees may propose and implement Management Practices that are effective at addressing the water quality

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management goals listed above.

- 3) To eliminate, minimize, or reduce the discharge of sediment, Enrollees shall prioritize all Controllable Sediment Discharge Sources<sup>60</sup> for implementation of practices, maintenance, and repair.
- 4) All Management Practices shall be properly designed, installed<sup>61</sup>, maintained, and promptly repaired to prevent, minimize, or eliminate the discharge of waste. Maintenance of management practices shall include their periodic inspection to evaluate effectiveness and prioritize repair.
- 5) When effectiveness evaluation, monitoring data, or inspections indicate that the implemented management practices have not been effective in preventing discharges from causing or contributing to exceedances of Water Quality Benchmarks or from violating Receiving Water Limitations in Section II.C, Enrollees must improve or implement additional management practices, as specified in Section II.H Adaptive Management.
- 6) Enrollees shall comply with applicable mitigation measures in Attachment E: CEQA Mitigation Measures during construction of Ground-Disturbing Management Practices. These mitigation measures shall be reported in accordance with the reporting requirements of Attachment A: Monitoring and Reporting Program.
- 7) Enrollees shall report all management practices annually in a Farm Evaluation in accordance with Attachment A: Monitoring and Reporting Program. Enrollees shall annually certify in their Farm Evaluation that maintenance and periodic inspection of management practices were completed. A copy of the Farm Evaluation shall be maintained at the Enrollee's primary place of business and shall be submitted to North Coast Water Board staff on request. The Coalition is required to submit Farm Evaluation information to the North Coast Water Board on request.

**E. Streamside Area Requirements**

- 1) For the purposes of this Order, a Streamside Area is comprised of two contiguous components: a Riparian Vegetation Area and a Vegetated Buffer in which different requirements are applied. A Streamside Area is defined as the area between the waterside edge of vegetation at ground level<sup>62</sup> and where the field-side edge of the Vegetated Buffer meets the Farm Area. The Riparian Vegetation Area extends from the waterside edge of vegetation to the Vegetated Buffer in Perennial and Ephemeral/Intermittent Streams. The Vegetated Buffer is measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the waterside edge of vegetation in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs. Enrollees may refer to Section IV of Attachment D: Methodologies and Procedures for an example

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of a Streamside Area.

- 2) Enrollees shall refer to Table II.1 in determining widths for implementation of Streamside Area management practices.

**Table II.1: Streamside Area Minimum Horizontal Width (feet) as Measured from Waterside Edge of Vegetation**

| <b>Streamside Area component</b> | <b>Perennial Stream</b> | <b>Ephemeral/ Intermittent Stream</b> | <b>Hydrologically Connected Undesignated Channel</b> | <b>Unfarmed Wetland<sup>63</sup></b> | <b>Hydrologically-Connected<sup>64</sup> Lake, Pond, or On-Stream Reservoir</b> |
|----------------------------------|-------------------------|---------------------------------------|------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------|
| Riparian Vegetation Area         | 25                      | 15                                    | N/A                                                  | N/A                                  | N/A                                                                             |
| Vegetated Buffer                 | 25                      | 10                                    | 10                                                   | 50                                   | 50                                                                              |
| Total Streamside Area width      | 50                      | 25                                    | 10                                                   | 50                                   | 50                                                                              |

**Riparian Vegetation Requirements**

- 3) Enrollees shall implement the following management practices in the Riparian Vegetation Area of all Streamside Areas:
  - a) Allow the natural establishment and abundance of native riparian vegetation to minimize or prevent discharge of sediment, nutrients, and excess temperature to surface water.
  - b) Existing riparian vegetation may not be removed for activities appurtenant to the lily bulb operation except for: (1) restoration and planting of vegetation that is native to California and naturally occurs in the local HUC-8 watershed; (2) work necessary for protection of public health or safety, including fire fuel management as required by California Fire Code section 304.1.2. and/or local ordinances; (3) streamside area restoration outside of jurisdictional waters of the United States or waters of the State<sup>65</sup>, or (4) removal of riparian vegetation as part of necessary maintenance of existing watercourse crossings<sup>66</sup> and linear utilities, control of invasive species, and permitted surface water diversions<sup>67</sup>; or (5) other restoration and/or maintenance projects subject to the prior approval of the Executive Officer.



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- c) Allow essential functions supporting beneficial uses such as sediment filtering, woody debris recruitment, streambank stabilization, nutrient cycling, pollutant filtering, and shading (e.g., to achieve site potential effective shade<sup>68</sup>).

**Vegetated Buffer Requirements**

- 4) Enrollees shall install and/or maintain<sup>69</sup> Vegetated Buffers to minimize or prevent discharges of sediment and nutrients to surface waters. Vegetated buffers shall be the minimum width (feet) listed in Table II.1 and shall be measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the Waterside edge of vegetation to the Farm Area in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs.
- 5) The following activities are not allowed within a Vegetated Buffer:
  - a) Construction and/or installation of new permanent structures appurtenant to lily bulb operations. (e.g., agricultural roads and buildings). Maintenance and/or reconstruction of existing permanent structures within the existing footprint is allowed.
  - b) Storage of chemicals, oil, or petroleum products.
  - c) Placement of construction materials, trash rubbish, refuse, plant waste, or other organic or earthen material or solid waste.
- 6) Vegetated buffers may be used for vehicle, or equipment use and turn around provided Enrollees manage and maintain a minimum of 90 percent vegetated cover on Vegetated Buffers between **October 1- June 15** of each year to minimize, control, or prevent discharges of sediment, nutrients, and pesticides to surface waters.

**Riparian Vegetation Area Restoration Alternative**

- 7) In lieu of meeting the Riparian Vegetation Area minimum widths for Perennial and Ephemeral/Intermittent streams in Table II.1, an Enrollee may mitigate the difference in area available for natural succession of riparian vegetation between riparian vegetation existing at the date of Order adoption and Table II.1 requirements. Mitigation must be accomplished through restoration and protection of native riparian vegetation at another location within the same sub-watershed (HUC-12) with similar or greater ecological value and function.
- 8) The proposed Restoration Area (length and width) shall be no less than 200 percent of the difference between existing Riparian Vegetation Area and Table II.1 requirements. The proposed Restoration Area shall be placed into a conservation

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easement with sufficient financial resources to fund 20 years of riparian vegetation maintenance and replacement of vegetation that does not survive.

- 9) Enrollees choosing this option shall implement restoration and protection within the Restoration Area(s) and have the Restoration Area(s) placed within a conservation easement within five years of the date of Order adoption.
- 10) Enrollees selecting a Riparian Vegetation Area Restoration Alternative must submit a proposal to the Executive Officer for review and approval by **February 1, 2028**. The proposal must include all information necessary to indicate that the proposed Restoration Alternative will satisfy the above requirements. Restoration projects that discharge materials or pollutants into waters of the state must be authorized by the North Coast Water Board prior to implementation through an applicable permitting program (e.g., 401 Water Quality Certification).

**F. Compliance Education**

- 1) Enrollees shall participate in compliance education<sup>70</sup> annually that focuses on: (1) actions necessary to attain compliance with the water quality goals of this Order; and (2) practices to prevent or minimize the discharge of sediment, pesticides, and nutrients to surface water and groundwater. Enrollees shall document annual compliance education in the Farm Evaluation as specified in Attachment A: Monitoring and Reporting Program

**G. Monitoring and Reporting Requirements**

- 1) Enrollees shall comply with all monitoring requirements specified in Attachment A: Monitoring and Reporting Program (MRP). Required monitoring includes Drinking Water Supply Well Monitoring, Surface Water Monitoring, and Groundwater Trend Monitoring, as applicable. Monitoring may be conducted at the individual or Coalition level as applicable, and shall be conducted in accordance with the methods, frequencies, and locations specified in the MRP.
- 2) Enrollees shall comply with all reporting requirements specified in Attachment A: Monitoring and Reporting Program (MRP) which includes submission of an Annual Compliance Report, consisting of management practice information and water quality data. Enrollees participating in an approved Coalition may satisfy reporting obligations through the Coalition, which shall submit required reports on behalf of its members.
- 3) The North Coast Water Board's Executive Officer may require the Coalition to provide direct reporting data for its Enrollee members upon request. The Coalition shall provide this information within 30 days of the request.

## **H. Adaptive Management Program**

### **Surface Water Adaptive Management Program**

- 1) The Adaptive Management Program for surface water establishes an iterative process to ensure surface water quality conditions achieve Receiving Water Limitations (Section II.C of this Order) within a certain time schedule. Adaptive Management requirements apply to lily bulb Fields within a crop production cycle, defined as any period in which the Field is not in permanent pasture ( $\geq 90$  percent ground cover). A crop production cycle includes field preparation, bulb growing, harvesting, and the post-harvest period until permanent ground cover is re-established.
- 2) Field(s) may be temporarily exempted from the Adaptive Management Program requirements in the years that they are planted to hay crops, forage, fallowed, or used for grazing) and the pesticides for which Adaptive Management was triggered are not applied. Applicable Field(s) shall be subject to Adaptive Management in the next year they undergo a crop production cycle (e.g., experience ground disturbing activities to prepare fields for planting, get planted to lily bulbs and undergo cultivation activities, or apply the applicable pesticide(s)). Adaptive Management Program requirements apply until after the fields have been harvested and are maintaining 90% or greater planted ground cover.
- 3) At any point during implementation of the Adaptive Management Program, an Enrollee may elect to implement an individual Sampling Plan to directly demonstrate that applicable Water Quality Benchmark(s) identified in Table A.5 of Attachment A: MRP for the exceeded parameter are being met at Edge-of-Field Discharge Point(s) when the Field is next planted to lily bulbs to exempt that Field from Adaptive Management requirements. If this option is selected, the Enrollee shall follow all applicable monitoring and reporting requirements as outlined in Attachment A: MRP.
- 4) The Executive Officer may require any Enrollee or group of Enrollees to enter, or stay in, the Adaptive Management Program where there is evidence that a Field is threatening to discharge waste. Upon notification by the Executive Officer, Enrollee(s) shall follow the general Adaptive Management Program outlined below.
- 5) The Adaptive Management Program is activated when a Water Quality Benchmark as identified in Table A.5 of Attachment A: Monitoring and Reporting Program (MRP) is exceeded at a downstream monitoring station. Table A.3 and Figure A.1 in Attachment A: MRP identify the tributary area associated with each downstream monitoring station. Upon activation or continuation of the Adaptive Management Program, all Fields planted to lily bulbs at the time the sample was collected and located within the tributary area of the affected monitoring station shall be subject to the Adaptive Management Program.

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- 6) Samples collected from monitoring stations downstream of lily bulb agriculture have already exceeded Water Quality Benchmarks as documented in the 2021–2024 Smith River Plain Surface Water Monitoring Study and reported in the 2025 SWAMP Report and Updates Memo (see Findings #62-65). All Fields identified in Figure 2 in Appendix II and identified by corresponding Field ID and Coordinates of Field Centroid in Table II.2 below shall enter **Tier 1 Adaptive Management** for the parameter(s) listed upon enrollment in this Order. If any portion of a Field identified in Figure 2 in Appendix II and Table II.2 is reconfigured or split into a new or multiple Field(s), those new or reconfigured Fields will also be subject to Adaptive Management. Enrollees shall comply with Tier 1 Adaptive Management requirements during the first year each applicable Field is planted to lily bulbs.

**Table II.2: Field Centroid Coordinates (Latitude/Longitude of Field Midpoint) and Tier 1 Adaptive Management Parameters Assigned at Enrollment, by Field ID (see Figure 2 in Appendix II for the corresponding map)**

| Field ID | Parameter(s)            | Coordinates of Field Centroid |
|----------|-------------------------|-------------------------------|
| 1        | Imidacloprid and Copper | 41.940018, -124.169381        |
| 2        | Imidacloprid and Copper | 41.938090, -124.167125        |
| 3        | Imidacloprid and Copper | 41.937427, -124.164305        |
| 4        | Copper                  | 41.936583, -124.167501        |
| 5        | Imidacloprid and Copper | 41.935270, -124.164809        |
| 6        | Imidacloprid and Copper | 41.935095, -124.163398        |
| 7        | Copper                  | 41.934979, -124.160966        |
| 8        | Imidacloprid and Copper | 41.933375, -124.157541        |
| 9        | Imidacloprid and Copper | 41.933038, -124.154134        |
| 10       | Copper                  | 41.936718, -124.177129        |
| 11       | Copper                  | 41.934973, -124.174627        |
| 12       | Copper                  | 41.934438, -124.171844        |
| 13       | Copper                  | 41.933431, -124.166763        |
| 14       | Imidacloprid and Copper | 41.931173, -124.163775        |
| 15       | Imidacloprid and Copper | 41.931852, -124.161803        |
| 16       | Copper                  | 41.931393, -124.159942        |
| 17       | Copper                  | 41.931188, -124.157065        |
| 18       | Copper                  | 41.930677, -124.154376        |
| 19       | Imidacloprid and Copper | 41.931652, -124.173489        |
| 20       | Imidacloprid and Copper | 41.931666, -124.170372        |
| 21       | Copper                  | 41.930074, -124.160475        |
| 22       | Imidacloprid and Copper | 41.930103, -124.177521        |
| 23       | Copper                  | 41.929683, -124.172092        |
| 24       | Imidacloprid and Copper | 41.929684, -124.167433        |
| 25       | Copper                  | 41.928954, -124.165004        |
| 26       | Imidacloprid and Copper | 41.928936, -124.163461        |

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| Field ID | Parameter(s)            | Coordinates of Field Centroid |
|----------|-------------------------|-------------------------------|
| 27       | Imidacloprid and Copper | 41.928871, -124.160531        |
| 28       | Imidacloprid and Copper | 41.929039, -124.157253        |
| 29       | Imidacloprid and Copper | 41.928097, -124.175349        |
| 30       | Copper                  | 41.927750, -124.167726        |
| 31       | Imidacloprid and Copper | 41.927344, -124.163367        |
| 32       | Imidacloprid and Copper | 41.927391, -124.160144        |
| 33       | Imidacloprid and Copper | 41.927437, -124.157337        |
| 34       | Copper                  | 41.925605, -124.158192        |
| 35       | Copper                  | 41.899794, -124.144167        |
| 36       | Copper                  | 41.897704, -124.138684        |
| 37       | Copper                  | 41.896020, -124.138481        |

- 7) Receiving Water Limitations are effective immediately except where an Enrollee is implementing an approved Water Quality Management Plan under the Adaptive Management Program. The Adaptive Management Program functions as a time schedule ending with Tier 2 implementation (described below), after which continued Water Quality Benchmark exceedances may constitute a violation of Receiving Water Limitations of this Order.
- 8) Enrollees shall implement the tiered Adaptive Management framework described below and in Table II.3 for each parameter that exceeds a Water Quality Benchmark. Upon an initial Benchmark exceedance, applicable Fields shall enter Tier 1 Adaptive Management and be subject to Tier 1 requirements during the next crop production cycle. If no Benchmark exceedance occurs during a monitoring year in which the Field is planted to lily bulbs, the Field shall no longer be subject to the Adaptive Management schedule; however, Tier 1 management practices shall be maintained in all subsequent crop production cycles.

If, at any time while a Field is subject to Tier 1 requirements, an additional Water Quality Benchmark exceedance occurs at the downstream monitoring station for the same parameter, the Field shall be subject to Tier 2 requirements during the next crop production cycle. Tier 2 requirements shall be maintained in all subsequent crop production cycles. Any Water Quality Benchmark exceedance occurring after Tier 2 requirements have been implemented may constitute a violation of Receiving Water Limitations of this Order. See Attachment D: Methodologies and Procedures for an Adaptive Management flowchart that describes this process.

**Table II.3: Adaptive Management Tier Requirements for Surface Water**

| <b>Adaptive Management Tier</b>                                 | <b>Tier Requirements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tier 1:</b><br>Initial Water Quality Benchmark Exceedance    | <p><b>Option 1 — Grower-Prepared Water Quality Management Plan (WQMP)</b><br/>The Enrollee develops and implements a WQMP that incorporates <b>at least one</b> of the following practices on each Field covered by the plan:</p> <ul style="list-style-type: none"> <li>• Treat-and-Control Management Practices</li> <li>• Watercourse Setback</li> <li>• Pesticide Application Performance Standard</li> </ul> <p><b>Option 2 — Certified WQMP</b><br/>A <b>Qualified Professional</b> designs and certifies the WQMP, including a <b>quantitative demonstration</b> that the practices implemented on each Field will be sufficient to ensure that discharges from the Field do not exceed Receiving Water Limitations at the downstream monitoring location.</p> |
| <b>Tier 2:</b><br>Subsequent Water Quality Benchmark Exceedance | <b>Certified WQMP</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**Grower-Prepared WQMP**

- 9) Enrollees may choose, as one of two Tier 1 Adaptive Management compliance options, to develop and implement a Grower-prepared WQMP. The Grower-prepared WQMP must be submitted by **January 1<sup>st</sup>** to the Executive Officer for review and approval in the calendar year that the Field will be entering its next crop production cycle<sup>71</sup>. Once approved, the Grower-prepared WQMP must be implemented in the year that the Field is planted to lily bulbs. At a minimum, the Grower-prepared WQMP shall identify the pollutant exceeding the Receiving Water Limitations in Section II.C of this Order and include the following:
- Field Map:** A map of the Field(s) with all irrigation and stormwater discharge locations labeled. The WQMP may cover all Fields or be submitted for individual Fields. The Field Map shall identify where practices will be implemented in each Field.

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- b) Practices Identified: For each Field covered by the Grower-prepared WQMP, the Enrollee shall identify and implement at least **one** of the following management practices:
- i) **Treat and Control Management Practices:** Implement Management Practice(s) that will minimize or eliminate the discharge of the exceeded parameter from the Field. Tier 1 Management Practices treat<sup>72</sup>, divert, infiltrate, reuse, contain, retain, or reduce the volume of storm water runoff from a given Field.
  - ii) **Watercourse Setback:** Fields that are hydrologically connected to receiving waters may implement a Watercourse Setback<sup>73</sup>. The setback shall be measured from the watercourse at the waterside edge of vegetation at ground level<sup>74</sup> and shall meet the minimum width to the Planted Area of the lily bulb Field that is designated in Table II.4 by watercourse type. If selected, this setback must be implemented at all edges of a planted Field that drain to the watercourse. The Watercourse Setback shall maintain at least 90 percent ground cover between **October 1 and June 15** and follow all applicable design and maintenance standards consistent with NRCS practices for conservation cover and critical area planting<sup>75</sup>.

**Table II.4. Required Widths of Vegetated Watercourse Setback by Watercourse type**

| <b>Perennial Stream</b> | <b>Ephemeral/<br/>Intermittent Stream</b> | <b>Hydrologically Connected<br/>Undesignated Channel</b> |
|-------------------------|-------------------------------------------|----------------------------------------------------------|
| 100 ft                  | 100 ft                                    | 30 ft                                                    |

- iii) **Attainment of Active Ingredient Application Performance Standard:** Enrollees may refer to Table II.5 to meet tributary- and parameter-specific performance standards for active ingredient application amount. The attainment of the active ingredient application rate must be met at the tributary level. If the Enrollee elects this option for Adaptive Management Compliance, the application amount shall be reported in the Annual Compliance Report (See Attachment A: MRP). Where multiple growers are applying pesticides within the tributary area to a given monitoring station, the performance standard application amount is prorated based on total lily bulb acres cultivated.

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**Table II.5: Annual Active Ingredient Application Amount (lbs./year) Performance Standard by Monitoring Station**

| <b>Active Ingredient and Normalized Rate by Monitoring Station Tributary Area</b> | <b>Tillas Slough</b><br>(downstream of Delilah Creek) | <b>Delilah Creek</b> | <b>Rowdy Creek</b> | <b>Morrison Creek at Morrison Slough</b> | <b>Mello Creek*</b><br><i>*optional sampling, see Section III.A in Attachment A: MRP for details</i> | <b>Kamph Park Creek</b> |
|-----------------------------------------------------------------------------------|-------------------------------------------------------|----------------------|--------------------|------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------|
| Elemental Copper (0.5 lbs./acre/year)                                             | 1003                                                  | 447                  | 10877              | 1097                                     | 203                                                                                                  | 70                      |
| Imidacloprid (0.01 lbs./acre/year)                                                | 20                                                    | 89                   | 22                 | 21.9                                     | 4                                                                                                    | 1.4                     |
| Diuron (0.05 lbs./acre/year)                                                      | 100                                                   | 45                   | 1088               | 110                                      | 20                                                                                                   | 7                       |
| Ethoprop (0.3 lbs./acre/year)                                                     | 602                                                   | 268                  | 6526               | 658                                      | 122                                                                                                  | 42                      |

Certified WQMP for Surface Water

- 10) The Certified WQMP is developed as an Adaptive Management response to results from Surface Water Monitoring. The Certified WQMP includes management practices designed to address specific constituents of concern in a manner that accounts for the characteristics and conditions of each individual lily bulb Field or operation. It provides a quantitative demonstration that the management practices implemented will result in discharges, or the lack thereof, that achieve applicable Water Quality Benchmarks in surface waters. The Certified WQMP may be submitted individually or submitted by the Coalition on behalf of multiple Enrollees.
- 11) Each Certified WQMP shall be prepared under the direction of, and certified by, a Qualified Professional. The Certified WQMP shall be submitted by **January 1** to the Executive Officer for review and approval in the year that the applicable Field(s) is entering its next crop production cycle.
- 12) The Certified WQMP shall describe and provide a schedule for the implementation of management practices to meet the Receiving Water Limitations of this Order.
- 13) At a minimum, the Certified WQMP shall identify the pollutant exceeding the applicable Water Quality Benchmark and include:
  - a) Field Map: A map of the Field(s) with all irrigation and stormwater discharge



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locations labeled The Certified WQMP may cover multiple Fields or individual Fields, as applicable.

- b) Site Analysis: A description of the average frequency of crop rotation and other crop(s) or uses of Field(s) when not planted to lily bulbs and all management practices being implemented on the site to prevent, minimize, or eliminate the discharge of the exceeded constituent.
  - c) Adaptive Management: All the management practices that will be implemented on the Field(s) in the next year it is planted to lily bulbs. Management practices must be improved in each subsequent year adaptive management is required.
  - d) Quantitative Demonstration: The assessment shall evaluate the location, size, and pollutant reduction capacity or volume retention capacity of each management practice for the 1-inch 24-hour storm under wet antecedent moisture conditions (AMC III<sup>76</sup>). The quantitative demonstration shall be supported by water quality data collected in the field that directly reflects the performance of the implemented management practices under actual operating conditions. Supporting water quality data shall not rely solely on literature reviews, modeling assumptions, or generalized performance estimates, but must include monitoring results sufficient to demonstrate that the implemented practices are effective at reducing pollutant loads and achieving water quality benchmarks. Edge-of-Field sampling may be used but is not required. For example, in lieu of Edge-of-Field sampling, a Certified WQMP may include monitoring results from receiving waters located upstream and downstream of the lily bulb Field (monitoring locations subject to approval by the Executive Officer).
  - e) Effectiveness: The Certified WQMP shall include an effectiveness monitoring plan to ensure the proper maintenance and continued performance of all existing and future management practices.
  - f) Schedule of Implementation: The Certified WQMP shall include a schedule of management practice implementation not to exceed two crop production cycles of the Field, unless otherwise approved by the Executive Officer.
- 14) The Certified WQMP must be prepared and certified in one of the following ways:
- a) The WQMP is developed and certified by a Qualified Professional and submitted as part of the Annual Compliance Report to the North Coast Water Board; or
  - b) The WQMP is prepared and certified in an alternative manner to a Qualified Professional and approved by the Executive Officer. Such approval will be

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provided based on the Executive Officer's determination that the alternative method for preparing the WQMP meets the objectives and requirements of this Order.

- 15) The Certified WQMP shall be submitted to the Executive Officer for review and approval. Upon approval, the Enrollee shall implement the Certified WQMP on a continuous basis. The Certified WQMP shall be updated if there is a change to site configuration or management practices. The Executive Officer may require that the Certified WQMP be updated at five-year intervals and shall notify the Enrollee at least one year prior to the end of each five-year period if an update is required. Any required update shall be certified by a Qualified Professional and shall describe all additional management practices implemented to achieve Receiving Water Limitations.

**Groundwater Adaptive Management**

- 16) The Adaptive Management Program is activated for impacts to groundwater quality based on the following conditions:
  - a) There is a statistically significant increasing trend over 3 years of any groundwater monitoring parameter in a Groundwater Trend Monitoring or Drinking Water Supply Well; or
  - b) A Water Quality Benchmark indicated in Table A.9 of Attachment A: Monitoring and Reporting Program is exceeded in either a Groundwater Trend Monitoring well or a Drinking Water Supply Well.
- 17) The Adaptive Management Program for Groundwater is implemented as described in this section and summarized in Table II.6. Enrollees shall refer to Table II.6 for a consolidated summary of program triggers, requirements, and response actions.

**Table II.6: Adaptive Management Requirements for Groundwater**

| <b>Adaptive Management Program Trigger</b>                                                                                                                             | <b>Summary of Requirements</b>                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Statistically significant increasing trend in constituent concentration over a three-year period in a Groundwater Trend Monitoring Well or Drinking Water Supply Well. | Enrollee must attend an education event and implement and report additional measures to reduce discharge of the constituent. If the constituent is nitrate, Enrollees must develop and implement a certified Irrigation and Nutrient Management Plan.                                                                    |
| Exceedance of Water Quality Benchmark                                                                                                                                  | <p>Step 1: Enrollee or Coalition submits a Hydrogeological Evaluation of Groundwater Impacts to identify which lily bulb Fields and Enrollees are subject to the requirement to submit a Groundwater Protection Plan.</p> <p>Step 2: Identified Enrollee(s) must develop and implement a Groundwater Protection Plan</p> |

Increasing Trend in Constituent Concentration over Three Years

- 18) If there is a statistically significant increasing trend in the concentration of a required monitoring constituent in either a Groundwater Trend Monitoring well or a Drinking Water Supply Well over three years, the Enrollee shall:
- a) Attend at least one compliance education event addressing applicable management practices to reduce discharges of the constituent to groundwater;
  - b) Implement and report additional measures to reduce discharges of the constituent to groundwater<sup>77</sup>; and
  - c) Develop and implement a certified Irrigation and Nutrient Management Plan (INMP) for all enrolled Field(s) if the constituent is nitrate.
- 19) For Enrollees required to prepare, implement, and get certified<sup>78</sup> an Irrigation and Nitrogen Management Plan (INMP), the INMP shall cover all enrolled Fields that are either planted to lily bulbs, or planted to another crop that receives an external source of nitrogen<sup>79</sup>. The INMP shall be annually submitted to the North Coast Water Board for the previous crop year as part of the Annual Compliance Report until the trend of increasing nitrate concentration in the well attenuates. Alternatively, Enrollees may submit their INMP to the Coalition who shall submit

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Enrollee data to the North Coast Water Board annually in accordance with Section IV of the MRP. A copy of the Certified INMP shall be located at the Enrollee's farming operations headquarters or primary place of business. The Enrollee must provide the INMP to North Coast Water Board staff, if requested.

- 20) Enrollees may aggregate data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, and (3) the same management practices. These "Management Units" shall be defined, labeled and consistent across all INMP and Farm Evaluation reporting.
- 21) Enrollees shall use the INMP Template approved by the North Coast Water Board's Executive Officer. At a minimum, the INMP shall include the following information:
  - a) Crop Year.
  - b) Owner/Operator name.
  - c) Assessor Parcel Number (APN).
  - d) Total acreage for each APN identified.
  - e) Planted acreage for each APN identified.
  - f) Irrigation method(s).
  - g) Crop Yield (tons/planted acre)
  - h) Nitrogen Applied (lbs./acre) from the following sources:
    - i) All applied water
    - ii) Synthetic Fertilizers, and/or
    - iii) Organic Amendments (e.g., manure, compost, etc.)
  - i) Documented compliance education received or attended during the previous year in accordance with Section II.H of this Order.
- 22) The INMP shall be certified in one of the following ways:
  - a) Certified by an Irrigation and Nitrogen Planning Specialist<sup>80</sup>. The specialist that certifies the INMP must be capable of answering questions relevant to the INMP and should be fully competent and proficient by education and experience in the Field(s) of study covered by certification relevant to the

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development of an INMP; or

- b) Self-certified by the Enrollee who attends a California Department of Food and Agriculture (CDFA), or other Executive Officer approved Third-Party training for INMP certification. The Enrollee must retain written documentation of their attendance in the Third-Party training; participate and obtain documentation of such participation in any continuing education required by CDFA; and make such documentation available to the North Coast Water Board on request; or
- c) Self-certified by the Enrollee that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS) or the University of California Cooperative Extension. The Enrollee must retain written documentation of the recommendation provided and make such documentation available to the North Coast Water Board on request; or
- d) Self-certified by the Enrollee if no Nitrogen is applied to the Field; or
- e) Certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the INMP meets the objectives and requirements of this Order.

Exceedance of Water Quality Benchmark for Groundwater

- 23) If a parameter identified in Table A.9 of Attachment A: MRP exceeds a Water Quality Benchmark, the Coalition, or the owner of the parcel on which the Groundwater Trend or Drinking Water Well is located, shall submit to the Executive Officer for review and approval a Hydrogeological Evaluation of Groundwater Impacts. The Hydrogeological Evaluation shall be prepared under the responsible charge of a Professional Engineer or Professional Geologist and shall be completed prior to the development of a Groundwater Protection Plan.
- 24) At a minimum, the Hydrogeological Evaluation of Groundwater Impacts shall:
  - a) Identify the monitoring well(s) with Water Quality Benchmark exceedances and describe the relevant hydrogeologic setting, including aquifer characteristics, groundwater flow direction, and hydraulic connectivity;
  - b) Delineate the potential area contributing to the Water Quality Benchmark exceedance, based on available hydrogeologic information and groundwater flow conditions;
  - c) Identify all lily bulb fields within the contributing area that have applied the exceeded parameter within the previous five years and that may reasonably

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affect groundwater quality at the monitoring well; and

- d) Evaluate whether the exceedance is likely attributable to current or historical agricultural practices associated with identified lily bulb fields.
- 25) The Executive Officer shall use the Hydrogeological Evaluation of Groundwater Impacts to determine which Enrollees, as owners or operators, are required to develop and implement a Groundwater Protection Plan in accordance with Section II.H of this Order.
- 26) An individual Enrollee may submit a Non-Contribution Demonstration to the Executive Officer for review and approval demonstrating that the Enrollee's Field(s) did not cause or contribute to the Water Quality Benchmark exceedance. The Non-Contribution Demonstration shall include quantitative, parameter-specific information relevant to the exceeded parameter, including, as applicable, Irrigation and Nutrient Management Plans and individual pesticide use report information, and shall be prepared under the responsible charge of a Professional Geologist or Professional Engineer.

Groundwater Protection Plan

- 27) The Groundwater Protection Plan requires implementation of a series of steps to achieve compliance with the Receiving Water Limitations of this Order, including defining the nature and extent of groundwater impacts, identifying sensitive receptors including agricultural and drinking water wells and interconnected surface waters, conducting continued monitoring, and implementing corrective actions where natural attenuation is not sufficient to achieve Receiving Water Limitations within a reasonable timeframe (10 years). The Groundwater Protection Plan may be prepared for multiple Enrollees or individual Enrollees, as applicable.
- 28) Each Groundwater Protection Plan shall be prepared under the direction of, and certified by, a Professional Geologist or a Professional Engineer. The Groundwater Protection Plan shall be submitted by **January 1** to the Executive Officer for review and approval in the year that the applicable Field(s) is entering its next crop production cycle.
- 29) At a minimum, the Groundwater Protection Plan shall include the following:
- a) The Plan shall describe the nature, extent, and mobility of constituent(s) exceeding Water Quality Benchmark(s) in groundwater and identify all current and reasonably anticipated sensitive receptors, including agricultural or drinking water wells, and surface water bodies.
  - b) The Plan must include a map of all the Field(s) identified in the Hydrogeological Evaluation for Groundwater that are covered by the Plan

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with all sensitive receptors labeled.

- c) The Plan shall delineate the extent of impact with a hydrogeologic investigation sufficient to characterize the impacted area and potential migration pathways.
- d) A monitoring network shall be established within the extent of impact and maintained to evaluate groundwater quality conditions and compliance with Receiving Water Limitations, as demonstrated by comparison to the applicable Water Quality Benchmark.
- e) If groundwater quality is demonstrated to be stable or naturally attenuating toward Receiving Water Limitations within a reasonable timeframe (i.e., 10 years), the Plan may rely on monitoring and attenuation but shall continue until compliance is documented.
- f) If Water Quality Benchmarks are exceeded and are not expected to attenuate within a reasonable timeframe (e.g., in the case of continuing application of the constituent):
  - i) If the constituent is nitrate: the Plan shall propose a Groundwater Protection Target that establishes a nitrogen loading target (based on the individual grower's ratio of nitrogen applied to nitrogen removed) that is intended to achieve compliance with the Receiving Water Limitations for groundwater within the time schedule (10 years). Compliance with the implementation of this Plan includes the Enrollee's conformance with the Groundwater Protection Target on the applicable Field(s) until Receiving Water Limitations are met. Groundwater Protection Targets in each Plan shall be subject to public review and comment.
  - ii) If the constituent is a pesticide: the Plan shall propose and implement corrective actions to reduce or control sources and prevent further impact to sensitive receptors, with management practice implementation and monitoring continuing until Receiving Water Limitations are achieved, unless otherwise approved by the Executive Officer.
- g) The Plan shall include a schedule of implementation not to exceed 10 years unless otherwise approved by the Executive Officer.

### **I. Provisions**

#### **Noncompliance**

- 1) Enrollees shall comply with all conditions of this Order. Noncompliance is a violation of the Porter-Cologne Water Quality Control Act (Water Code, § 13000 et seq.) and grounds for: (1) enforcement action; (2) termination, revocation and

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reissuance, or modification of these waste discharge requirements; or (3) denial of an Order renewal application, or a combination thereof. Coalition(s) shall also comply with all relevant conditions of this Order on behalf of the Enrollees enrolled through their program(s).

- 2) Enrollees shall report any noncompliance that may endanger human health or the environment. Information shall be provided orally to the North Coast Water Board office and the Office of Emergency Services within twenty-four (24) hours of when the Enrollee becomes aware of the incident. A written report shall also be provided within five business days of the time that the Enrollee becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance.

### **Enforcement**

- 3) All Enrollees, regardless of whether they enroll individually or through a Coalition and any non-Enrollee owner or operator, bear ultimate responsibility for complying with this Order. The North Coast Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to comply with any provisions of this Order may subject Enrollees to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code sections 13323, 13268, and 13350; a Time Schedule Order issued pursuant to Water Code section 13300 or 13308; issuance of a Cease-and-Desist Order pursuant to Water Code section 13301; Cleanup and Abatement Order pursuant to Water Code section 13304; or referral to the California Attorney General for recovery of judicial civil liability. Enrollees shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment.
- 4) For Coalition(s), failure to comply with the applicable terms and conditions of this Order or the Coalition requirements in Attachment C may result in revocation of approval to act as a Coalition or any other remedy provided by law. Affected Enrollees would be required to join an approved Coalition, meet requirements for Enrollees not represented by a Coalition, or obtain coverage under other applicable general or individual WDRs.

### **Inspection and Entry**

- 5) Consistent with Water Code section 13267, subdivision (c), Enrollees and Coalition(s) shall allow the North Coast Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:



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- a) Enter the premises regulated by this Order, or the place where records are kept under the conditions of this Order,
- b) Have access to and copy records kept under the conditions of this Order,
- c) Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d) Sample or monitor for the purpose of ensuring compliance with this Order, or as otherwise authorized by the Water Code, any substances or parameters at locations regulated under this Order.

**Records Retention**

- 6) Enrollees and Coalitions, as appropriate, shall retain copies of all reports required by this Order and the associated MRP. Records shall be maintained for a minimum of ten years from the date of the sample, measurement, report, or application. Records may be maintained electronically, and the Coalition must store backup files in a secure, offsite location managed by an independent third-party entity. This period may be extended during the course of any unresolved litigation or when requested by the North Coast Water Board's Executive Officer.
- 7) Enrollees and Coalitions shall provide copies of any or all records when requested by North Coast Water Board staff. Electronic submittals are acceptable.

**Electronic Reporting**

- 8) Enrollees and Coalition(s), as appropriate, shall submit reports and information required for North Coast Water Board Executive Officer approval under this Order in an electronic format<sup>81</sup> via email to [NorthCoast@Waterboards.ca.gov](mailto:NorthCoast@Waterboards.ca.gov).

**Claims for Exemption from Public Disclosure**

- 9) If the Coalition and/or an Enrollee asserts that all or a portion of a report submitted pursuant to this Order is subject to an exemption from public disclosure (e.g., due to proprietary or trade secret information), the Coalition and/or Enrollee must provide an explanation of how those portions of the reports are exempt from public disclosure. The Coalition and/or Enrollee must clearly indicate on the cover of the report (typically an electronic submittal) that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). North Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If staff disagrees with the asserted exemption from public disclosure, staff will notify the Enrollee prior to making such

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report or portions of such report available for public inspection.

**Signature and Certification**

- 10) All documents and reports requested herein shall be signed and dated by a duly authorized representative and shall contain a statement by the Enrollee, or as appropriate by an authorized representative of the Enrollee (e.g., Third-Party representative), certifying under penalty of perjury under the laws of the State of California, that the report is true, complete, and accurate. The document and/or report shall be submitted under the title: "General Waste Discharge Requirements for Commercial Lily Bulb Operations in the Smith River Plain."

**Violation of Law and Property Rights**

- 11) This Order does not authorize violation of any federal, state, or local laws or regulations.
- 12) This Order does not convey property rights of any sort, or exclusive privileges, nor does it authorize injury to private property or invasion of personal rights.

**Modification, Revocation, Termination**

- 13) This Order may be modified, revoked and reissued, or terminated. The filing of a request by an Enrollee for an Order modification, rescission, or reissuance, or an Enrollee's notification of planned changes or anticipated noncompliance, does not stay any Order condition. Causes for modification include, but are not limited to, the violation of any term or condition contained in this Order, a material change in the character, location, or volume of discharge, a change in land application plans, or the adoption of new regulations by the State Water Board, North Coast Water Board (including revisions to the Basin Plan), or federal government.

### **III. Certification**

I, Valerie Quinto, Executive Officer do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California North Coast Regional Water Quality Control Board, on **August 6, 2026**.

Valerie Quinto  
Executive Officer  
California Water Quality Control Board,  
North Coast Region

Appendix I: Acronyms, Definitions, and Endnotes  
Appendix II: Figures  
Attachment A: Monitoring and Reporting Program  
Attachment B: Management Practices  
Attachment C: Grower Coalition Requirements  
Attachment D: Methodologies and Procedures  
Attachment E: CEQA Mitigation Measures  
Attachment F: Forms and Templates

## **Appendix I: Acronyms, Definitions, and Endnotes**

### **I. Acronyms and Abbreviations**

| <b>Acronym/Abbreviation</b> | <b>Term</b>                                                                                                               |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Antidegradation Policy      | State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality Waters in California |
| Basin Plan                  | Water Quality Control Plan for the North Coast Basin                                                                      |
| BLM                         | Biotic Ligand Model                                                                                                       |
| BLM-IWQC                    | Biotic Ligand Model Instantaneous Water Quality Criteria                                                                  |
| CalFIRE                     | California Department of Forestry and Fire Protection                                                                     |
| CDFA                        | California Department of Food and Agriculture                                                                             |
| CDFW                        | California Department of Fish and Wildlife                                                                                |
| CDPR                        | California Department of Pesticide Regulation                                                                             |
| CDPH                        | California Department of Public Health                                                                                    |
| CEDEN                       | California Environmental Data Exchange Network                                                                            |
| CEQA                        | California Environmental Quality Act                                                                                      |
| C <sub>N</sub>              | Nitrogen Removal Coefficient                                                                                              |
| CSDS                        | Controllable Sediment Discharge Sources                                                                                   |
| CRHR                        | California Register of Historical Resources                                                                               |
| CWA                         | Clean Water Act                                                                                                           |
| DDW                         | State Water Board, Division of Drinking Water                                                                             |
| DWR                         | Department of Water Resources                                                                                             |
| EIR                         | Environmental Impact Report                                                                                               |
| ESJ Order                   | Eastern San Joaquin Order (State Board Order WQ 2018-0002).                                                               |

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| <b>Acronym/Abbreviation</b> | <b>Term</b>                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|
| ELAP                        | Environmental Laboratory Accreditation Program                                                                   |
| Enforcement Policy          | State Water Board Water Quality Enforcement Policy                                                               |
| eNOI                        | Electronic Notice of Intent                                                                                      |
| GPS                         | Global Positioning System                                                                                        |
| GWP                         | Groundwater Protection (see GWP Formula, GWP Values, GWP Targets)                                                |
| HUC                         | Hydrologic Unit Code                                                                                             |
| ILRP                        | Irrigated Lands Regulatory Program                                                                               |
| INMP                        | Irrigation and Nitrogen Management Plan                                                                          |
| MCL                         | Maximum Contaminant Level                                                                                        |
| MDL                         | Method Detection Limit                                                                                           |
| mg/L                        | Milligrams per Liter                                                                                             |
| MRP                         | Monitoring and Reporting Program                                                                                 |
| NCRWQCB                     | North Coast Regional Water Quality Control Board                                                                 |
| Nitrogen AR                 | Nitrogen Applied and Removed                                                                                     |
| NOA                         | Notice of Applicability                                                                                          |
| NOT                         | Notice of Termination                                                                                            |
| NPDES                       | National Pollutant Discharge Elimination System                                                                  |
| NPS                         | nonpoint source                                                                                                  |
| NPS Policy                  | State Water Board Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program |
| NRCS                        | Natural Resources Conservation Service                                                                           |

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| <b>Acronym/Abbreviation</b> | <b>Term</b>                                                                   |
|-----------------------------|-------------------------------------------------------------------------------|
| Porter-Cologne Act          | Porter-Cologne Water Quality Control Act                                      |
| QAPP                        | Quality Assurance Project Plan                                                |
| North Coast Water Board     | North Coast Regional Water Quality Control Board                              |
| ROWD                        | Report of Waste Discharge                                                     |
| SGMA                        | Sustainable Groundwater Management Act                                        |
| State Water Board           | State Water Resources Control Board                                           |
| SWAMP                       | Surface Water Ambient Monitoring Program                                      |
| Temperature Policy          | Policy for the Implementation of the Water Quality Objectives for Temperature |
| Trend Monitoring Report     | Water Quality Trend Monitoring Report                                         |
| ug/L                        | Micrograms per Liter                                                          |
| UCCE                        | University of California Cooperative Extension                                |
| USEPA                       | United States Environmental Protection Agency                                 |
| USGS                        | United States Geological Survey                                               |
| Water Code                  | California Water Code                                                         |
| WDRs                        | Waste Discharge Requirements                                                  |
| WQMP                        | Water Quality Management Plan                                                 |

## II. Definitions

The following definitions apply to Order No. R1-2026-0035 and its associated attachments, including the Monitoring and Reporting Program (MRP). The terms are arranged in alphabetical order. All other terms not explicitly defined here for the purposes of this Order, the Additional Findings and Regulatory Considerations, and the MRP have the same definitions as defined by Water Code Division 7 or are explained within the Order or MRP documents.

**Abandoned Well.** A well is considered “abandoned” when it has been destroyed in accordance with local and state well standards. An abandoned well is not synonymous with an “inactive well” (see also Inactive Well).

**Active Well.** A water well that is in operation/use.

**Adaptive Management.** The iterative process of evaluating monitoring results, programmatic performance, and new scientific information to guide modifications to management practices and implementation schedules, with the goal of achieving water quality objectives and protecting beneficial uses. Adaptive management relies on data collected through surface water and groundwater trend monitoring and other relevant sources of information including effectiveness of implemented management practices.

**All-Season Road.** An agricultural road that is part of the permanent road network and is designed for year-round use. These roads have a surface that is suitable for maintaining a stable operating surface throughout the year.

**Antidegradation.** The State Water Board established a policy to maintain high quality waters of the State - Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California." Resolution No. 68-16 requires existing high-quality water to be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of water, and will not result in water quality less than that prescribed in the policies. When authorizing the discharge of waste into waters of the state, North Coast Water Boards are required to comply with Resolution No. 68-16. Permits or regulatory orders issued by the North Coast Water Board must result in the best practicable treatment or control of the discharge necessary to assure pollution or nuisance will not occur and maintain the highest water quality consistent with maximum benefit to the people of the state. Resolution No. 68-16 has been approved by the USEPA to be consistent with the federal antidegradation policy (40 CFR 131.12).

**Appurtenant.** Belonging to, pertinent to, or used for the Commercial Lily Bulb Operation.

**Appurtenant Field Road.** An agricultural road used for Commercial Lily Bulb

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Operations which connects or is used to access lily bulb fields under the ownership or control of the landowner or operator.

**Authorized Representative.** An individual, agency, or entity who acts on behalf of another individual, agency, or entity (such as an approved Third-Party program staff, Enrollee, or consultant retained by an approved Third-Party program acting on behalf of an individual Enrollee or the North Coast Water Board).

**Basin Plan.** The Basin Plan is the North Coast Region's Water Quality Control Plan. The Basin Plan describes how the quality of the surface and groundwater in the North Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan includes beneficial uses, water quality objectives, and a program of implementation.

**Beneficial Uses.** The Basin Plan establishes the beneficial uses of surface water and groundwater to be protected in the North Coast Region. Beneficial uses for the Smith River Plain can be found in Section I.E.7 of this Order.

**Biotic Ligand Model (BLM).** The BLM is the current EPA recommended method for determining copper concentrations protective of aquatic life on a site-specific basis and has been adopted by the State of Idaho Department of Environmental Quality and the State of Oregon Department of Environmental Quality to develop state-wide, site-specific water quality criteria for copper.

**Biotic Ligand Model Instantaneous Water Quality Criteria (BLM-IWQC).** A criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO<sub>4</sub>), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection.

**Commercial Lily Bulb Operation.** A Commercial Lily Bulb Operation is land planted in lily bulbs or a similar bulb crop within a 5 year period (including appurtenant field roads, agricultural structures, and areas used for activities appurtenant to the Commercial Lily Bulb Operation) with one or more of the following characteristics: (1) The landowner or operator holds a current Operator Identification Number/Permit Number for pesticide use reporting; (2) The crop and/or its product is sold; or (3) the federal Department of Treasury Internal Revenue Service form 1040 Schedule F Profit or Loss from Farming is used to file federal taxes.

**Concentration.** The relative amount of a substance mixed with another substance. An example is 5 mg/L of nitrogen in water or 5 ppm (parts per million).



**Controllable Sediment Discharge Sources (CSDS).** Areas discharging or having the potential to discharge sediment to waters of the state in violation of water quality standards or other requirements of this Order caused or affected by human activity and may feasibly and reasonably respond to management practices.

**Cover Crop.** (See Ground Cover).

**Discharge.** A release of a waste to waters of the state, either directly to surface waters or through percolation to groundwater. Wastes from irrigated agriculture include but are not limited to earthen materials (soil, silt, sand, clay, and rock), inorganic materials (metals, plastics, salts, boron, selenium, potassium, nitrogen, phosphorus, etc.) and organic materials such as pesticides. Discharges from Commercial Lily Bulb Farms regulated by this Order include discharges to surface water and groundwater, through mechanisms such as stormwater runoff flowing from irrigated lands, irrigation tailwater, percolation or pollutants to groundwater, and runoff resulting from operational spills. These discharges can contain wastes that could affect the quality of waters of the state and impair beneficial uses.

**Discharge Point.** A discharge point is defined as a location where surface water discharges, which are in hydrologic connection to off-farm surface waters, leave the Enrollee's property. A discharge point is any hydrologically connected discharge that is not an agricultural drainage structure as defined above.

**Disturbance.** When natural conditions have been modified in a way that may result in waste discharge to waters of the state from the site. Disturbed areas are where natural plant growth has been removed, whether by physical, animal, or chemical means, or natural grade has been modified for any purpose. Disturbance includes all activities whatsoever associated with developing or modifying land for agricultural related activities or access. Disturbance activities include, but are not limited to, construction of roads, buildings, water storage areas; excavation, grading, and site clearing. Disturbance includes crop areas, storage areas where soil or chemicals (e.g., pesticides, fertilizers, compost, or biosolids) are located.

**Drinking Water Supply Well.** Any groundwater well that is connected to a residence, workshop, or place of business that may be used for human consumption, cooking, or sanitary purposes that is located within an enrolled Assessor Parcel Number (APN). This includes all domestic wells located within the enrolled APN, not limited to the leased property or within the farm boundary. This definition includes "dual-use" wells that are used for both irrigation and domestic purposes. The State Water Resources Control Board (State Water Board), Groundwater Ambient Monitoring and Assessment (GAMA) Program defines an individual well serving a single residential connection as a "private domestic well." For the purposes of this Order, a "private domestic well" is a Drinking Water Supply Well if it is located on the enrolled parcel and there are drinking water users of that well.

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**Edge-of-Field.** Edge of the Farm Area producing crops including the Appurtenant Field Roads. Point in land where the surface water drains out of the Farm Area producing areas. See also Discharge Point.

**Enrollee.** The owner and/or operator of the Commercial Lily Bulb Operation discharges or has the potential to discharge waste that could directly or indirectly reach waters of the State and affect the quality of any surface water or groundwater. See also Landowner, Operator.

**Ephemeral Stream.** A Class III watercourse. A body of flowing water that contains water for only part of the year, but more than just after rainstorms and as snowmelt as shown in the NHD shapefile. In the absence of diversion, water is flowing less than three months during a typical year and the stream does not support riparian vegetation or aquatic life. Ephemeral watercourses typically have water flowing for a short duration after precipitation events or snowmelt and show evidence of being capable of sediment transport.

**Erosion.** The gradual destruction of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

**Exceedance.** A reading using a field instrument or a detection by a California State-certified analytical laboratory where the detected result is above an applicable water quality standard for the parameter or constituent.

**Farm Area.** The Planted Area and appurtenant structures, field roads, maintenance areas, mixing and loading sites, and appurtenant storage yards on a Commercial Lily Bulb Operation.

**Field.** A term to describe a contiguous Planted Area that is farmed in lily bulbs in any particular year for the purposes of monitoring, reporting and adaptive management. A Field is a contiguous block of planted lily bulbs not separated by Appurtenant Field Roads or waterbodies. Where this Order scales requirements by Management Unit, Enrollees may report data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, (3) and the same management practices. See Management Unit.

**Ground Cover.** Ground cover refers to the following practices: (1) Cover crops can be grasses, legumes, forbs, or other herbaceous plants established in planted fields for livestock grazing, for production into hay and forage crops, or provide seasonal or year-round ground cover for conservation purposes. (2) Conservation cover is establishing and maintaining perennial vegetated cover to protect soil and water resources on lands needing permanent protective cover that will not be used for forage production. (3) Effective soil cover includes mulching, straw mulching, plant residues or other suitable materials produced off site to the land surface. Mulching is used on bare, exposed soil

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surfaces that are deemed to be potential critical erosion areas. In most cases, mulch will consist of grain straw residue, but may include wood chips, leaves, composted yard waste, etc. (NRCS Conservation Practice Standards 2016<sup>82</sup>).

**Ground Disturbing Management Practices.** These measures could include but are not limited to practices to prevent erosion of exposed soil and stockpiles, including watering for dust control, establishing perimeter silt fences, and/or placing fiber rolls; minimizing soil disturbance areas; implementing practices to maintain water quality, including silt fences, stabilized construction entrances, and storm drain inlet protection; limiting construction to dry periods; and revegetating disturbed areas.

**Groundwater.** The supply of water found beneath the Earth's surface, usually in aquifers which can supply wells and springs.

**Groundwater Protection Formula, Values and Targets.** The Groundwater Protection (GWP) Formula generates GWP Values, expressed as either nitrate-N loading numbers or concentrations of nitrate in water (e.g., mg/L), reflecting the influence of total applied nitrogen, total removed nitrogen, recharge conditions, and other relevant and scientifically supported variables that influence the potential average concentration of nitrate in water expected to reach groundwater in a given township over a given time period. GWP Values are calculated based on reported INMP data and reflect discharge estimates from the bottom of the root-zone. GWP Targets considers GWP Values to establish the nitrogen loading rate necessary to comply with the Antidegradation Policy and Basin Plan.

**Groundwater Trend Monitoring Well.** A well that the Enrollee selects for Groundwater Trend monitoring pursuant to Section III of Attachment A: Monitoring and Reporting Program.

**High-Water Mark.** That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

**High Vulnerability Groundwater Basin.** Defined in the ESJ Order as areas "where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities." For the purposes of this Order, 'high vulnerability areas' are defined as the priority groundwater basins having a relatively high threat from salts and nutrients and would benefit from salt and nutrient management planning as defined in Groundwater Basin Evaluation and Prioritization Resolution No. R1-2021-0006.

**Hydrologically Connected.** Farm areas with a continuous surface flow path to a

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natural stream channel during a storm runoff event (also referred to as hydrologic connectivity). Connectivity usually occurs through drainage structures, drainage inlets, road ditches, gullies, and channels.

**Hydrologically Connected Undesignated Channel.** Channels not part of the NHD dataset that are hydrologically connected to off-farm surface waters. Includes agricultural ditches.

**Inactive Well.** A well is considered “inactive” when it has been taken out of service but has not been destroyed (see Abandoned Well definition). An inactive well must not allow impairment of water quality within the well and/or groundwater encountered by the well.

**Individual Enrollee.** An Enrollee in the Lily Bulb Order who is not part of a Coalition. The Individual Enrollee is responsible for conducting all monitoring individually and reporting directly to the North Coast Water Board.

**Intermittent Stream.** A Class II watercourse. A body of flowing water that contains water only during or after a local rainstorm or heavy snowmelt as shown in the NHD shapefile. In the absence of diversions, water is flowing for three to nine months during a typical year, provides aquatic habitat for non-fish aquatic species, fish always or seasonally present within 1,000 feet downstream, and/or water is flowing less than three months during a typical year and the stream supports riparian vegetation.

**Invasive Species.** Organisms (plants, animals, or microbes) that are not native to an environment and that, once introduced establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health. U.S. Department of Agriculture, Natural Resource Conservation Service website: EnviroAtlas Hydrologic Unit Codes Fact Sheet<sup>83</sup>. For guidance on identifying species of concern, see the Cal-IPC website: Plants A to Z<sup>84</sup>.

**Irrigation.** Applying water to land areas to supply the water and nutrient needs of plants.

**Irrigation Management Practices.** Management practices designed to improve irrigation efficiency and reduce the amount of irrigation return flow or tailwater, and associated degradation or pollution of surface and groundwater caused by discharges of waste associated with irrigated lands.

**Irrigation and Nitrogen Planning Specialist.** A Certified Crop Advisor (CCA) who has completed the California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy’s (ASA) International Certified Crop Adviser (ICCA) Coalition and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take the CDFA

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Irrigation and Nitrogen Management Training for Grower Self-Certification, pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education. More information can be found at [CDFA FREP Training](https://www.cdfa.ca.gov/is/ffldrs/frep/training.html) (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).

**Landowner.** An individual or entity who has legal ownership of a parcel(s) of land. See also Enrollee, Operator.

**Leaching.** In agriculture, leaching is the loss of water-soluble plant nutrients from the soil, due to the percolation of rain and irrigation water. Leaching may also refer to the salinity control practice of applying a small amount of excess irrigation to drain down salts from the root soil profile to avoid salts from building up in the soil. In the natural environment, leaching contributes to groundwater contamination. As water from rain, flooding, or other sources seeps into the ground, it can dissolve chemicals and carry them into the underground water supply.

**Load.** The mass of a substance discharged over a given amount of time, for example 10 mg/day or 5 kg/day.

**Major Storm Event.** A Major Storm Event is defined as a storm that is forecasted and produces at least one inch of precipitation within a 24-hour period and is preceded by a minimum of 48 hours producing less than 0.25 inches of precipitation. A Major Storm Event has ended when no more than 0.25 inches of precipitation has been produced within a 48-hour period. Collection of samples during a Major Storm event shall occur within 24 hours following the first inch of precipitation and before cumulative precipitation exceeds three inches within a 24-hour period. See Attachment D: Methodologies and Procedures for guidance.

**Management Unit.** Where this Order allows reporting by Management Unit, Enrollees may report data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, and (3) the same management practices. Management Units can be defined by the Enrollee in a manner consistent with the farming operation so long as the Enrollee tracks which Field(s) comprise each Management Unit. See Field.

**Method Detection Limit.** The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in accordance with USEPA Definition and Procedure for the Determination of the Method Detection Limit, Revision 2. The laboratory establishes the MDL values based on the analytical test method and the types of calibrated laboratory equipment that are used.

**Monitoring.** Observing and checking a feature or factor over time to determine compliance with this Order or other regulatory requirements. Monitoring in this Order includes but is not limited to surface water or groundwater sampling and analysis to

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evaluate water quality in connection with agricultural activities, and inspecting operations, management practice implementation and effectiveness, maintenance of on-site records, and management practice reporting.

**Nitrogen Applied.** Total nitrogen applied includes nitrogen in any product, form, or concentration including, but not limited to, organic and inorganic fertilizers, slow-release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water; it is reported in units of pounds of nitrogen per crop, per acre for each commercial lily bulb Field or nitrate loading risk unit.

**Nitrogen Removed.** Nitrogen Removed includes all nitrogen taken from the Field in harvested or other materials. Other materials may include leaf material, bulbs, and any other source of nitrogen removed from the field.

**Nitrogen-Removal Coefficient (CN).** Percent of nitrogen content in the dry matter of plant tissue. The CN multiplied by the weight of plant material removed from the Fields, can be used to estimate the nitrogen removed from the marketable portion of a crop.

**Nonpoint Source (NPS) Pollution.** The Basin Plan states that nonpoint sources of water pollution are generally defined as sources which are diffuse (spread out over a large area). Nonpoint sources of pollution are not subject to NPDES permitting. The wastes are generally carried off the land by runoff. Common nonpoint sources of pollution are activities associated with agriculture, timber harvest, certain mining, dams, and saltwater intrusion.

**Nitrogen Management Practices.** Management practices designed to reduce the nitrogen loss from agricultural lands, which occur through edge-of-field runoff or leaching from the root zone.

**Operator.** Person responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater, including, but not limited to, a farm/ranch manager, lessee, or sub-lessee. If enrolled, the operator is responsible for ensuring compliance with this Order and for any discharge of waste occurring on or from the operation. See also Enrollee, Landowner.

**Operation.** A distinct farming business, generally characterized by the form of business organization, such as a sole proprietorship, partnership, corporation, and/or cooperative. A farming operation may be associated with one-to-many individual farms/ranches.

**Perennial Stream.** A stream that holds water throughout the year. Also known as a Class I watercourse. In the absence of diversions, water is flowing for more than nine months during a typical year, fish always or seasonally present onsite or includes habitat to sustain fish migration and spawning, and/or a spring, an area where there is concentrated discharge of ground water that flows at the ground surface (a spring may

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flow any part of the year and does not have a defined bed and banks).

**Pesticide.** Any substance intended to control, destroy, repel, or otherwise mitigate a pest. The term pesticide is inclusive of all pest and disease management products, including insecticides, herbicides, fungicides, nematocides, rodenticides, algicides, etc.

**Planted Area.** The area of the Farm Area that is planted in lily bulbs; a subset of the Farm Area. Planted Area does not include appurtenant structures or field roads.

**Pollutant.** The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water, including dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

**Pollution.** Any alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (1) the waters for beneficial uses, (2) facilities which serve these beneficial uses. Pollution may include contamination.

**Quality Assurance Project Plan.** A Quality Assurance Project Plan (QAPP) integrates all technical and quality aspects of a project, including planning, implementation, and assessment.

**Qualified Professional.** An individual licensed in California under the Professional Engineer Act (e.g., Professional Engineer), Geologist and Geophysicist Act (e.g., Professional Geologist, Certified Engineering Geologist, or Certified Hydrogeologist), and Land Surveyors' Act (e.g., Professional Land Surveyor); a California Registered Professional Forester (RPF); or a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD), a certified soil scientist registered through the American Society of Agronomy; Certified Professional in Erosion and Sediment Control (CPSEC)<sup>TM</sup>/Certified Professional in Storm Water Quality (CPSWQ)<sup>TM</sup> registered through EnviroCert International, Inc.; a or professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET). A Qualified Professional must only perform work they are qualified to complete, consistent with applicable licensing and registration restrictions, and must certify any work completed. See Business and Professions Code sections 6700-6799, 7800-7887, and 8700-8805, respectively.

**Quality of the Water.** The "chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use" as defined in the California Water Code Sec. 13050(g).

**Receiving Waters.** Surface waters or groundwater that receive or have the potential to receive discharges of waste from irrigated lands.

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**Receiving Water Limitation.** A requirement that prohibits wastes discharged from Commercial Lily Bulb Operations in the Smith River Plain including sediment, pesticides, and nutrients from causing or contributing to an exceedance of applicable water quality objectives for surface waters or groundwater, unreasonably affecting applicable beneficial uses, or causing or contributing to a condition of pollution, contamination, or nuisance as defined in Water Code Section 13050. Receiving Water Limitations are implemented to ensure compliance with both numeric and narrative water quality objectives, including but not limited to objectives for chemical constituents, pH, sediment, turbidity, and toxicity. Compliance with Receiving Water Limitations is demonstrated by meeting Water Quality Benchmarks established in the Order, and any exceedance may trigger adaptive management or enforcement actions as specified in the Order.

**Riparian Vegetation.** The vegetation (including dead, dying, or decaying vegetation) along a watercourse that is distinguished from other vegetation by its dependence on the combination of soil moisture and other environmental factors provided by a watercourse.

**Sediment and Erosion Control Practices.** Practices used to prevent and reduce the amount of soil and sediment entering surface water in order to protect or improve water quality.

**Site-Specific Potential Effective Shade.** The shade equivalent to that provided by topography and potential vegetation conditions at a site. Shade controls that are effective at correcting temperature impairments also operate to prevent impairments and provide other water quality protections such as bank stability and filtering sediment and other waste discharges.

**Source of Drinking Water.** Any water designated as municipal or domestic supply (MUN) beneficial use in a North Coast Water Board Basin Plan and/or as defined in State Water Board Resolution No. 88-63.

**Stormwater.** Stormwater runoff, snow melt runoff, and surface runoff and drainage, as defined in 40 CFR 122.26(b)(13).

**Stormwater Runoff.** Precipitation water in excess of what can infiltrate the soil surface and be stored in small surface depressions.

**Streamside Area.** The area between the waterside edge of riparian vegetation (or the nearest edge of the High-Water Mark if riparian vegetation is not present) and the field side edge of a vegetated buffer. A vegetated buffer is not synonymous with a filter strip, which may be used as part of farming practices (e.g., equipment turn-around) and disturbed for tilling, planting, or other practices.

**Surface Runoff.** Precipitation, snow melt, or irrigation water in excess of what can



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infiltrate the soil surface and be stored in small surface depressions, a major transporter of nonpoint source wastes in rivers, streams, and lakes.

**Tailwater.** Runoff of irrigation water from the lower end of an irrigated field.

**Toxicity Unit.** A toxicity unit (TU) is a simple ratio of the measured concentration of dissolved copper to the BLM-generated criteria and is calculated by dividing the measured value by the modelled criteria. See Attachment D: Methodologies and Procedures for more information on how the 'TU' is calculated and used. See also, Biotic Ligand Model.

**Coalition.** An organization or entity that is approved to represent Enrollees under this Order and is obligated to fulfill the following responsibilities: (1) collect fees from Enrollees and submit payments to the State Water Resources Control Board; (2) manage communications between Enrollees and the North Coast Water Board; (3) provide compliance education resources for Enrollees; and (4) fulfill monitoring and reporting requirements including but not limited to conducting regional surface water and groundwater monitoring, and connecting Enrollees to resources that can assist the preparation and implementation of Water Quality Management Plans.

**Third-Party Program.** The set of requirements under this Order that a Coalition is allowed to perform on behalf of the Enrollees enrolled in that Coalition.

**Total Maximum Daily Load (TMDL).** The calculation of the maximum amount of a particular material that a waterbody can assimilate on a regular basis and still support beneficial uses designated for that waterbody.

**Trend.** A general direction in which something is developing or changing. See also Water Quality Trend.

**Unfarmed Wetland.** Any wetland not currently farmed or historically farmed in the lily bulb crop rotation upon enrollment in the Order. An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

**Vegetated Buffer.** A narrow, permanent strip of dense perennial vegetation (including riparian vegetation) where no crops are grown and which is established parallel to the contours of and perpendicular to the dominant slope of the land applications area for the purposes of slowing water runoff, enhancing water infiltration, trapping pollutants bound to sediment and minimizing the risk of any potential nutrients or pollutants from reaching surface waters. A vegetated buffer is not synonymous with a filter strip, which may be used as part of farming practices (e.g., equipment turn-around) and disturbed for tilling, planting, or other practices

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**Watercourse Setback.** A setback area adjacent to a watercourse, including streams, creeks, and other designated or undesignated channels, whether perennial, intermittent, or ephemeral, that is required to be maintained in vegetative cover in accordance with this Order for purposes of Adaptive Management. This term is distinct and independent from Streamside Areas established to implement the Temperature Policy. The Watercourse Setback is measured from the waterside edge of vegetation to the Planted Area of the lily bulb field.

**Waste.** “Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal” as defined in the California Water Code Sec. 13050(d). “Waste” includes irrigation return flows and drainage water from agricultural operations containing materials not present prior to use. Waste from irrigated agriculture includes earthen materials (such as soil, silt, sand, clay, rock), inorganic materials (such as metals, salts, boron, selenium, potassium, nitrogen, phosphorus), and organic materials such as pesticides.

**Water Quality Benchmark.** A concentration based on relevant water quality criteria that is the numeric translation of applicable Water Quality Objectives. Water Quality Benchmarks are defined in Section G.1 of the Findings and included in Attachment A: Monitoring and Reporting Program. Water Quality Benchmarks for surface water are established for both acute and chronic exposure conditions. Exceedance of a Water Quality Benchmark is determined by considering both concentration and frequency within a calendar year. Receiving Water Limitations in Section II.C of this Order reference compliance with all water quality objectives, some of which are translated through Water Quality Benchmarks. Attainment of Water Quality Benchmarks demonstrates attainment of the corresponding Water Quality Objective and compliance with Receiving Water Limitations. Conversely, exceedance of a Water Quality Benchmark indicates that discharges may be causing or contributing to an exceedance of a Water Quality Objective and are, therefore, in violation of Receiving Water Limitations of the Order. Water Quality Benchmarks for groundwater are protective of applicable Water Quality Objectives. Attainment of Water Quality Benchmarks for groundwater in this Order demonstrate compliance with Receiving Water Limitations.

**Water Quality Objective(s).** “Limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area,” as defined in Sec. 13050(h) of the California Water Code. Water Quality Objectives may be either numerical or narrative and serve as Water Quality Criteria for purposes of section 303 of the Clean Water Act.

**Water Quality Standard.** Provisions of State or Federal law that consist of the beneficial designated uses or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular waterbody,

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and an antidegradation statement. Water quality standards include water quality objectives in the North Coast Water Board's Basin Plan, water quality criteria in the California Toxics Rule and National Toxics Rule adopted by USEPA, and/or water quality objectives in other applicable State Water Board plans and policies. For groundwater with the beneficial use of municipal or domestic water supply, the applicable drinking water standards are those established by the USEPA or California DDW, whichever is more stringent. Under Sec. 303 of the Clean Water Act, each State is required to adopt water quality standards.

**Water Quality Trend.** A change in time of a measured chemical constituent that represents an aspect of the quality of the water (e.g., increasing, stable, or decreasing concentration of a constituent). The analysis of a water quality trend predicts the behavior of water quality parameters and overall water quality in the time domain.

**Waters of the State.** "Any surface water or groundwater, including saline waters, within the boundaries of the State" as defined in the California Water Code Sec. 13050(e). "Waters of the state" includes all "waters of the U.S." Any significant accumulation of water above the ground surface, such as lakes, ponds, rivers, streams, creeks, springs, wetlands, and canals.

### III. Endnotes

The following endnotes apply to Order No. R1-2026-0035 only. Endnotes for the Monitoring and Reporting Program shall be provided at the end of Attachment A: Monitoring and Reporting Program. Endnotes are arranged in order that they appear in the document.

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- <sup>1</sup> The California Interagency Watershed Map of 1999 (final version CalWater 2.2.1 updated in 2014) was the State of California's working definition of watershed boundaries prior to the development of the federal Hydrologic Unit Code (HUC) system. The purpose of the CalWater dataset was to standardize the boundary delineation, coding, and naming of California watersheds by government agencies. CalWater divides the State into ten Hydrologic Regions (HR). Each HR is progressively subdivided into six smaller, nested levels: the Hydrologic Unit (HU, major rivers), Hydrologic Area (HA, major tributaries), Hydrologic Sub-Area (HSA), Super Planning Watershed (SPWS), and Planning Watershed (PWS).
- <sup>2</sup> Lily bulb crop rotation can sometimes have longer or shorter crop rotation cycles than three-to-five years.
- <sup>3</sup> For the purposes of this Order, pesticides include insecticides, herbicides, and fungicides.
- <sup>4</sup> 2018 SWAMP Monitoring Report: [180101-FINAL SWAMP REPORT Smith River.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/180116/180101-FINAL%20SWAMP%20REPORT_Smith%20River.pdf)  
[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/pdf/180116/180101-FINAL%20SWAMP%20REPORT\\_Smith%20River.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/180116/180101-FINAL%20SWAMP%20REPORT_Smith%20River.pdf)
- <sup>5</sup> See Smith River Plain Water Quality Management Plan: [Smith River Plain Water Quality Management Plan Public Review Draft February 2021](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmgmtplan.pdf).  
[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2021/smithmgmtplan.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmgmtplan.pdf)
- <sup>6</sup> [2025 SWAMP Report Smith River Plain Surface Water Monitoring Report 2021-2024](https://waterboards.ca.gov/northcoast/board_info/board_meetings/10_2025/10_08/pdf/1/1-smith-report.pdf)  
[https://waterboards.ca.gov/northcoast/board\\_info/board\\_meetings/10\\_2025/10\\_08/pdf/1/1-smith-report.pdf](https://waterboards.ca.gov/northcoast/board_info/board_meetings/10_2025/10_08/pdf/1/1-smith-report.pdf)
- <sup>7</sup> The 2025 SWAMP Report Updates Memo can be found here:  
[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2026/25\\_SWAMP\\_MR\\_MEMO.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2026/25_SWAMP_MR_MEMO.pdf)
- <sup>8</sup> [Smith River Plain Surface Water Monitoring Study 2021-2024](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2025/25_SWAMP_MR_SRPWM.pdf)  
[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2025/25\\_SWAMP\\_MR\\_SRPWM.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2025/25_SWAMP_MR_SRPWM.pdf)
- <sup>9</sup> Under section 9 of the ESA, it is illegal to import, export, or take endangered species for any purpose, including commercial activity. The term “take” means to harass, hunt, shoot, capture, trap, kill, collect, wound, harm, or pursue an ESA-listed species, or attempt any of these activities. See [Protective Regulations for Threatened Species under the Endangered Species Act: Section 4\(d\) | NOAA](#)

[Fisheries](#) for more information.

(<https://www.fisheries.noaa.gov/national/endangered-species-conservation/protective-regulations-threatened-species-under-endangered#:~:text=Under%20section%209%20of%20the,attempt%20any%20of%20these%20activities.>)

- <sup>10</sup> Pounds of copper itself, not pounds of a copper containing compound.
- <sup>11</sup> Hurst, M., Wolfe, L., & Selby, P. (2024). The Effects of Vegetative Barriers on Copper in Runoff from Lily Bulb Fields. California State Polytechnic University – Humboldt. Final Report submitted to the California State University - Agricultural Research Institute (CSU-ARI) and Southern California Coastal Water Research Project. Date: 8/15/2024
- <sup>12</sup> Fischer, R.A., Martin, C.O., Ratti, J.T., & Guidice, J. (2000). Improving Riparian Buffer Strips for Water Quality and Wildlife. U.S. Army Engineer Research and Development Center (ERDC).
- <sup>13</sup> Cole, L.J., Stockan, J., & Helliwell, R. (2020). Managing riparian buffer strips to optimise ecosystem services: A review. *Agriculture, Ecosystems & Environment*, 296, 106891.
- <sup>14</sup> See Tables I.3 and I.4 in the Findings for a consolidated list of Water Quality Benchmarks.
- <sup>15</sup> See [rb1\\_smith\\_river\\_jan2018.pdf \(ca.gov\)](#)  
([https://www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/reglrpts/rb1\\_smith\\_river\\_jan2018.pdf](https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb1_smith_river_jan2018.pdf))
- <sup>16</sup> At the Sarina Road SWAMP Monitoring location
- <sup>17</sup> See [Aquatic Life Benchmarks and Ecological Risk Assessments for Registered Pesticides | US EPA](#) for US EPA Aquatic Life Benchmarks  
(<https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>)
- <sup>18</sup> Toxicity was determined using methods developed by the UC Davis Aquatic Health Program Laboratory.
- <sup>19</sup> See the 2018 SWAMP Report: [180101-FINAL SWAMP REPORT Smith River.pdf \(ca.gov\)](#)
- <sup>20</sup> Smith River Plain Dissolved Copper Monitoring Report 2017-2018  
<https://share.google/4uapRZA0fypqC6b01>
- <sup>21</sup> Hurst, M., Bright, P., Villalta, E., & Wolfe, L. (2022). The Bioavailability of Copper in the Smith River Plain. California State University - Agricultural Research Institute (ARI) and the Tolowa Dee-ni' Nation. Cal Poly Humboldt, Arcata, CA. August 15, 2022.
- <sup>22</sup> Sandahl, J. F., M. J. B. Miyasaka, N. Koide, and H. Ueda. "A Sensory System at the Interface between Urban Stormwater Runoff and Salmon Survival." *Environmental Science & Technology*, vol. 41, no. 8, 2007, pp. 2998-3004.
- <sup>23</sup> Olivari, Francisco A., Pedro P. Hernández, and Miguel L. Allende. "Acute Copper

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Exposure Induces Oxidative Stress and Cell Death in Lateral Line Hair Cells of Zebrafish Larvae.” *Brain Research*, vol. 1244, 2008, pp. 1-12.

<sup>24</sup> Visit the North Coast Lily Bulb page to access prior studies:

[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily)

<sup>25</sup> The 2025 SWAMP Report can be found here:

[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2025/25\\_SWAMP\\_MR\\_SRPWM.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2025/25_SWAMP_MR_SRPWM.pdf)

<sup>26</sup> The 2025 SWAMP Report Updates Memo can be found here:

[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2026/25\\_SWAMP\\_MR\\_MEMO.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2026/25_SWAMP_MR_MEMO.pdf)

<sup>27</sup> Normalized application rates were determined by dividing application rates for each tributary watershed by the tributary area in acres.

<sup>28</sup> The Water Quality Benchmark for diuron and imidacloprid in this Order are consistent with the USEPA Aquatic Life Benchmarks. The Aquatic Life Benchmark for diuron was updated in 2025. The 2025 SWAMP Report compared diuron and imidacloprid detections using benchmarks derived from UC Davis studies.

<sup>29</sup> See definitions of Groundwater Trend Monitoring Well and Drinking Water Supply Well in Appendix I

<sup>30</sup> View the [Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf) (ca.gov)

[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/pdf/151209/Smith\\_River\\_Plain\\_2015\\_Groundwater\\_Interim\\_Monitoring\\_Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)

<sup>31</sup> Trace concentrations are concentrations between the Method Detection Limit and the Reporting Limit.

<sup>32</sup> Established health levels are drinking water standards developed by the CA Department of Pesticide Regulation, the CA State Water Board, and the US EPA. Concentrations below these levels are considered protective against both acute and chronic human health impacts from pesticide exposure

<sup>33</sup> See [Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf) (ca.gov) [https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/pdf/151209/Smith\\_River\\_Plain\\_2015\\_Groundwater\\_Interim\\_Monitoring\\_Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)

<sup>34</sup> Smith River Management Plan, 2021.

[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/agricultural\\_lands/lily/pdf/2021/smithmgmtplan.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmgmtplan.pdf)

<sup>35</sup> National Oceanic and Atmospheric Administration (NMFS). 2014. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*). National Marine Fisheries Service. Arcata, CA. 1841p

- <sup>36</sup> See [Essential Fish Habitat on the West Coast | NOAA Fisheries](https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast)  
<https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast>
- <sup>37</sup> 2005 Tidewater Goby Recovery Plan  
[https://ecos.fws.gov/docs/recovery\\_plan/051207.pdf](https://ecos.fws.gov/docs/recovery_plan/051207.pdf)
- <sup>38</sup> Portions of the Basin Plan's narrative toxicity objective have been superseded by the Statewide Aquatic Toxicity Provisions. (See Staff Report for State Policy for Water Quality Control: Toxicity Provisions, Appendix E, pp. 413-414.  
[https://www.waterboards.ca.gov/water\\_issues/programs/state\\_implementation\\_policy/docs/2021/2021-toxicity-staff-report.pdf](https://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/docs/2021/2021-toxicity-staff-report.pdf) )
- <sup>39</sup> Water Quality Benchmarks were derived from water quality criteria are generally consistent with the State Water Board's guidelines for listing impaired waters under Section 303(d) of the Clean Water Act. As a general approach, North Coast Water Board staff reviewed all available pesticide water quality criteria and selected the most protective (i.e., lowest) values for relevant beneficial uses of surface waters and groundwater in the Smith River Plain. In surface waters, Water Quality Benchmarks (except the acute benchmark for ethoprop and the BLM-derived benchmarks for copper) are sourced from USEPA Aquatic Life Benchmarks. The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO<sub>4</sub>), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. For groundwater Water Quality Benchmarks, the North Coast Water Board relies on the applicable Drinking Water Maximum Contaminant Level (MCL), if available. If an MCL is not available, the North Coast Water Board has selected the best available Drinking Water Standard available. Human Health Reference Levels (HHRL) are identified by California Department of Pesticide Regulation's Human Health Assessment Branch. Pesticide concentrations measured in water exceeding these reference levels indicate a health concern. They are not legally enforceable standards but can be used to identify pesticide levels in drinking water that could pose a human health risk. USEPA Chronic or Lifetime Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of chronic non-carcinogenic effects over a lifetime of exposure, assuming that 20% of the exposure to a given pesticide is from water and additional exposure is derived from another source such as food, air, or dermal contact. USEPA Acute or One-day Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of acute



or up to one-day non-carcinogenic effects, assuming that the entire exposure to a given pesticide is from drinking water. Health-Based Screening Levels (HBSLs) are federal, non-enforceable water-quality benchmarks developed by the United States Geological Survey. The HBSL concentration level for diuron, for example, represents a one-in-one million cancer risk range.

<sup>40</sup> See Endnote 38.

<sup>41</sup> The DPR acute Human Health Reference Level (HHRL) for imidacloprid (283 µg/L) is lower than the corresponding chronic HHRL (552 µg/L) because DPR derived both values from the same point of departure applied to the subpopulation with the highest water intake per body weight (non-nursing infants). The difference between the two values reflects the drinking-water exposure assumption, not greater short-term toxicity: the acute HHRL uses 95th-percentile daily water intake, while the chronic HHRL uses average daily intake. DPR uses the lower acute HHRL of 283 µg/L as its screening level because it is protective of both acute and chronic exposures. Accordingly, this Order uses the acute screening level as its Water Quality Benchmark. (See DPR, Updated Risks from Human Exposure to Imidacloprid Residues in Well Water, April 13, 2021: [https://www.cdpr.ca.gov/wp-content/uploads/2024/10/imidacloprid\\_risks\\_memo.pdf](https://www.cdpr.ca.gov/wp-content/uploads/2024/10/imidacloprid_risks_memo.pdf) )

<sup>42</sup> Contact the North Coast Water Board for a copy of this internal memo.

<sup>43</sup> Nowell, L.H., Norman, J.E., Moran, P.W., Martin, J.D., and Stone, W.W., 2014, Pesticide toxicity index—A tool for assessing potential toxicity of pesticide mixtures to freshwater aquatic organisms: U.S. Geological Survey Scientific Investigations Report 2014–5106, 104 p., doi.org.

<sup>44</sup> The Clean Water Act does not specifically define nonpoint source pollution, except by stating that nonpoint source is anything that is not considered a point source. A point source is defined under federal regulation as “any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

<sup>45</sup> The Antidegradation Policy:  
[https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/1968/rs68\\_016.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf)

<sup>46</sup> State Water Board Order WQ 86-17 (*Fay*), pp. 16-19.

<sup>47</sup> *Asociación de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal.App.4th 1255, 1262.

<sup>48</sup> State Water Board Order 2015-0075 (*Los Angeles MS4*), p. 23.

<sup>49</sup> While the baseline for the application of the state antidegradation policy is generally the highest water quality achieved since 1986, baseline water quality may be a lower level if that lower level was allowed through a permitting action that was



consistent with applicable antidegradation policies, or where a water quality objective for a particular constituent was adopted after 1968, the baseline for that constituent is the highest water quality achieved since the adoption of the objective. State Water Board Order 2015-0075 (*Los Angeles MS4*) pp. 23-24, fn. 82.

<sup>50</sup> In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Coalition, SWRCB Order No 2018-0002 (2018):

[https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2018/wqo2018\\_0002\\_with\\_data\\_fig1\\_2\\_appendix\\_a.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2018/wqo2018_0002_with_data_fig1_2_appendix_a.pdf).

<sup>51</sup> Questions and Answers Resolution, No. 68-16, State Water Board (Feb. 16, 1995), pp. 5-6.

<sup>52</sup> Questions and Answers Resolution, No. 68-16, State Water Board (Feb. 16, 1995), pp. 5-6.

<sup>53</sup> The State of California maintains multiple publicly accessible environmental monitoring databases and data systems that provide surface water and groundwater quality information, including: the California Environmental Data Exchange Network (CEDEN) for statewide surface water quality data (<https://ceden.org/>) ; GeoTracker, an online data access system of the State Water Resources Control Board (<https://www.waterboards.ca.gov/oil-gas/geotracker/>) ; the California Department of Pesticide Regulation's Surface Water Database (SURF) (<https://www.cdpr.ca.gov/environmental-monitoring/surface-water/>) and Well Inventory Database for pesticide well sampling data (<https://calpip.cdpr.ca.gov/wellInventoryDatabase.cfm>) ; and the Groundwater Ambient Monitoring and Assessment (GAMA) Program's online groundwater quality tools (<https://www.waterboards.ca.gov/gama/>) .

<sup>54</sup> [https://www.waterboards.ca.gov/gama/docs/hva\\_map\\_table.pdf](https://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf)

<sup>55</sup> Note that this section reviews costs of compliance to the Enrollees in this Order. There are broader economic considerations not quantified in this section. For example, implementing this Order may result in positive economic impacts on the broader community through water quality benefits to tourism, recreation, or fishing.

<sup>56</sup> Estimated costs are generated from NRCS Conservation Practice Codes that can be referenced in the NRCS Field Office Technical Guide.  
<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>

<sup>57</sup> See the North Coast Basin Plan for applicable water quality objectives. [North Coast Basin Plan June 2025 Edition](https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/250703/06_25_BP.pdf)  
[https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/basin\\_plan/250703/06\\_25\\_BP.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/250703/06_25_BP.pdf)

<sup>58</sup> See Appendix I for definition of a Field, which has a distinct geography the Lily Bulb Order uses for Planted Areas of lily bulb agriculture.

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- <sup>59</sup> Agricultural pollutants can include, but is not limited to fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals and wastes associated with agricultural activities.
- <sup>60</sup> See Appendix I for definition.
- <sup>61</sup> Engineered management practices shall be designed and installed in compliance with plans and specifications prepared by a civil engineer.
- <sup>62</sup> The waterside edge of vegetation means the line on the bank that is established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Enrollees may refer to the definition of Waterside edge of vegetation in Appendix I and/or Attachment D: Methodologies and Procedures for examples.
- <sup>63</sup> This Order does not authorize agricultural activities or work in an Unfarmed Wetland. Enrollees must seek coverage through the 401 Water Quality Certification and Wetlands Program (see [https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/water\\_quality\\_certification/](https://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification/)) for discharges of dredged or fill material to waters of the state (e.g., agricultural development or agricultural activities in Unfarmed Wetlands). An Unfarmed Wetland is any wetland not currently farmed at time of adoption of the Order. An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. (See [https://www.waterboards.ca.gov/water\\_issues/programs/cwa401/docs/2021/procedures.pdf](https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf)).
- <sup>64</sup> In this case, Hydrologically Connected refers to the lake or reservoir being Hydrologically Connected to the stream, not the Farm Area.
- <sup>65</sup> Streambank restoration within waters of the United States or waters of the state requires separate regulatory coverage under either Clean Water Act section 404/401 or alternative waste discharge requirements. See [Water Quality Certification](https://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification/) ([https://www.waterboards.ca.gov/northcoast/water\\_issues/programs/water\\_quality\\_certification/](https://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification/))
- <sup>66</sup> Maintenance of existing watercourse crossings without the need for additional permitting by the North Coast Water Board is limited to removal of vegetation impacting the use and function of the crossing (e.g., preventing vehicle access across the crossing or limiting the flow of water through the crossing infrastructure), clearing and maintaining watercourse function using hand tools or the manual placement of energy dissipating rock.

- <sup>67</sup> Installation of surface water diversion infrastructure requires a valid water right from the State Water Board Division of Water Rights and may require additional permit coverage from the North Coast Water Board through an approved 401 Water Quality Certification or alternate waste discharge requirements.
- <sup>68</sup> The level of effective shade provided by vegetation when the vegetation is growing at potential. For any given location, this term is called “site- specific potential effective shade.”
- <sup>69</sup> [NRCS Technical Note on Riparian Buffer Design and Species Considerations](https://www.nrcs.usda.gov/plantmaterials/idpmstn7248.pdf) (<https://www.nrcs.usda.gov/plantmaterials/idpmstn7248.pdf>) and Dewalle, David. (2010). Modeling Stream Shade: Riparian Buffer Height and Density as Important as Buffer Width1. JAWRA Journal of the American Water Resources Association. 46. 323 - 333. 10.1111/j.1752-1688.2010.00423.x.
- <sup>70</sup> Compliance education sources include formal classroom training, individual meetings with a qualified trainer, printed materials, and/or internet-based training with an approved Coalition, University of California Cooperative Extension (UCCE), Natural Resources Conservation Service (NRCS), Resource Conservation Districts (RCDs), Regional or State Water Boards, Department of Pesticide Regulation, California Department of Fish and Wildlife, California Department of Food and Agriculture, or other organizations as approved by the Executive Officer. Compliance education requirements are consistent with “outreach and education” requirements in the Statewide Precedential Order.
- <sup>71</sup> For example, if the Field is to be prepped and planted to lily bulbs in the summer/fall of 2028, then the WQMP is due to the North Coast Water Board on January 1, 2028.
- <sup>72</sup> Treatment Control Management Practices are the implementation of one or more mechanical, chemical, biologic, or any other treatment technology. Treatment control Management Practices must be designed by a qualified professional and must monitor pollutant concentration entering and exiting the treatment system.
- <sup>73</sup> See definition in Appendix I
- <sup>74</sup> The waterside edge of vegetation means the line on the bank that is established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Enrollees may refer to the definition of Waterside edge of vegetation in Appendix I and/or Attachment D: Methodologies and Procedures for examples.
- <sup>75</sup> Refer to relevant NRCS Conservation Practice Codes that can be referenced in the NRCS Field Office Technical Guide. <https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>
- <sup>76</sup> See [Runoff Volumes Standard Operating Procedure \(Rainfall and runoff\) SOP](https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance) ([https://www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/cwt/guidance](https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance))

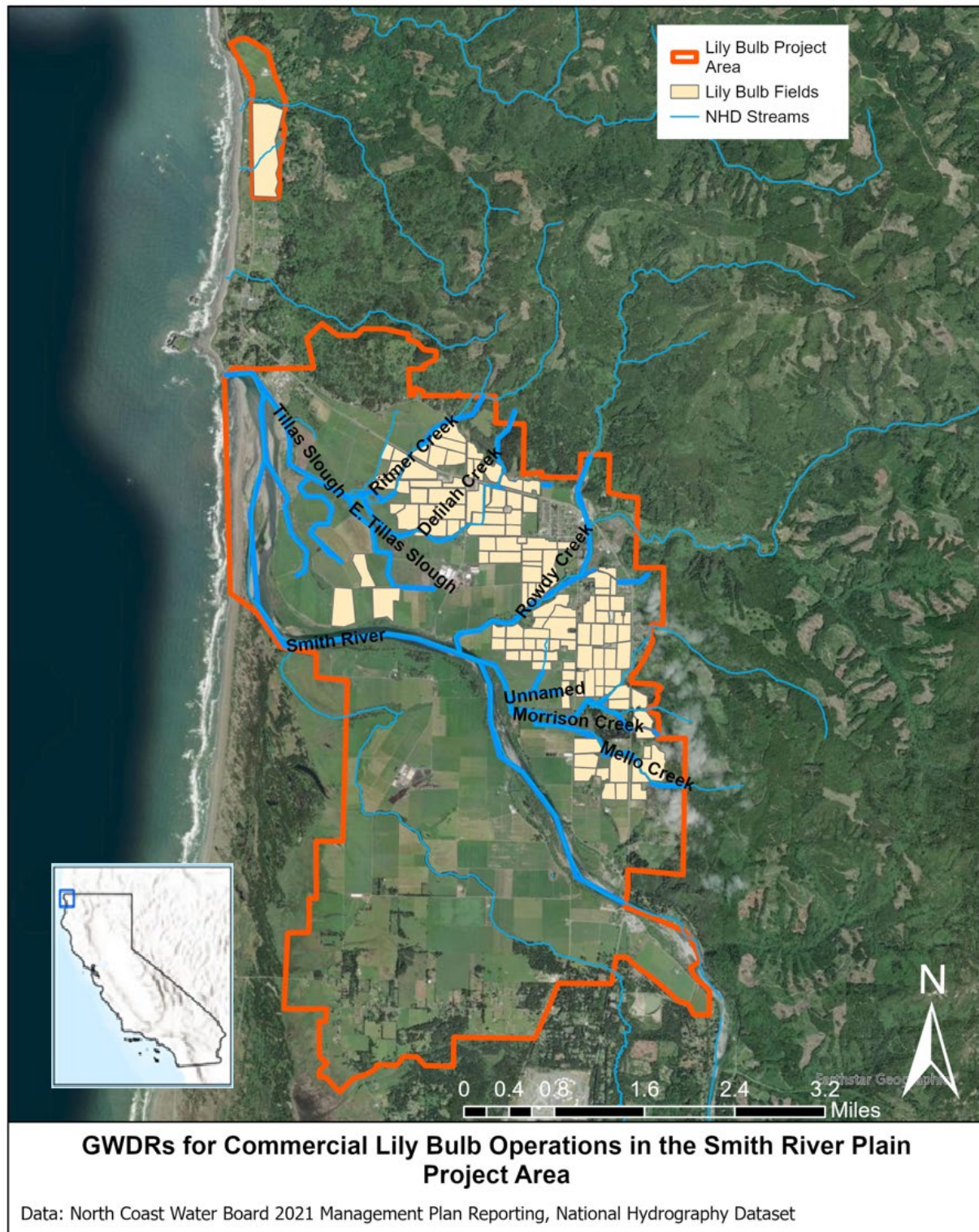
[/512.pdf](#)

- <sup>77</sup> See INMP Worksheet for examples of groundwater protection management practices
- <sup>78</sup> INMPs shall be certified either by a by a certified irrigation and nitrogen planning specialist or self-certified by the Enrollee. A certified irrigation and nitrogen planning specialist is a Certified Crop Advisor (CCA) who has completed the California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy’s (ASA) International Certified Crop Adviser (ICCA) Third-Party and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take the [CDFA Irrigation and Nitrogen Management Training for Grower Self-Certification](#), pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).
- <sup>79</sup> External sources of nitrogen do not include livestock manure. For example, if a Field is planted to forage crops or irrigated pasture and only receives nitrogen through grazed livestock manure, an INMP is not required for that Field.
- <sup>80</sup> An Irrigation and Nitrogen Planning Specialist is a Certified Crop Advisor (CCA) who has completed the California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy’s (ASA) International Certified Crop Adviser (ICCA) Third-Party and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take [the CDFA Irrigation and Nitrogen Management Training for Grower Self-Certification](#), pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).
- <sup>81</sup> [Guidance for electronic submittal](#) ([https://www.waterboards.ca.gov/northcoast/publications\\_and\\_forms/available\\_documents/pdf/2014/ECM\\_Letter-Guidelines.pdf](https://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/2014/ECM_Letter-Guidelines.pdf)).
- <sup>82</sup> Natural Resources Conservation Service: [Conservation Practice Standards Information](#) (<https://www.nrcs.usda.gov/getting-assistance/conservation-practices>).
- <sup>83</sup> See the [EnviroAtlas Hydrologic Unit Codes Fact Sheet](#) (<https://enviroatlas.epa.gov/enviroatlas/datafactsheets/pdf/Supplemental/HUC.pdf>).
- <sup>84</sup> See the [Cal-IPC website: Plants A to Z](#) (<https://www.cal-ipc.org/plants/profiles/>).



## Appendix II: Figures

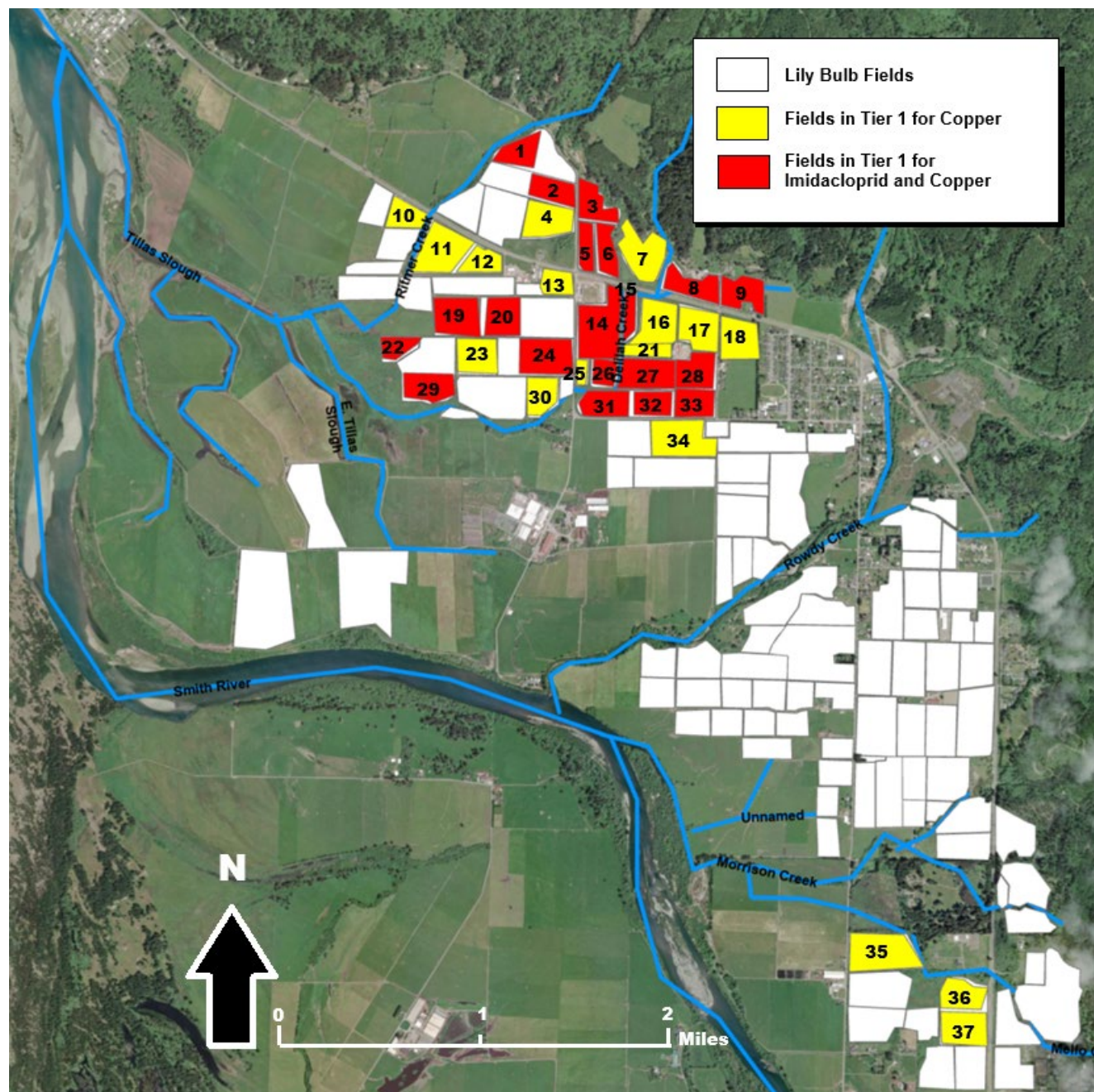
Figure 1: Fields used for lily bulb cultivation as reported in 2024 and major coastal tributaries of the Smith River Plain





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**Figure 2: Fields subject to Tier 1 Adaptive Management Requirements upon Enrollment in Order in accordance with Section II.H.**



See Table II.2 in Section II.H of the Order (p.77) for the coordinates of each Field ID listed on this map.

