Laguna de Santa Rosa Watershed Total Phosphorus Blue Ribbon Panel Summary Report

August 2018

Prepared for The City of Santa Rosa by the Consensus and Collaboration Program of the College of Continuing Education at California State University, Sacramento

Attachment J

Blue Ribbon Panel Meeting 2 Summary

Meeting 2 Summary
Laguna de Santa Rosa Watershed
Total Phosphorus Blue Ribbon Panel

June 1, 2018

Meeting Purpose:

- Continue work by the Total Phosphorus (TP) Blue Ribbon Panel (BRP) to develop recommendations on TP regulations and water quality improvements
- Continue education about the Laguna de Santa Rosa Watershed history, physical conditions and regulatory background
- Finalize Charter and Guiding Principles
- Conduct early brainstorming of Framework Ideas

In Attendance:

Blue Ribbon Panel:

Don McEnhill	Russian River Keeper
Ethan Brown	Sonoma County Economic Development Board
John Largier	UC Davis
Alison Piccoli	California Restaurant Association
Michael Cohen	Sonoma State
Matt St. John	North Coast Regional Water Quality Control Board (RWQCB)
Wendy Trowbridge	Laguna Foundation
Amelia Whitson	U.S. Environmental Protection Agency (EPA) – Region IX

Staff Attendees

Ben Horenstein	City of Santa Rosa (City)
Rita Miller	City
Sean McNeil	City
Dave Ceppos	Sacramento State's Consensus and Collaboration Program (CCP)
Sophie Carrillo-Mandel	Sacramento State's Consensus and Collaboration Program (CCP)

Public Attendees

Brenda Adelman	Russian River Watershed Protection Committee
Veronica Astells	Town of Windsor
Toni Bertolero	Town of Windsor
Heather Johnson	City
David Kuszmar	RWQCB (by phone)
Molly MacLean	City
Mike Prinz	City
Claudia Villacorta	RWQCB
Tom Grovhoug	Larry Walker Associates
Alydda Mangelsdorf	RWQCB
Linda Sawyer	Brown and Caldwell

Meeting Introduction

Dave Ceppos (Facilitator) started the meeting and reviewed the agenda and purpose of the meeting. He asked BRP members and attending members of the public to introduce themselves. The Facilitator then described how the first meeting focused on process steps and identifying key guiding principles to help frame and drive discussions in Meetings 2 and 3. He described today's meeting as continuing that process and that there will be some finalizing of process items (Charter and Guiding Principles), information exchange, and the early steps of brainstorming on framework ideas. He reviewed the proposed approach for the brainstorming process and committed to revisit that when the Panel gets to that agenda item.

The Facilitator reviewed the content of the Meeting 1 Summary and asked for feedback. Matt St. John identified an inaccuracy wherein the summary makes a statement "Agricultural runoff is not included in watershed loading population." Matt St. John stated this should say "Recycled water irrigation runoff is not included in watershed loading population." The Facilitator committed that this adjustment will be made, and afterward this document will be entered into the process public record as "Final."

The Facilitator then reviewed the content of the draft Charter and asked if BRP members had any proposed adjustments. There were no suggestions and The Facilitator proposed that the Charter be considered final for the remaining 2 meetings.

***NOTE**:*
To reduce redundancy, this meeting summary memorializes the discussion by the BRP about informational presentations but does not restate said presentations. Instead each presentation is presented as an attachment to this summary.

Phosphorus Compliance Approaches

<u>Water Quality Trading Framework for the Laguna de Santa Rosa Watershed</u>

Matt St. John reiterated the discussion at the end of Meeting 1 and how from that, he felt there would be merit for the RWQCB to provide an informational presentation on the current Water Quality Trading Framework (WQTF) to the BRP. He introduced David Kuszmar of the RWQCB who gave the presentation (Attachment A) by phone.

Following the presentation, discussion ensued by the BRP. Michael Cohen asked if sediment can be trapped (i.e.: wetlands) or flow out of the Laguna. David Kuszmar said that the WQTF reduction credits are volume based, because phosphorous is commonly bound to the sediment, the goal is to capture it rather than consider its migration downstream.

Don McEnhill stated that in the RWQCB presentation, David Kuszmar made mention of the stakeholder process used to develop the WQTF and that while he appreciated that the RWQCB provided a stakeholder input process, he asserts that not all of the Russian River Keeper's recommendations were

reflected in the RWQCB record, including significant criticisms by River Keeper that were made at the time about the likely effectiveness of the WQTF.

Wendy Trowbridge stated that "approved practices" is the crux of whether the WQTF will work or not. Making something be an approved practice could be an arduous and expensive process that nonprofits can't afford. She asked how the RWQCB envisions practices being approved and if there is funding available for this. David Kuszmar stated that the RWQCB is hoping for a crowdsourcing type approach by mutually interested parties and that grant money could be available to develop documentation of efforts. John Largier asked if there is buying and selling, or just credits involved in this trading. David Kuszmar stated that there is buying and selling and that the currency is Phosphorous.

The Facilitator opened the floor for public comment. Toni Bertolero asked whether effectiveness as defined by the RWQCB is cost effectiveness or some other metric of effectiveness. David Kuszmar stated that there are multiple categories of effectiveness. He said that, for example, it might be deemed more effective to spend money on projects that do more than reduce phosphorous, or something that could be more affordable (effective) to point source permit holders. If something proves effective, it will be the City and others who demonstrate that through their utilization.

Nutrient Management in California: A Current Perspective

Ben Horenstein introduced Tom Grovhoug from Larry Walker Associates as a consultant to the City. Tom Grovhoug provided a presentation (Attachment B) about methods of nutrient management being used in other parts of the State.

Wendy Trowbridge asked how the San Francisco Bay science project is being funded. Tom Grovhoug described a joint effort by the Water Board and regulated utilities. He described that the Bay Water Board has a use regional permit that has all wastewater systems under permit to fund science, modeling, stakeholder collaboration, etc. The San Francisco Estuary Institute is also involved as the chief scientist. Don McEnhill asked if the existing WQTF could allow credits and could allow the City to fund pre-work towards projects within development of practice. Matt St. John said the short answer is "yes" but that the challenge is that national guidance related to credit trading requires credits be earned, so there must be a nexus to water quality and a reduction in phosphorus. Don McEnhill asked if RWQCB is beholden to that. Matt St. John responded that they are "beholden" to EPA's guidance.

Wendy Trowbridge asked if there can be pilot projects and Matt St. John said yes but that the details are complex. David Kuszmar reiterated that the WQTF proposal they drafted is clear that credits generated by projects must be real and verified to be used against the City's compliance obligations. The result is that a plan cannot reduce phosphorous, only a verifiable action can.

Matt St. John asked if Bay Area dischargers are given effluent limits. Tom Grovhoug stated that no; resources are going toward determining what limits to set and then the data obtained through the program will be analyzed and used to set appropriate limits, as applicable. Ben Horenstein expanded on this and described that the process is to hold off on management actions for now in the Bay Area. Tom Grovhoug expanded that there is an assessment of what could be done, i.e. "low-hanging fruit" projects.

Chemically Enhanced Treatment for Phosphorus Reduction

Mike Prinz from the City introduced Linda Sawyer from Brown & Caldwell, consultant to the City. Linda Sawyer provided a presentation on methods that could be used to chemically enhance TP reductions at the Laguna Treatment Plant (Attachment C).

Following the presentation, the BRP posed questions and comments. Don McEnhill asked about the cost per day for such treatment and Linda Sawyer estimated between $2,000 and $3,000 per day. Amelia Whitson asked if there was concern about where such treatment would take place (i.e. at the treatment plant or somewhere else in the water stream). Linda Sawyer said that work done at other locations has been done at their plants because they had systems in place to apply the chemicals. John Largier asked what other negative effects could take place. Linda Sawyer responded that when using the chemicals, phosphorous goes into the sludge and that sometimes concentrations are too low to recover the phosphorous. She also stated that nitrogen numbers could go up and that turbidity can be affected such that a facility might have to turn off chemicals under certain flow conditions to meet Title 22 regulations.

Michael Cohen asked if when adding Alum, does aluminum increase in the wastewater and asked if we could be trading one problem for another. Linda Sawyer replied that this is an unknown.

Wastewater Rate Comparison and Considerations

Sean McNeil from the City gave a presentation about wastewater rates in the City and in nearby communities. Matt St. John asked how much of the rates are associated with monthly operations and maintenance versus debt servicing. Ben Horenstein responded that the debt is around 15% and that there is an array of regulatory drivers that also factor into the rates. Allison Piccoli noted that Sean McNeil used a definition of a “large sit-down restaurant” and wondered what that is defined as. Sean McNeil stated that it was based on a particular range of how many thousands of gallons they use annually as well as by size. Beyond that he stated, there isn’t a specific definition. Allison speculated about a large sit-down restaurant being the size of a Chevy’s or similar and Sean McNeil agreed that was the general size considered.

Amelia Whitson stated that the City has done an amazing job examining recycled water use. Even though it’s outside the scope of the water quality trading, use of recycled water decreases the potential for discharge which reduces TP discharges. These are not being discredited in this program. Discussion ensued by the BRP about how the regulators address economic impact of water quality regulation. Matt St. John confirmed that it is something the RWQCB always must consider, but it’s not a deciding factor. Water quality performance is. There isn’t a thorough cost-benefit analysis. Amelia Whitson described it similarly however she said that cost benefit analysis does come into play in anti-degradation regulation.

Guiding Principles Discussion - Continued

The Facilitator reviewed the outcomes of the Guiding Principles discussion from Meeting 1 (Attachment D) and any suggestions that have emerged since then. He reiterated that the purpose of the principles is

to provide a set of objective criteria for the BRP to have that captures respective interests of the members such that when the Panel starts brainstorming proposals for their framework, they do so with common goals and understanding.

A member[1] suggested that a principle should state something about "good science" being an underpinning of all decisions. The group discussed item 7 on the list from Meeting 1 and collectively agreed that it is an outlier and should be struck since it is specific to water quality trading credits.

A member proposed that there should be something general about costs such as "economic impacts shall be considered." The BRP agreed with this suggestion. A suggestion was made to change principle 1 to read "Future actions and guidelines should result in the highest public benefit per dollar spent."

Ethan Brown asked if in terms of stakeholders, who are "stakeholders" and are they the same or different from the "public" that would "benefit." Matt St. John stated that all stakeholders are able to comment as the public. Ben Horenstein stated that the City thinks of stakeholders in many ways and that they think about it as shared responsibilities, not necessarily commensurate with discharge. Embedded in this is the challenge of the role and responsibility of agriculture. They are a key stakeholder but were not as relevant with the specific targets of the BRP, and so were not included in this process.

Brainstorming Session – Preliminary Framework Ideas Discussion

The Facilitator presented a format for panel members to identify potential projects by providing details of their idea in the following categories:

- Propose the idea
- Describe anticipated benefits
- Describe Guiding Principles achieved
- Discuss potential constraints
- Identify data / information needs to assess further

The Facilitator reminded the group of general brainstorming guidelines and etiquette: this should be a "safe space" to think creatively, there's no need to challenge or poke holes in preliminary ideas and that the goal is to support not inhibit creativity.

<u>Idea 1</u>
Proposed by Wendy Trowbridge, the idea is that every year, credits could be purchased toward restoration projects. These credits will last 20 years so there is long-term surety because the project would be done at the beginning. Projects could include ideas like emergent marsh (effective at removing phosphorous) and provide some upfront offsets, like dredging and removing phosphorous. Could work towards that through credit framework Matt St. John and David Kuszmar have developed, as an approved practice. Once it's an approved practice, we could add a few more acres every year.

[1] In some instances, the notes did not capture who made a particular comment, and in those instances the comment is attributed to "a member."

- Anticipated Benefits:
  1. Accrue credits every year without having to add new projects every year
  2. Makes everything more predictable
  3. Fits as part of a long-term plan
  4. Provides ecological benefits
  5. Increases assimilative capacity of watershed
  6. Improves opportunities for internal cycling is something

- Guiding Principles
  1. Addresses most of them: somewhat depending on the plant community

- Constraints
  1. How to get from where we are to make this type of idea a reality. We'll have to somehow quantify the amount of phosphorous we are talking about

     Discussion:
     A participant stated that big multi-benefit projects are costly; they provide benefits annually that sometimes a permitee might not need then. How do we match constraints pound for pound and how do we justify accruing credits for years we are not discharging? Another member suggested that the goal should be to sell the credits to another party, maybe in the future there will be more dischargers, and this can take on a banking kind of concept.

- Data Needed:
  John Largier asked if we know what the adverse ecological health impacts are to the Laguna. Can we attribute them to the nutrients? In the absence of that information, we should progress, but it would be good to know exactly what the impacts are.

<u>Idea 2</u>
Don McEnhill proposed an approach that focuses on floodland / floodplain reconnection rather than a specific wetland approach.

- Anticipated Benefits
  1. Creates a "parking lot" for TP pollution upstream of the Laguna as floodplain reconnectivity allows for infiltration of nutrients in floodwaters
  2. Eliminates the nutrient cycling issue
  3. Enhances benefits for tree species because the trees take up nutrients and sequester them for long periods, especially when compared to wetland plants
  4. Reduces flood peaks
  5. Provides an offramp for sediment and nutrient
  6. Could be located on public property
  7. Several small projects could space out offsets to accommodate ongoing credit needs
  8. There could be potential for groundwater recharge, though it probably wouldn't overcome the limited infiltration capacity of the clay soil

- Guiding Principles:

1. Items 1, 5, and 6 (however it would likely be expensive)

- Constraints:
  1. Could require a lot of difficult data collection and analysis
  2. Expensive moving dirt
  3. Location constraints
  4. Difficult to quantify benefits
  5. Available modeling tools, long time planning
  6. Regional permitting:
     a. Matt St. John stated that this could fall under the 4th project that David Kuszmar talked about. Lots of good templates and models to use

- Data Needed:
  1. Some data already exists. Should be easy enough to look at soil maps and find what parcels might be usable.
     a. Wendy Trowbridge stated that there isn't good data about phosphorous in the flood plain unfortunately. Matt St. John proposed that such a project could include a sediment capture component

<u>Idea 3</u>

Rita Miller proposed that the City contribute a specified amount of money for direct ecosystem restoration, in exchange for compliance certainty and elimination of no net loading provision in permit.

- Benefits:
  1. Maximize watershed benefit
  2. Provide money for Russian River restoration and fill in data gaps in watershed
  3. Allow funds that could address broader scale ecosystem concerns
  4. Address legacy sediment in the Laguna
  5. Maximize reuse of recycled water. City could maximize amount of recycled water stored without being concerned about discharge provisions that require offset credits for TP
  6. Accumulate funds for larger projects
  7. Alleviate upward trend of costs, project would be fewer and larger as low-hanging fruit is already addressed

- Guiding Principles
  1. Items 1, 4, 6, 8, as well as the new additions regarding best available science

- Constraints
  1. Eliminating the discharge limit presents new challenges, many people worked hard to establish those limits
  2. Impacts the current WQTF into which RWQCB has invested significant staff time
  3. As intermittent discharger it's hard to justify annual ongoing contributions from the City

Discussion:

Don McEnhill raised a concern that by decoupling discharge from compliance it removes the incentive to discharge less. Rita Miller countered that the City will still have to abide by the

discharge management plan. Discussion ensued about whether this proposal would really provide definable water quality improvements or simply provide a compliance structure that allows the City to meet an administrative milestone without true water quality benefits. City staff countered that the goal isn't to save money or "buy out" of a responsibility but instead to maximize benefits in a more innovative manner. Matt St. John asked a general question of what constitutes "compliance" in this proposal from the City. Ben Horenstein responded that providing an annual contribution and describing the funded projects being built that are designed to provide immediate and long-term water quality benefits would constitute compliance.

Next Steps

The Facilitator proposed that in advance of the 3rd and final meeting, BRP members prepare additional proposals and/or expand on the proposals presented today. He proposed that CCP will provide a standardized worksheet that categorizes the discussion approach used today as a mean for the BRP to prepare and present such proposals in a structured format.

- Action Items:
  - CCP to prepare and send out the proposed worksheet
  - BRP members to provide CCP with reference materials and/or links to then be sent to the full panel as a bibliography of information
  - CCP to prepare and distribute the draft Meeting 2 summary
  - CCP to prepare and distribute the proposed Meeting 3 agenda

Attachments

Attachment A: Water Quality Trading Framework for the Laguna de Santa Rosa Watershed presented by David Kuszmar, RWQCB

Attachment B: Nutrient Management in California: A Current Perspective presented by Tom Grovhoug, Larry Walker Associates

Attachment C: Chemically Enhanced Treatment for Phosphorus Reduction presented by Linda Sawyer, Brown & Caldwell

Attachment D: BRP Final Guiding Principles

Attachment K

Water Quality Trading Framework for The Laguna de Santa Rosa Watershed

Presented by David Kuszmar, RWQCB

Water Quality Credit Trading in the Laguna de Santa Rosa Watershed

June 1, 2018

David Kuszmar, P.E.

Laguna de Santa Rosa Watershed

- Largest tributary of Russian River (254 mi^2)
- Metropolitan center of North Coast Region
- 70 mi^2 of "Important Farmland" (per CA Dept. of Conservation)
- Largest freshwater wetlands complex on northern CA coast
- "Wetland of International Importance" (per Ramsar)

Laguna de Santa Rosa Watershed

303(d) Impairments:

Phosphorus

Dissolved Oxygen

Sediment

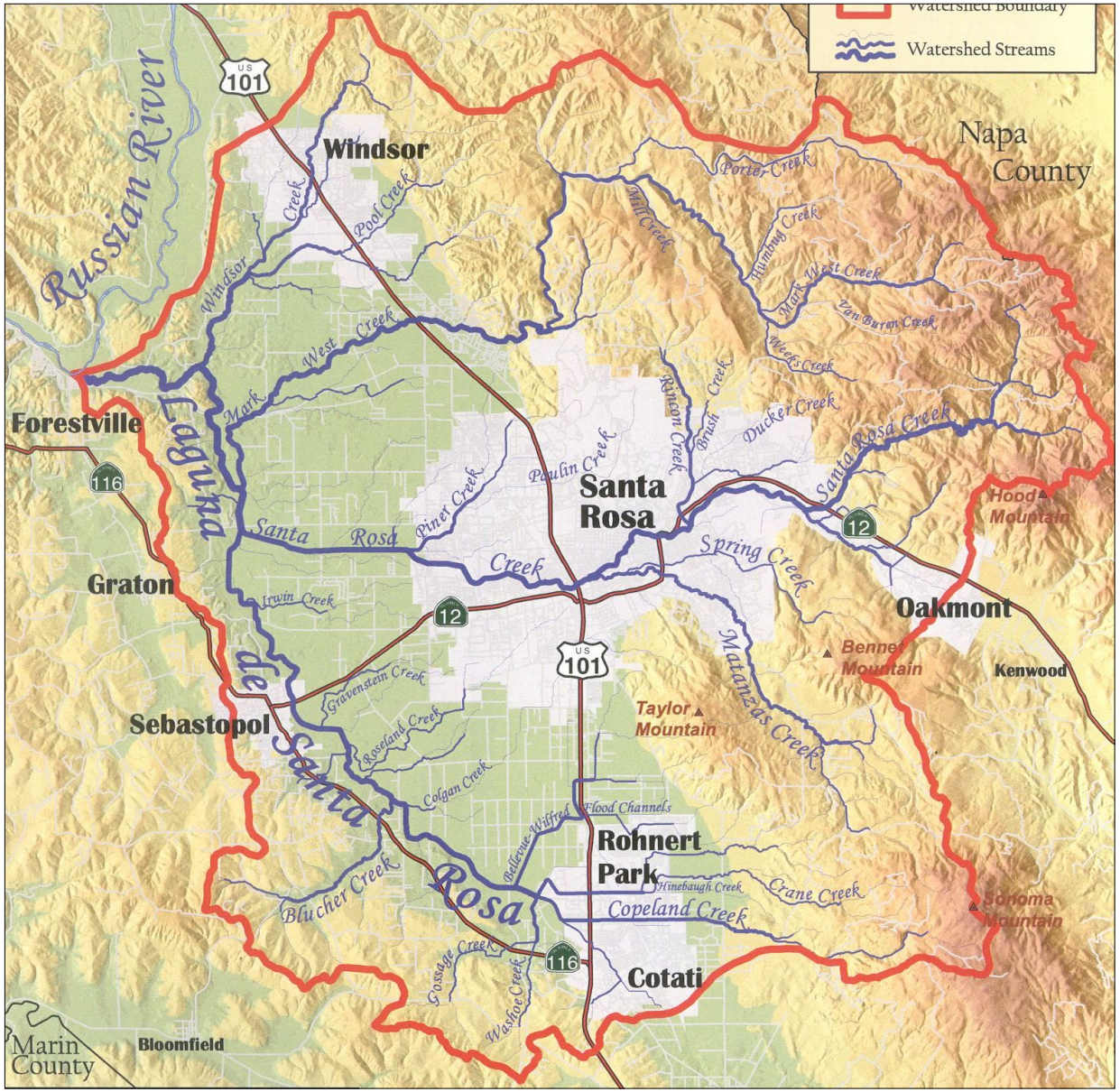
Temperature

Pathogens

Mercury

Aluminum

Manganese

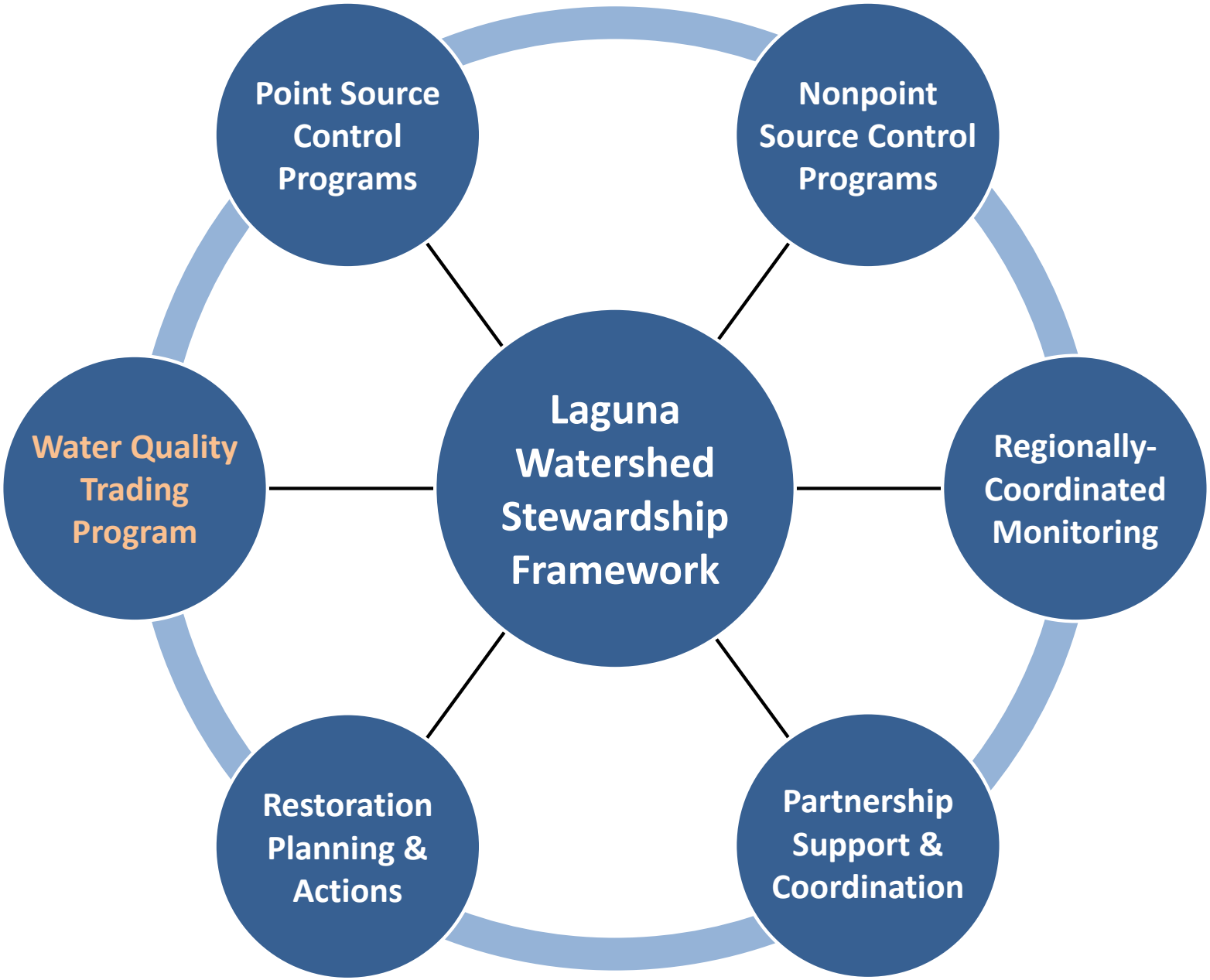


Initial Conclusions

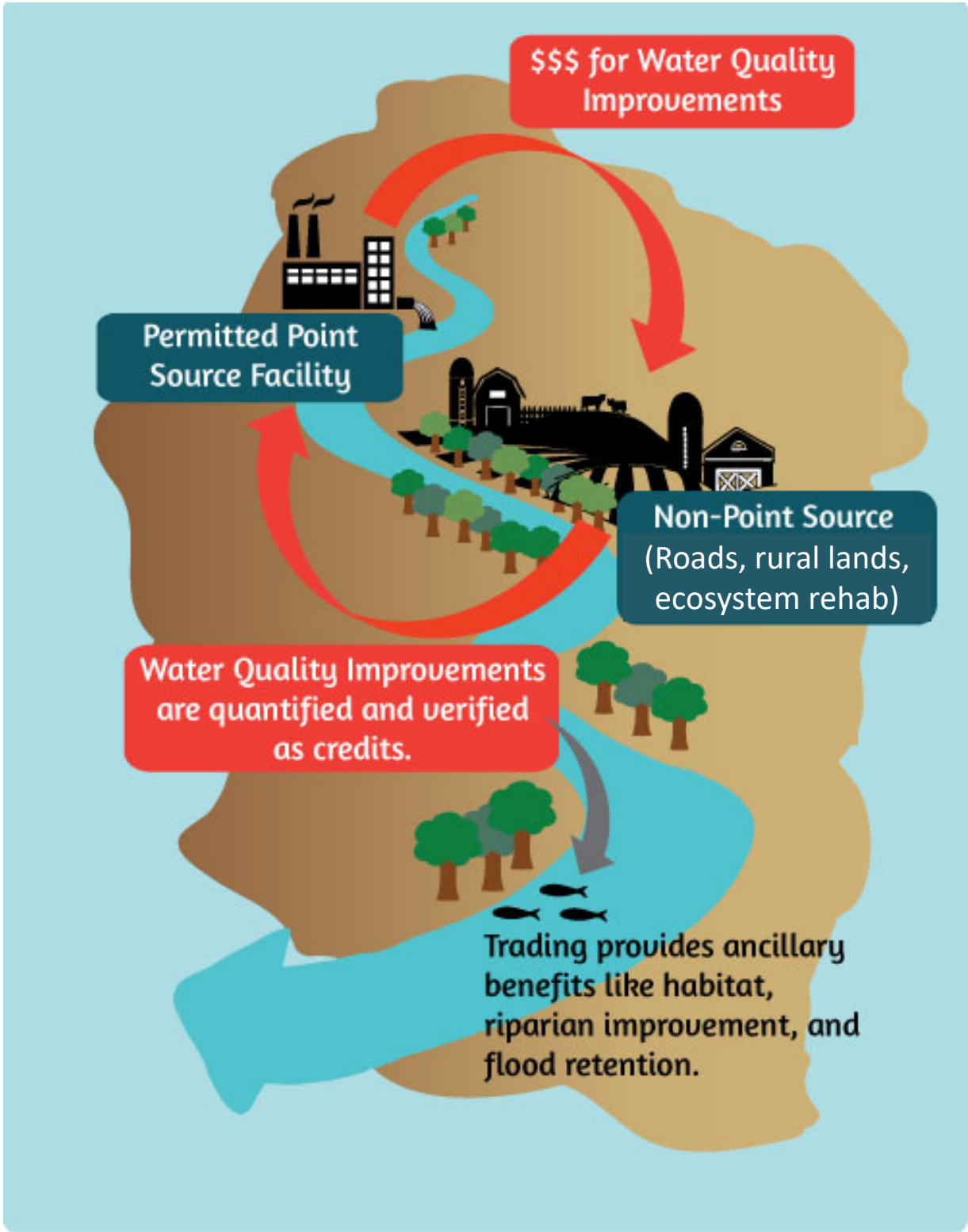
Reduce Pollutant Sources + Increase Assimilative Capacity

Diet + Exercise!

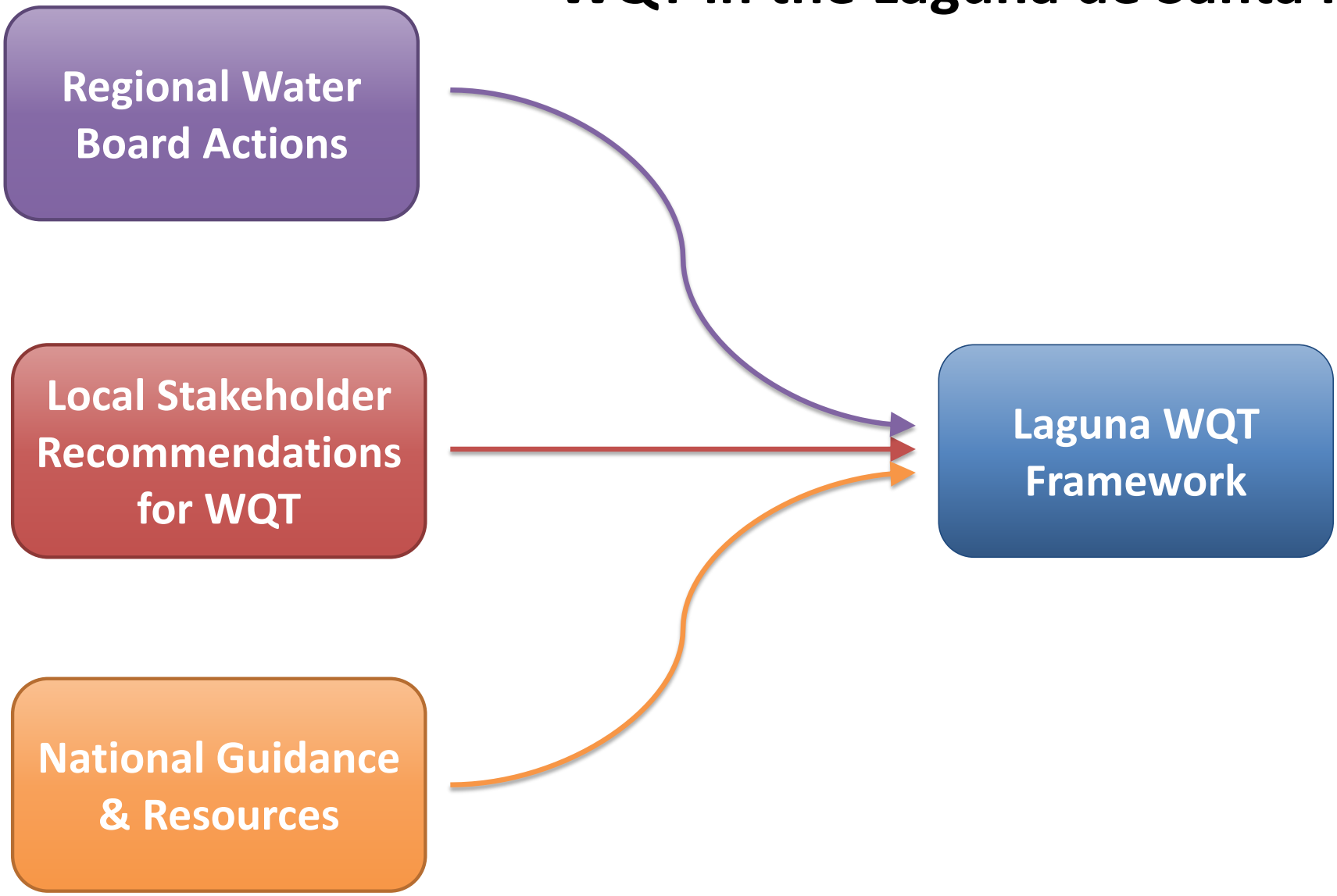
Vision for Beneficial Use Recovery in the Laguna



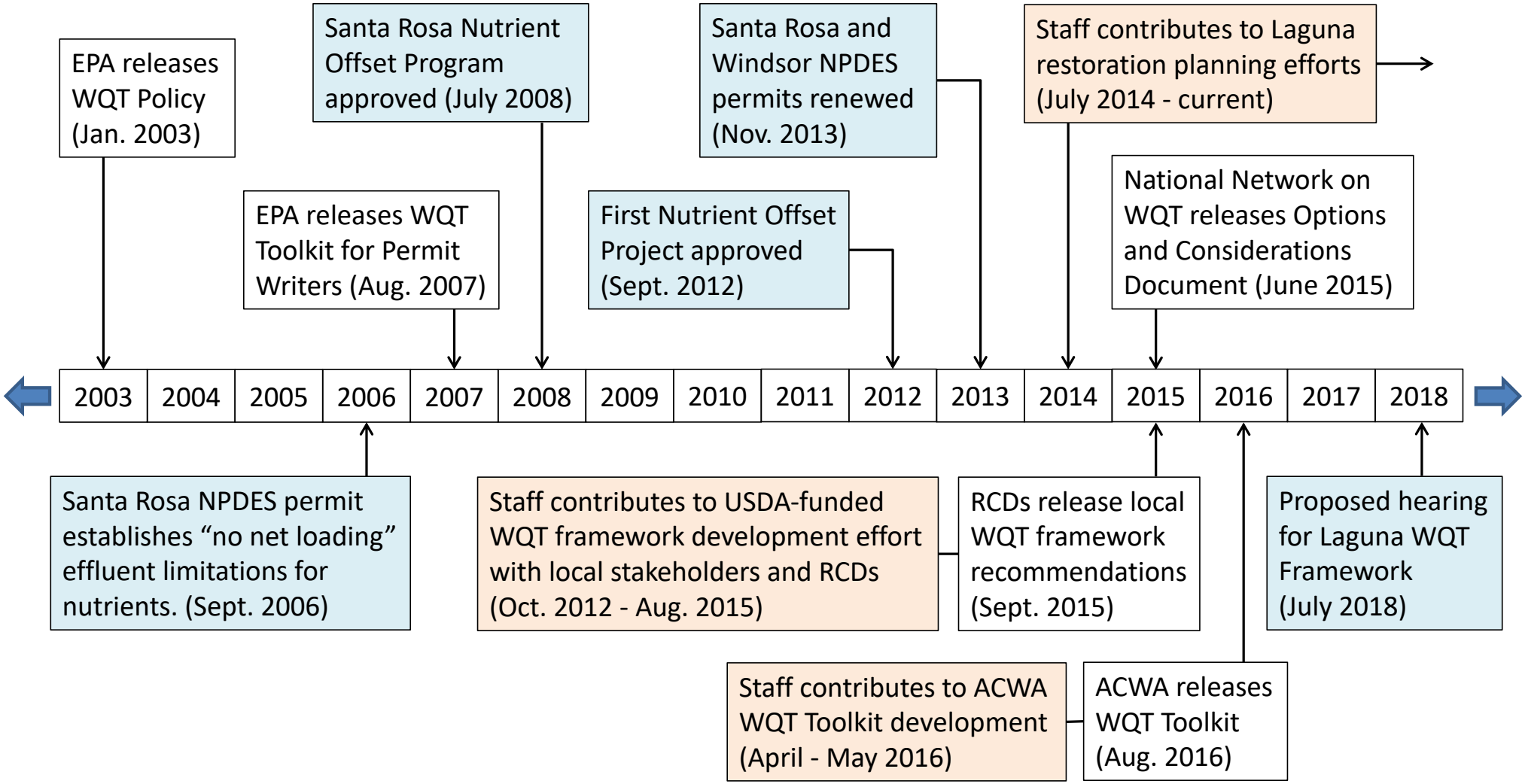
How Does Water Quality Credit Trading Work?



Recent Developments Related to WQT in the Laguna de Santa Rosa

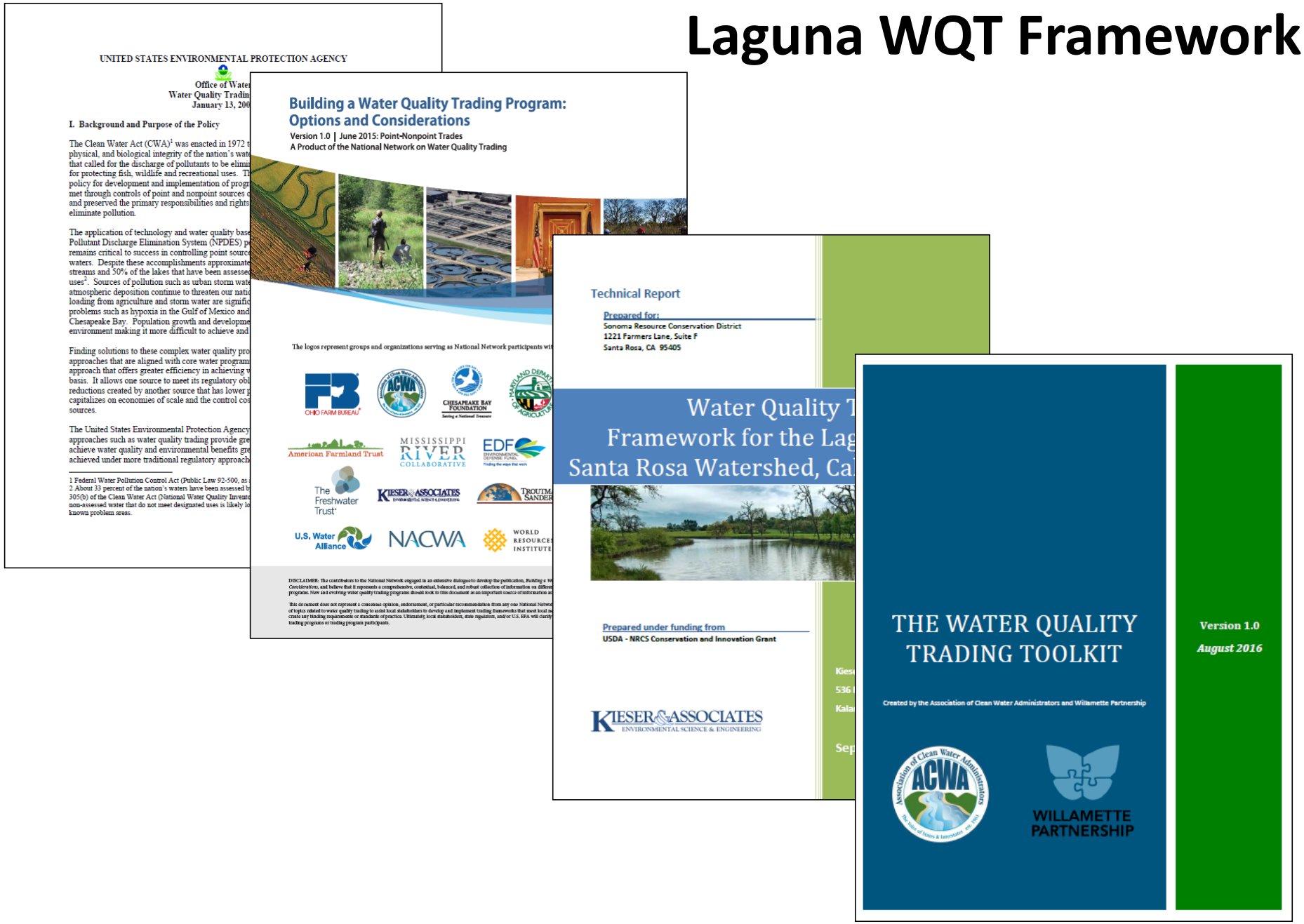


Laguna Water Quality Trading / Santa Rosa Nutrient Offset Program Timeline



Version: 5/8/18

Foundational References for the Laguna WQT Framework



Staff's Approach for Developing the Laguna WQT Framework

- Utilize ACWA Framework Template
- Adhere to Local Stakeholder Recommendations
- Rely on the National Network's *Options and Considerations* Document as a reference guide
- Consult with known interested parties regarding framework preferences
- Emphasize efficiency, predictability, transparency, best science

Guiding Principles for WQT in the Laguna de Santa Rosa

- All actions must be supported by sound science and accomplish regulatory and environmental goals.
- Trading activities must offer sufficient accountability, transparency, accessibility, and opportunities for public involvement to ensure that promised water quality improvements are delivered.
- The water quality benefits of any trade must be realized in place, in kind, and in time.

Laguna WQT Framework Structure

1. Policy & Regulatory Instruments
2. Trading Basics
3. Trading Eligibility Criteria
4. Quantifying Pollutant Reductions
5. Trading Ratios
6. Credit Characteristics
7. Project Planning, Pre-screening, & Approval
8. Project Implementation & Verification
9. Credit Certification, Registration & Tracking
10. Compliance and Enforcement
11. Framework Improvements and Monitoring

Practices vs. Projects

- Approved Practices: (Section 2.5)
  - Subject to public review and comment
  - Pre-qualified for future use
  - Supporting Documentation required
- Credit-Generating Projects: (Section 7.1)
  - Subject to public notification only
  - Must utilize pre-qualified practices
  - Credit Project Plan required

Trading Eligibility and Baseline

"…a pollutant reduction or removal action is eligible to generate water quality credits as long as it is not otherwise required." (Section 3.2)

"…baseline shall be defined as the minimum level of effort or level of implementation that must be achieved before a project is eligible to generate credits." (Section 3.2.2)

Trading Ratios (Section 5)

- Uncertainty Ratio 2:1
- Retirement Ratio 0.5:1
- Total Ratio 2.5:1

- Available Discounts:
  - Multi-benefit restoration projects
  - Projects on permanently protected lands
  - Direct measurement of pollutant reductions

Incentives for Restoration Actions in the Laguna WQT Framework

- Reduced Trading Ratios

  0.5 discount for multi-benefit projects

- Extended Credit Banking Allowances (new)

  Credits can be banked for up to 5 years

- Longer Project Lives (new)

  Projects can generate credits for up to 20 years

Thank You!

For more information:

http://www.waterboards.ca.gov/northcoast/water_issues/programs/nutrient_offset_program/

David Kuszmar, P.E.
david.kuszmar@waterboards.ca.gov
(707) 576-2693

Attachment L

Nutrient Management in California: A Current Perspective

Presented by Tom Grovhoug, Larry Walker Associates




Nutrient Management in California: Current Perspective

City of Santa Rosa Blue Ribbon Panel
Meeting No. 2

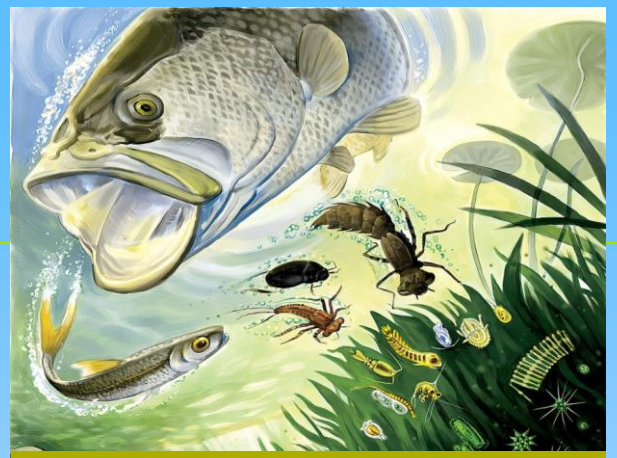
Tom Grovhoug, Larry Walker Associates
June 1, 2018

Nutrient Regulatory Policy Development in California

- Sacramento-San Joaquin Delta Nutrient Research Plan (*Central Valley Water Board)*
- San Francisco Bay Nutrient Management Strategy (*San Francisco Bay Water Board*)
- Biostimulatory Substances Objective and Program to Implement Biological Integrity (*State Water Board)*

Concerns with Nutrients

- Algal blooms, aquatic vegetation blooms, related effects
- Aesthetic impairment
- Degraded biological communities, food web
- Harmful Algae/Toxins
- Dissolved oxygen depressions
- Drinking water concerns – e.g. taste and odors



Altered Species Composition

Excessive Algal Growth

Hypoxia (low dissolved oxygen)

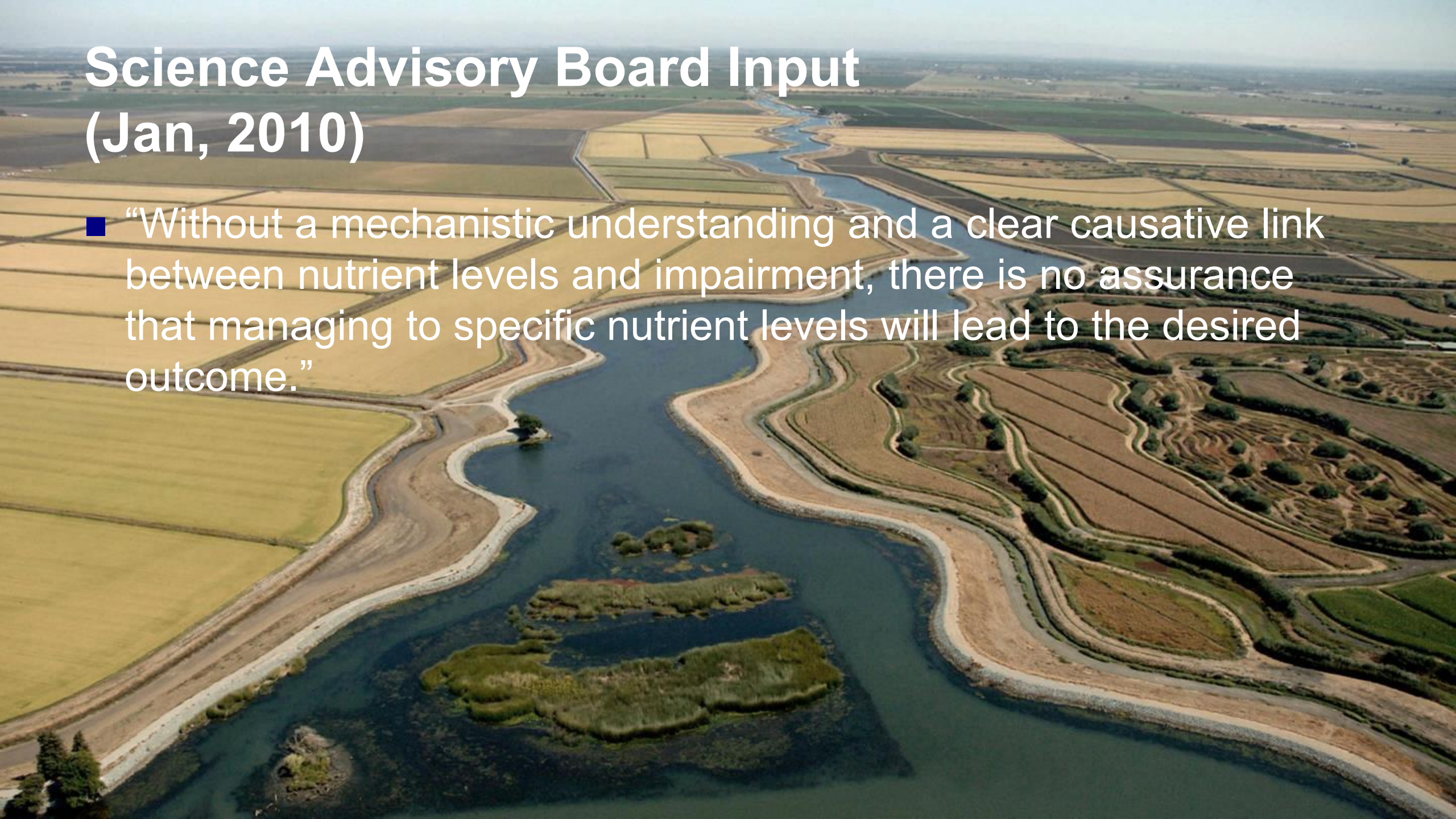
Harmful Algal Blooms

Multiple Contributing Factors in Addition to Nutrients

- Flow condition/residence time/tidal mixing
- Temperature
- Solar Irradiance
- Water clarity/turbidity
- Biological factors – clam grazing

Science Advisory Board Input (Jan, 2010)

- “Without a mechanistic understanding and a clear causative link between nutrient levels and impairment, there is no assurance that managing to specific nutrient levels will lead to the desired outcome.”



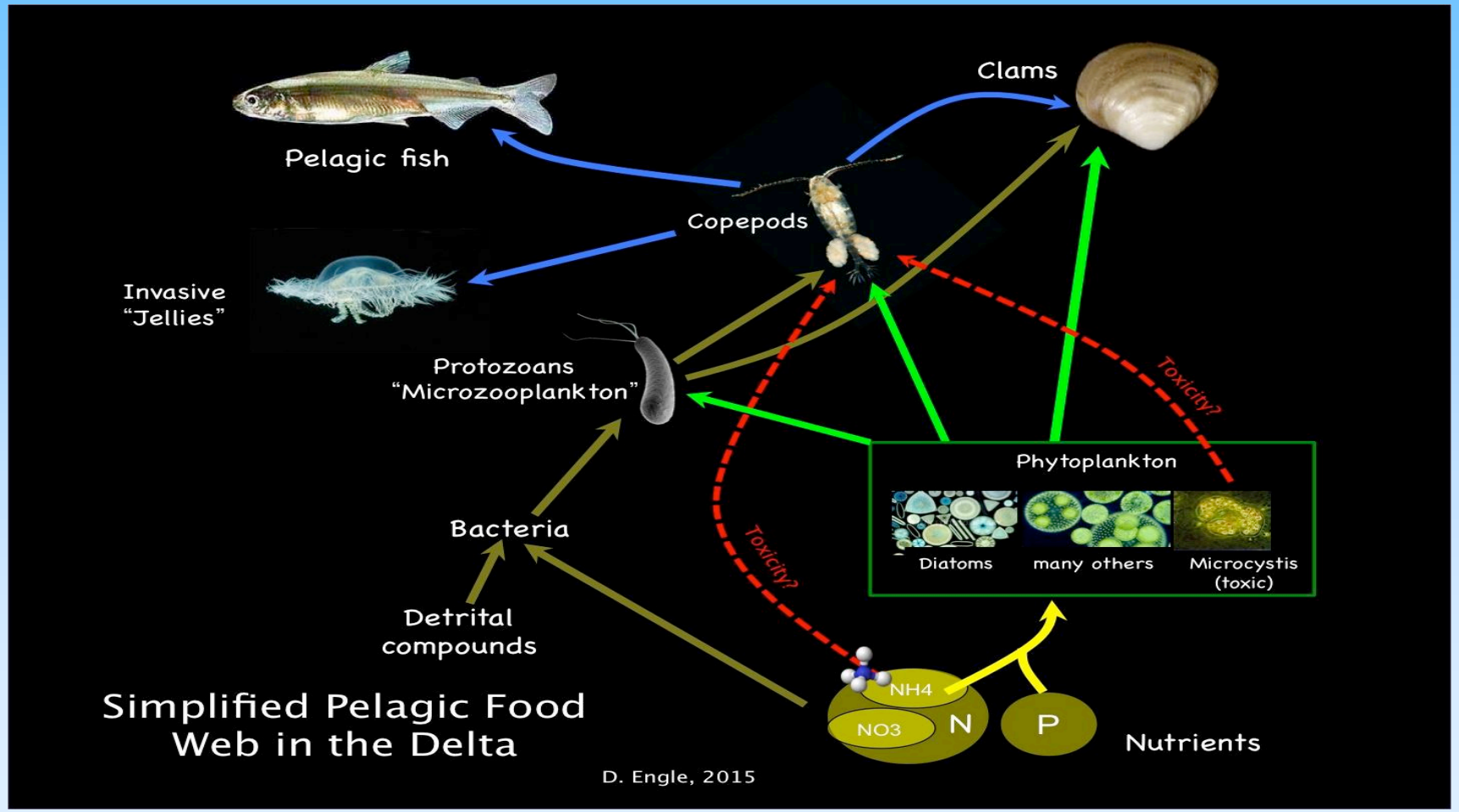
I. Sacramento-San Joaquin Delta Nutrients Research Plan

- Lead agency: Central Valley Water Board
- Collaborative Stakeholder Effort
- Started 2014

Delta - Macrophyte Blooms

Delta - *Microcystis* Blooms

Delta - Food Web Effects



Process to Develop a Delta Nutrients Management Strategy

Stakeholder and Technical Advisory Group – Charter Document, July 27, 2015

- Overarching goal:

  "…to develop a framework that will lead to effective nutrient management decisions and actions that achieve reasonable protection of beneficial uses…of the Delta."

- Key Framing Question:

  "…whether the management of nutrient loads can remedy the problem."

Delta Nutrient Science and Research Approach

- Stakeholder and Technical Advisory Group (STAG)
- Expert Science Teams
- White Papers and Data Gaps Analysis
- Delta Nutrients Research Plan
- Science Action Plan

Delta Nutrient Science Action Plan

- Monitoring
- Modeling
- Synthesis
- Coordination
- Funding Plan

II. San Francisco Bay Nutrients

- Elevated Levels – higher than Chesapeake Bay
- Serious problems have not occurred due to Bay resiliency
  - Turbidity
  - Tidal flushing
  - Clam grazing
- Outcome-based Nutrient strategy – in collaboration with Bay Area Clean Water Agencies (BACWA) and other stakeholders
  - Nutrient Watershed Permit (2014)

San Francisco Bay Nutrient Management Strategy

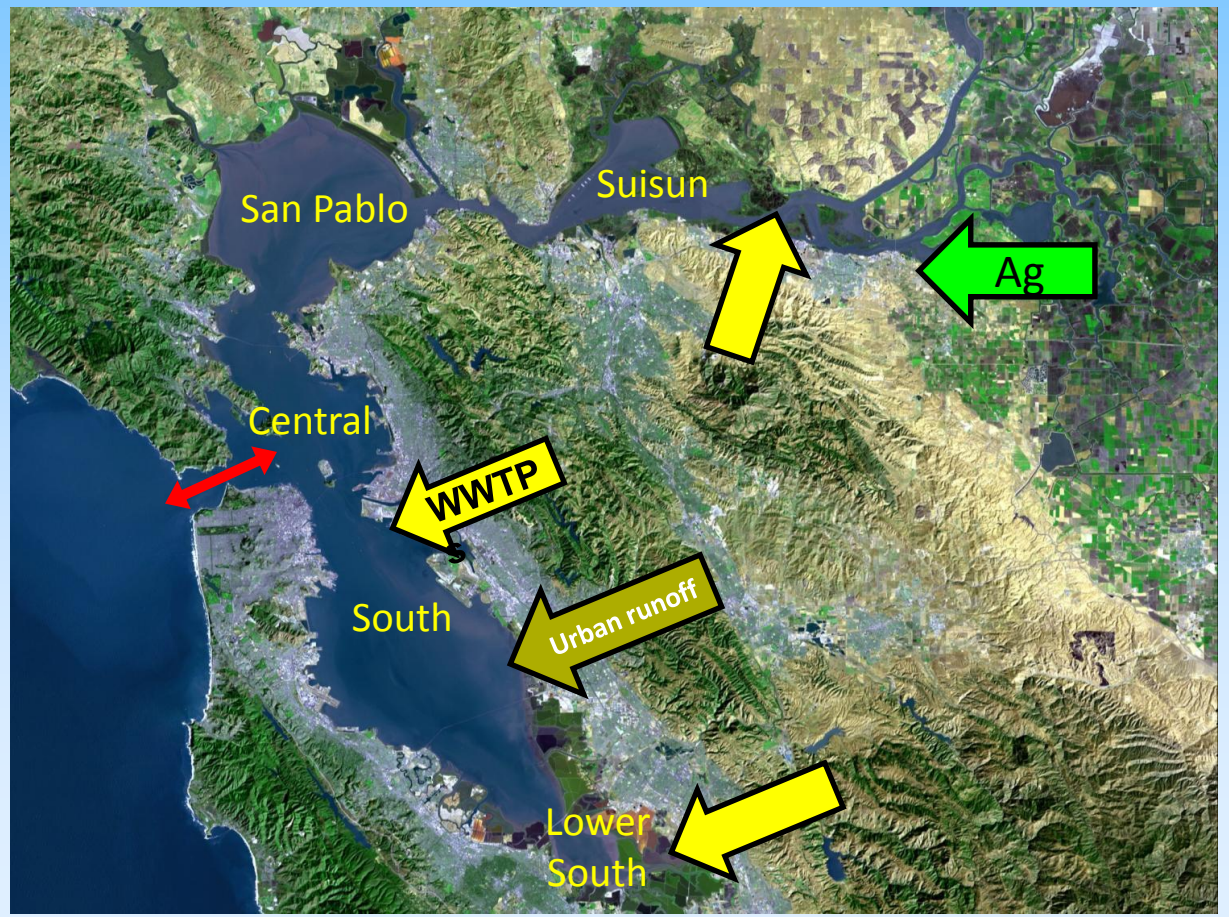
Long term Investment in Science to set the stage for effective management decisions

- System Understanding – [Get the loads and processes right]
- Sustainable Monitoring Program
- Water Quality Objectives Development – [Narrative vs Numeric]
- Implementation Plan

San Francisco Bay Nutrient Science Program

- Monitoring and special Studies
- Modeling
- Assessment Framework
- Understanding Loads

Leading to management decisions

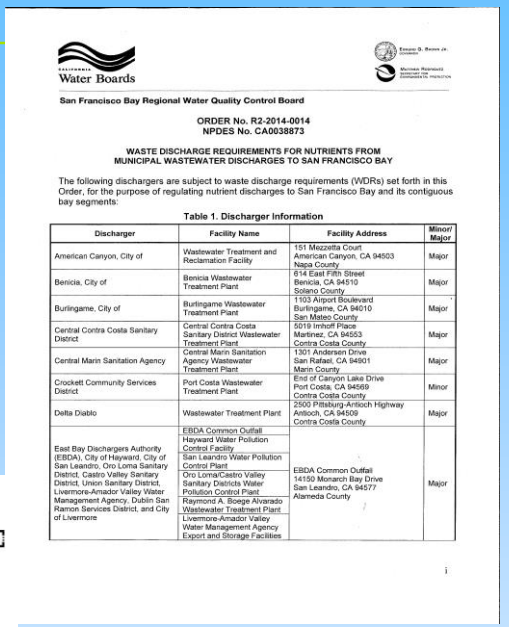


San Francisco Bay Nutrient Watershed Permit

2014 Permit

- Loads Assessment
- Treatment Options Evaluation
- Nutrient Science and Modeling – Discharger Contributions $$
- Exploring multi-benefit opportunities

2019 Permit, 2024 Permit,…



Water Boards

San Francisco Bay Regional Water Quality Control Board

ORDER No. R2-2014-0014
NPDES No. CA0038873

WASTE DISCHARGE REQUIREMENTS FOR NUTRIENTS FROM MUNICIPAL WASTEWATER DISCHARGES TO SAN FRANCISCO BAY

The following dischargers are subject to waste discharge requirements (WDRs) set forth in this Order, for the purpose of regulating nutrient discharges to San Francisco Bay and its contiguous bay segments:

Table 1. Discharger Information

Discharger	Facility Name	Facility Address	Minor/ Major
American Canyon, City of	Wastewater Treatment and Reclamation Facility	151 Mezzetta Court American Canyon, CA 94503 Napa County	Major
Benicia, City of	Benicia Wastewater Treatment Plant	614 East Fifth Street Benicia, CA 94510 Solano County	Major
Burlingame, City of	Burlingame Wastewater Treatment Plant	1103 Airport Boulevard Burlingame, CA 94010 San Mateo County	Major
Central Contra Costa Sanitary District	Central Contra Costa Sanitary District Wastewater Treatment Plant	5019 Imhoff Place Martinez, CA 94553 Contra Costa County	Major
Central Marin Sanitation Agency	Central Marin Sanitation Agency Wastewater Treatment Plant	1301 Andersen Drive San Rafael, CA 94901 Marin County	Major
Crockett Community Services District	Port Costa Wastewater Treatment Plant	End of Canyon Lake Drive Port Costa, CA 94569 Contra Costa County	Minor
Delta Diablo	Wastewater Treatment Plant	2500 Pittsburg-Antioch Highway Antioch, CA 94509 Contra Costa County	Major
East Bay Dischargers Authority (EBDA), City of Hayward, City of San Leandro, Oro Loma Sanitary District, Castro Valley Sanitary District, Union Sanitary District, Livermore-Amador Valley Water Management Agency, Dublin San Ramon Services District, and City of Livermore	EBDA Common Outfall Hayward Water Pollution Control Facility San Leandro Water Pollution Control Plant Oro Loma/Castro Valley Sanitary Districts Water Pollution Control Plant Raymond A. Boege Alvarado Wastewater Treatment Plant Livermore-Amador Valley Water Management Agency Export and Storage Facilities	EBDA Common Outfall 14150 Monarch Bay Drive San Leandro, CA 94577 Alameda County	Major

BACWA

Potential Nutrient Reduction by Treatment Optimization and Treatment Upgrades

Scoping and Evaluation Plan

Submittal to San Francisco Regional Water Quality Control Board

November 26, 2014

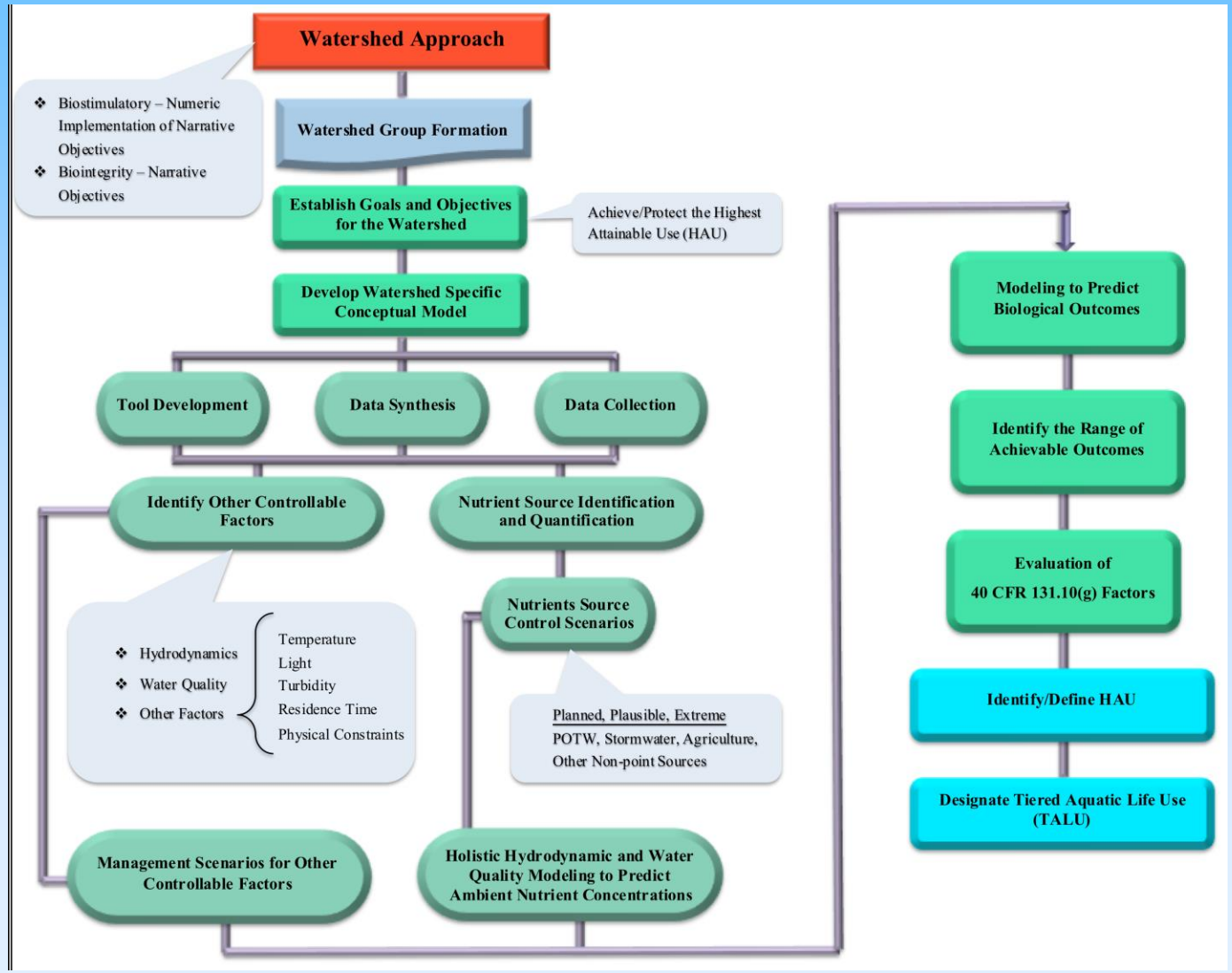
BACWA BAY AREA CLEAN WATER AGENCIES

III. Biostimulatory Substances Objective and Program to Implement Biological Integrity

- Lead Agency: State Water Board
- Applicable to all wadeable streams in California
- Started in 2011
- Stakeholder Advisory Group, Independent Science Panel

Southern CA – Algal Bloom

Holistic Watershed Approach



Conceptual Model

- Describes Known Relationships of watershed factors
  - Nutrient sources and cycling
  - Hydrologic characteristics
  - Geologic conditions
  - Riparian shading
  - Stream gradients
  - Channel conditions
  - Other factors [e.g. Invasive species]
- Used to determine required data synthesis, monitoring, and modeling efforts

Quantification of Influencing Factors

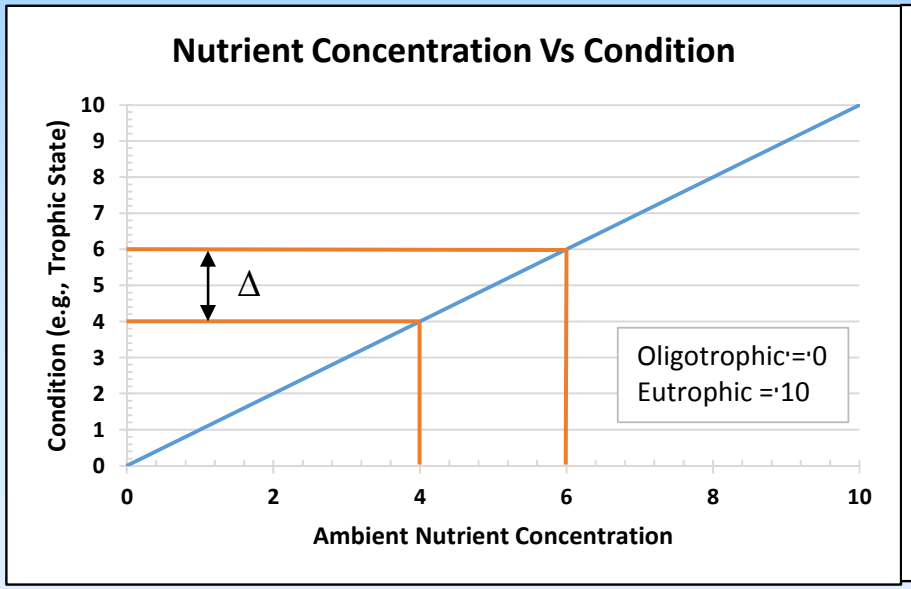
- Monitoring – ambient conditions
- Research – processes, rates
- Modeling – holistic assessment of a range of scenarios

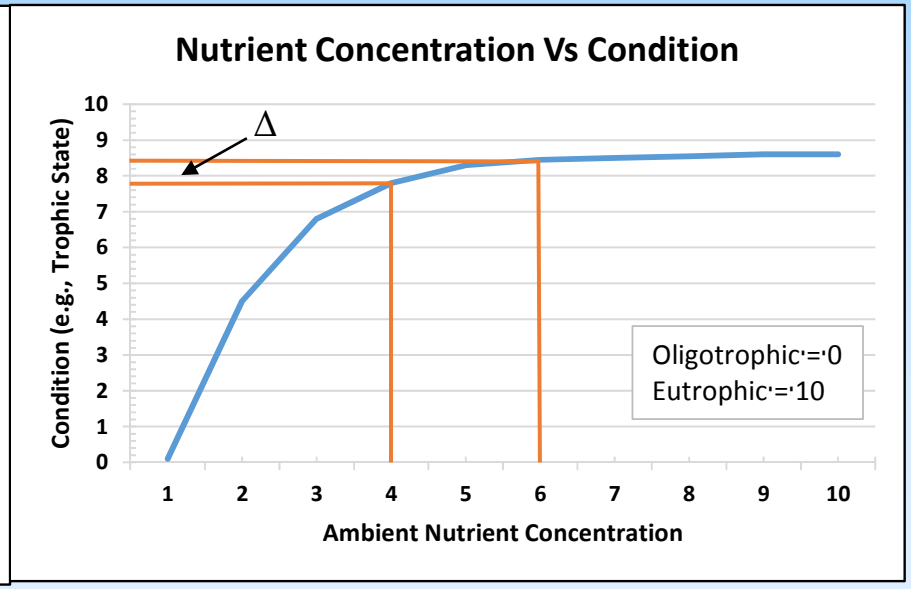
Development of Management Scenarios

- Range of Scenarios
  - Planned
  - Plausible
  - Extreme
- Watershed management
  - Nutrient load controls
  - Shading
  - Erosion control, buffers, wetlands
  - Flow management
  - Invasive species management

Evaluate Effectiveness of Load Management

- Use of modeling tools to determine biological outcomes resulting from load management





Potential Laguna de Santa Rosa Approach

- Holistic Watershed Approach
- Stakeholder Collaboration
- Science Strategy
  - Sources/Loads
  - Processes
  - Monitoring
  - Research
  - Modeling tool development and utilization
- Management Plan

Attachment M

Chemically Enhanced Treatment for Phosphorus Reduction

Presented by Linda Sawyer, Brown & Caldwell

City of Santa Rosa – Phosphorus Blue Ribbon Panel Meeting #2

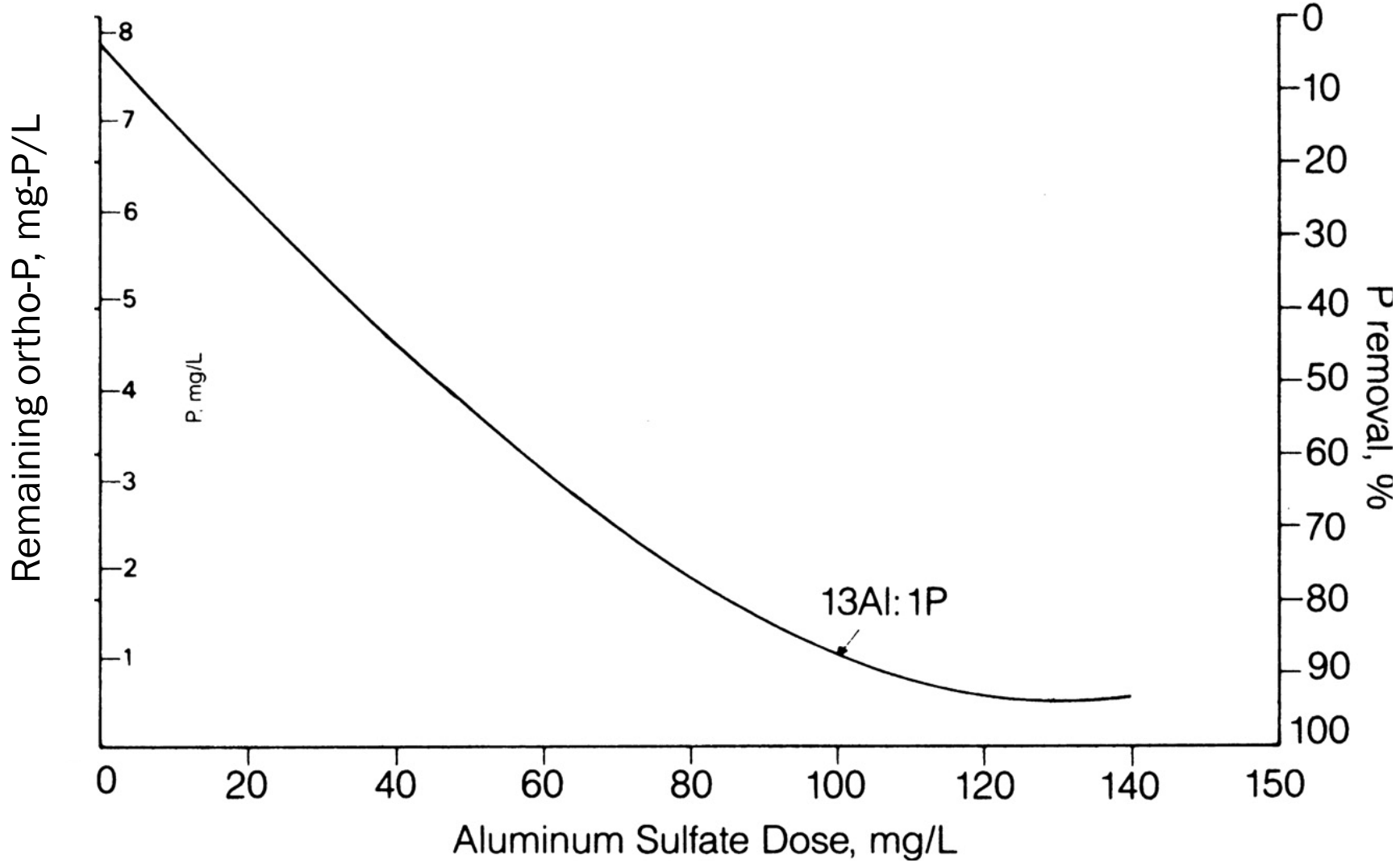
Chemical Addition for Phosphorus Removal

June 1, 2018

How Much Phosphorus Can Be Removed?

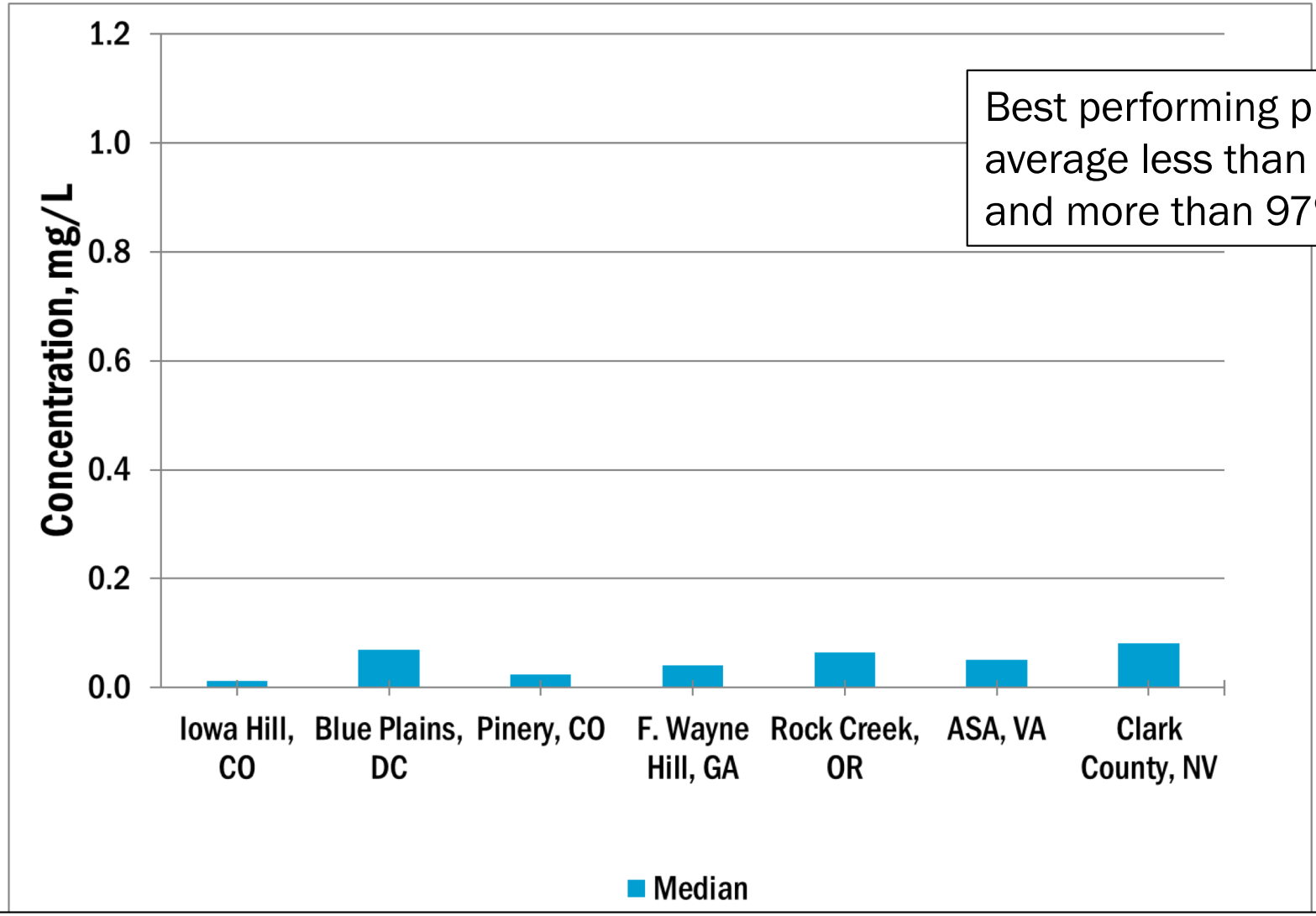
Brown AND Caldwell

Typical Chemical Addition



Source of Plot: Water Environment Federation Manual of Practice 8, Design of Water Resource Recovery Facilities, Sixth Edition, 2018, Figure 14.48.

Best Performing Plants for Phosphorus



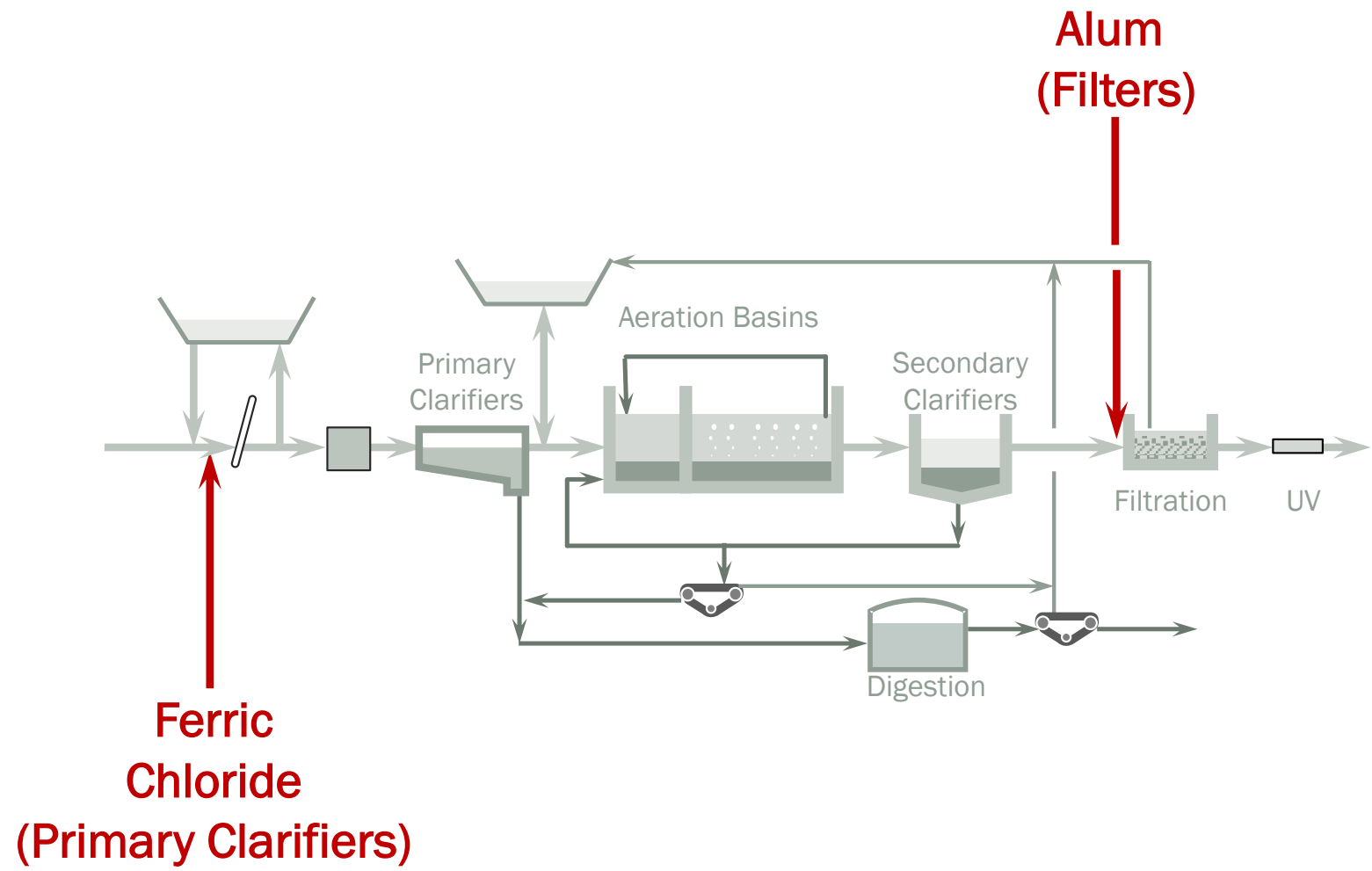
Best performing plants average less than 0.1 mg-P/L and more than 97% removal.

Source of Data: WERF Nutrient Management Volume II: Removal Technology Performance and Reliability, 2011.
Plants shown use chemical addition for phosphorus removal, typically with multiple point addition, tertiary clarifiers, and filtration.
Influent TP ranges from 4.0 to 8.5 mg/L.

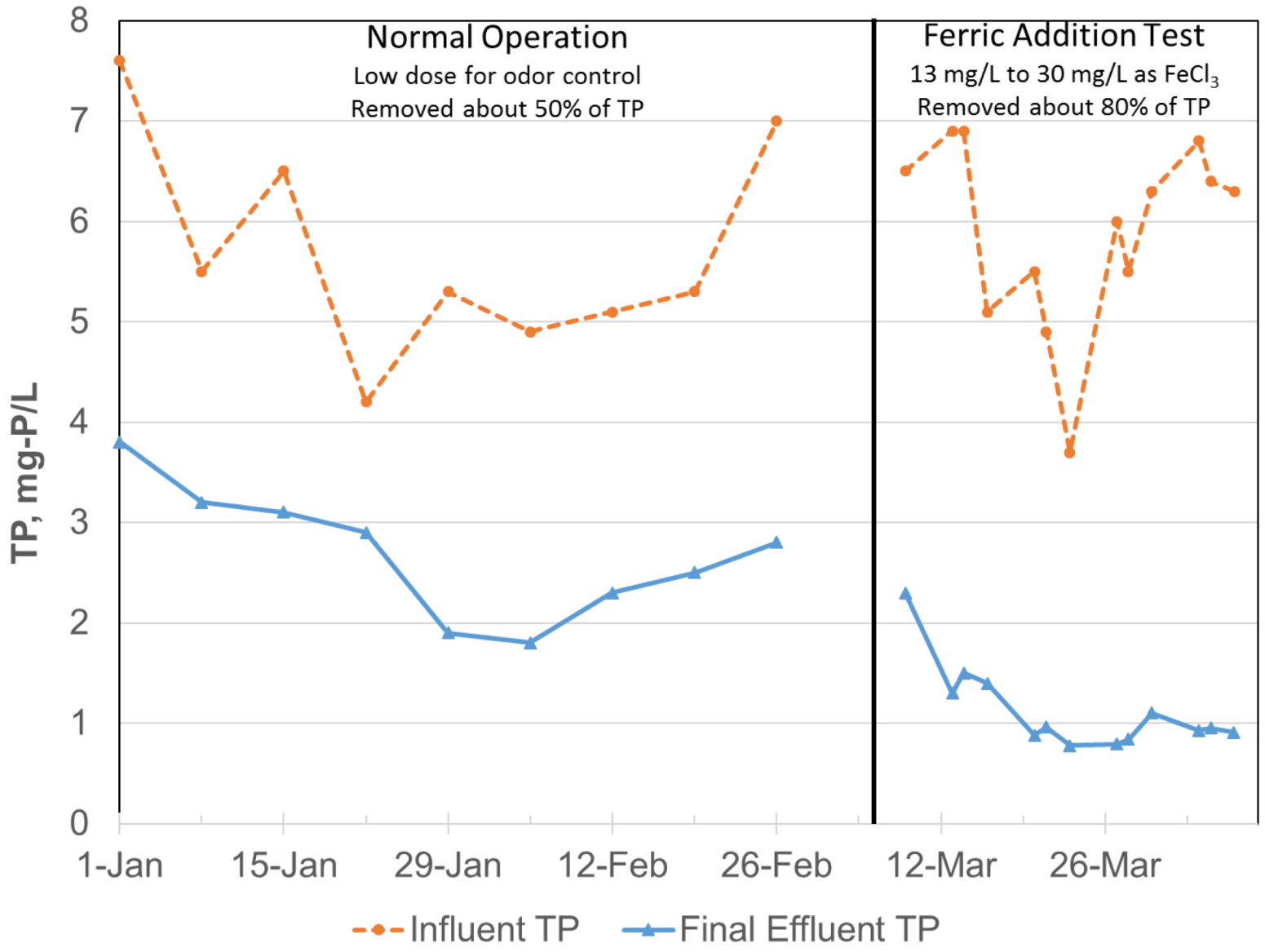
How Much Phosphorus Can Be Removed at Santa Rosa?

Brown AND Caldwell

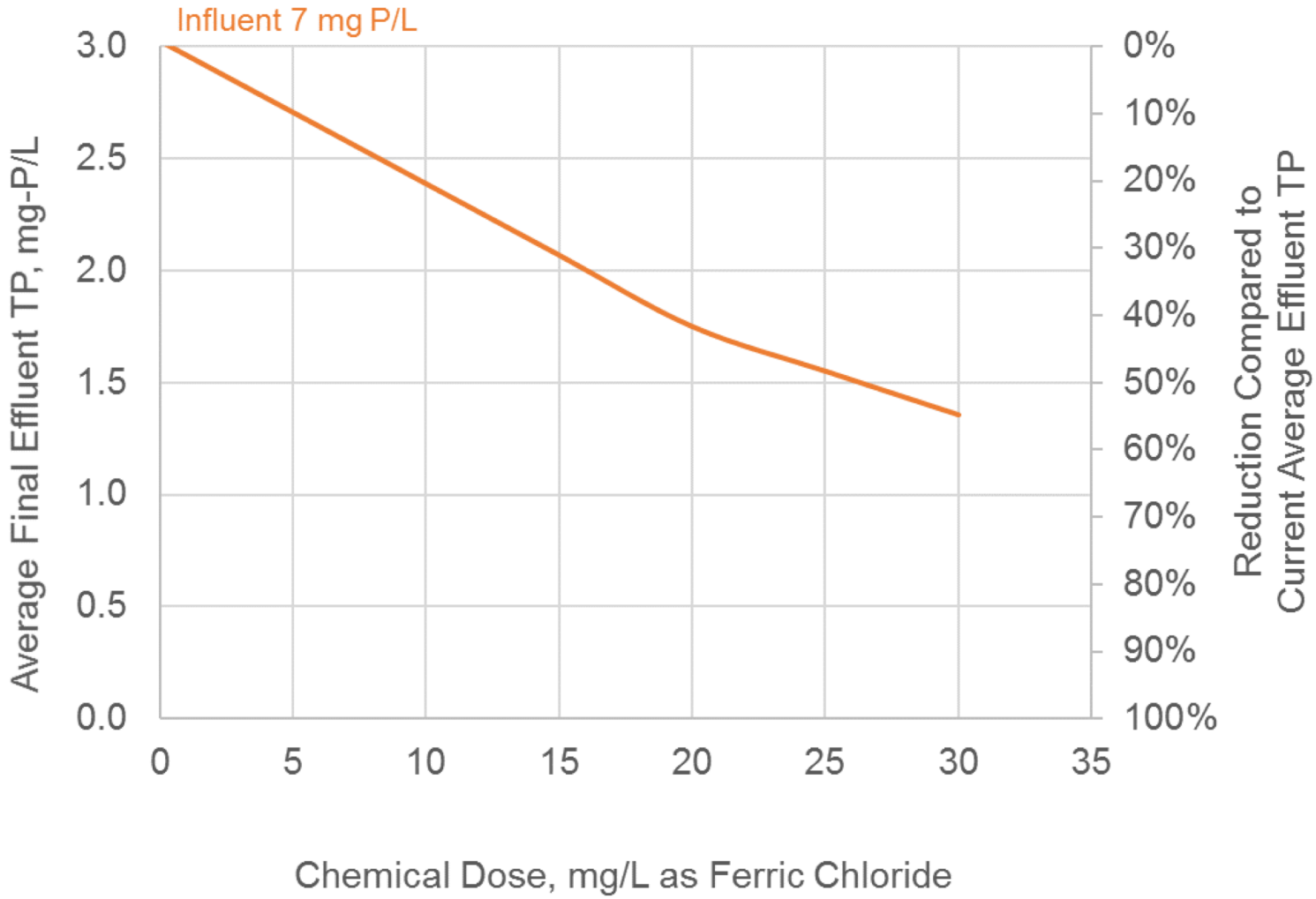
Full-Scale Testing at Santa Rosa



Primary Clarifiers with Ferric Chloride Test

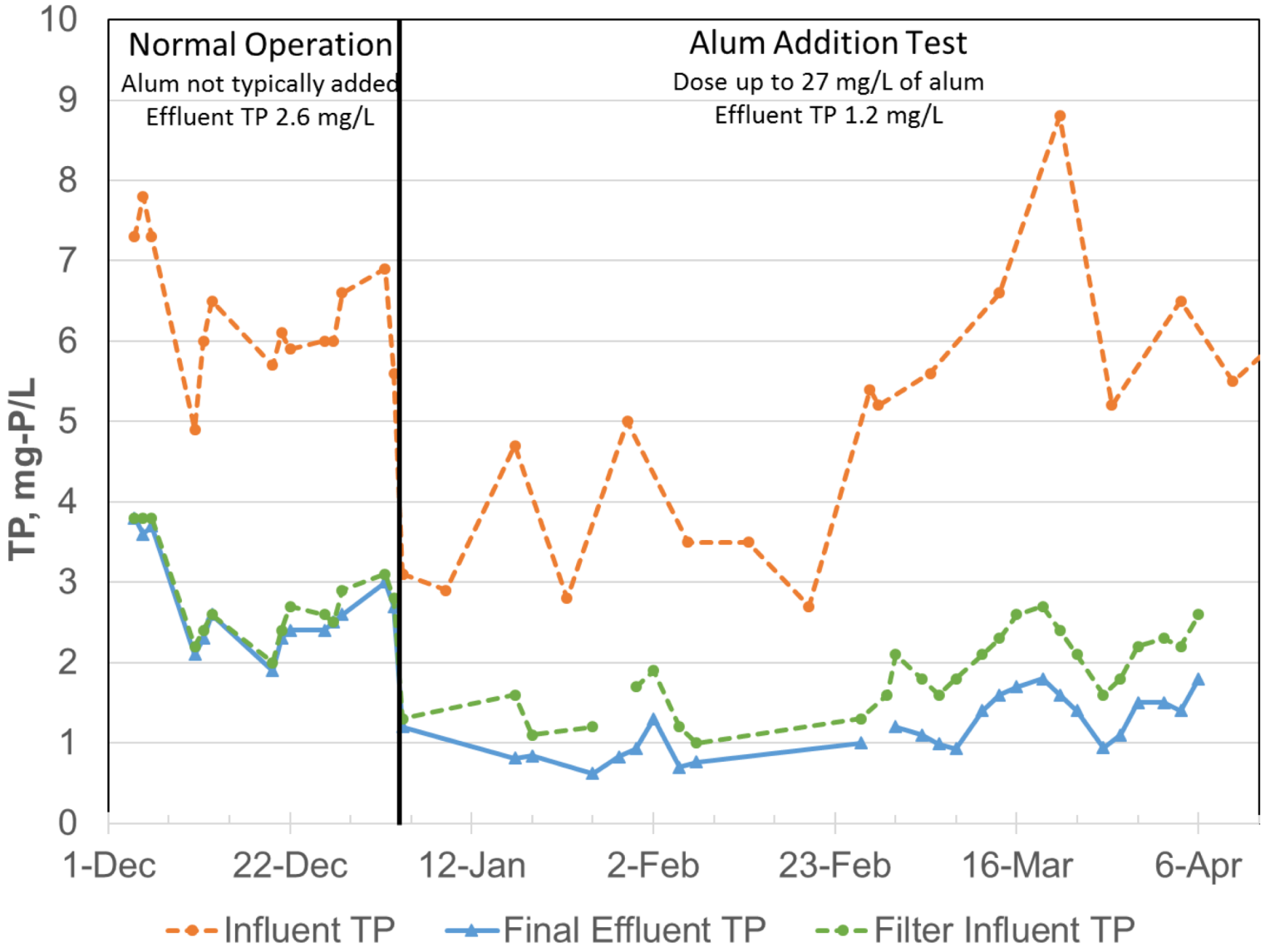


Primary Clarifiers with Ferric Chloride Dose-Response

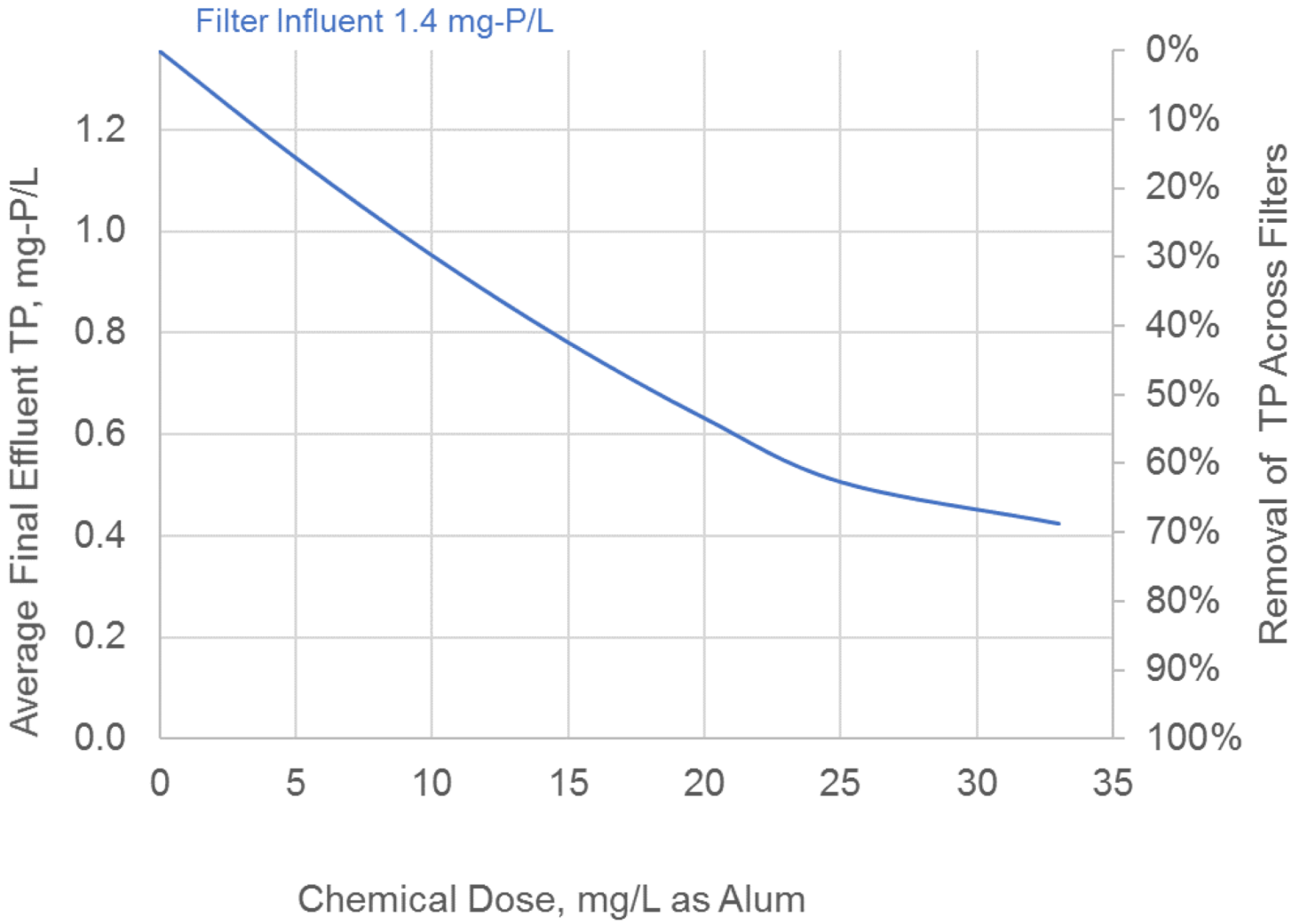


With ferric chloride addition, could reduce phosphorus discharges about 50% (on average).

Filters with Alum Test

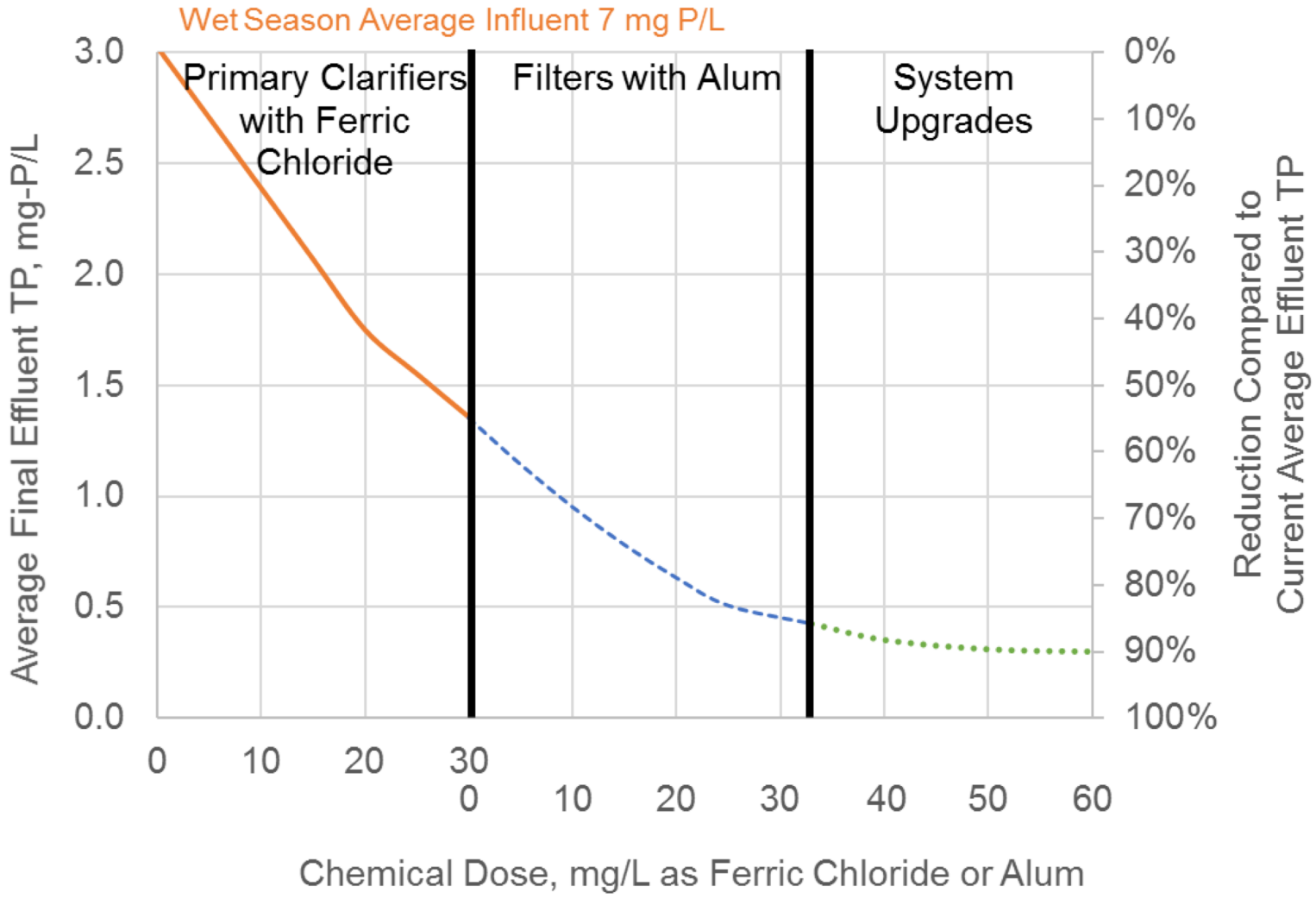


Filtration with Alum Dose-Response



With alum addition,could remove over 60% of filter influent phosphorus

Dose-Response at Santa Rosa



With system upgrades, could reduce phosphorus discharges up to 90% (on average).

Questions?

Brown AND Caldwell

Attachment N

Blue Ribbon Panel Meeting 3 Summary

Meeting 3 Summary
Laguna de Santa Rosa Watershed
Total Phosphorus Blue Ribbon Panel

June 27, 2018

Meeting Purpose:

- Finalize work by the Total Phosphorus (TP) Blue Ribbon Panel (BRP) to develop recommendations on TP regulations and water quality improvements

In Attendance

Blue Ribbon Panel (BRP):

Don McEnhill	Russian River Keeper
Ethan Brown	Sonoma County Economic Development Board
John Largier	UC Davis
Michael Cohen	Sonoma State
Matt St. John	North Coast Regional Water Quality Control Board (RWQCB)
Wendy Trowbridge	Laguna Foundation
Amelia Whitson	U.S. Environmental Protection Agency (EPA) – Region IX

Staff Attendees

Ben Horenstein	City of Santa Rosa (City)
Sean McNeil	City
Dave Ceppos	Sacramento State's Consensus and Collaboration Program (CCP)
Sophie Carrillo-Mandel	Sacramento State's Consensus and Collaboration Program (CCP)

Public Attendees

Brenda Adelman	Russian River Watershed Protection Committee
Veronica Astells	Town of Windsor
Toni Bertolero	Town of Windsor
Mike Brend	City
Hattie Brown	Sonoma County Regional Parks
Nate Jacobson	RWQCB
Heather Johnson	City
David Kuszmar	RWQCB
Molly MacLean	City
Mike Prinz	City
Claudia Villacorta	RWQCB

Meeting Introduction

Dave Ceppos (Facilitator) started the meeting and reviewed the agenda and purpose of the meeting. He asked BRP members and attending members of the public to introduce themselves. He explained that Alison Piccoli of the California Restaurant Association was absent but that he would follow up with her

regarding outcomes of the meeting. He noted that the two regulatory agency members may have to limit their role in voting procedures later in the meeting. Matt St. John (RWQCB) and Amelia Whitson (EPA) decided they intend to participate in discussion throughout the day including straw polls (as defined in the BRP Charter) but that they will recuse themselves from voting on final recommendations from the BRP. The Facilitator asked Matt St. John and Amelia Whitson if they would like to further speak to or change what he had described, and they concurred that the process description for the day was accurate given their role as State and Federal regulators respectively. Matt St. John and Amelia Whitson expressed gratitude to be included in the BRP and that they have found the discussions very informative.

Framework Proposals

The Facilitator introduced this agenda item as the principal activity for the day. He suggested that BRP members with a proposal follow the presentation format used in Meeting 2 (consistent with the worksheet provided to each BRP member following Meeting 2). This format was:

- Proposed idea
- Anticipated benefits
- Guiding Principles achieved
- Potential constraints
- Data / information needs to assess further

Each BRP member with a proposal presented according to the format above. After each presentation, the BRP discussed opportunities for improvements and then a straw poll was taken to gauge the preliminary level of support from each BRP member. If warranted, the members suggested amendments that would make the proposals more consistent with their respective interests.

After the presentations, the facilitator held a formal roll call on each proposal as a means to provide transparency and memorialize the level of support for each.

***NOTE**:*

To reduce redundancy, this meeting summary memorializes the discussion by the BRP for a specific proposal but does not restate said proposal. Instead each proposal is presented as an attachment to this summary. Likewise, for reference the BRP Guiding Principles are also presented as Attachment A.

<u>Proposal Discussion - Maximize Opportunities within the Existing Regulatory Framework</u>

The RWQCB proposal was titled “Maximize Opportunities within the Existing Regulatory Framework” (Attachment B). The goal is to maximize water quality improvement opportunities within the existing framework as presented in Meeting 2 by RWQCB staff member David Kuszmar.

A BRP member asked Matt St. John to explain how Guiding Principle 4, “Future approaches to reduce water quality impacts should incentivize beneficial actions and discharger behavior” is reached in his

proposal. Matt St. John described that the basis for the constraint is that there is not a completed master restoration plan or regional monitoring plan. When TMDL's are approved, the hope is that by then the framework outlined at Meeting 2 (e.g. the "wagon wheel") will be more developed and able to pursue more projects.

Wendy Trowbridge stated that her proposal is potentially a subset of the RWQCB proposal. She stated the constraint that it's difficult to predict benefits from projects. She stated that both her proposal and Matt St. John's suffer the same problem of how to identify a project, verify the credits, implement the project and verify the results.

General discussion about the fact that there is good data on how the Water Quality Trading Framework (WQTF) works but not on project outputs that demonstrate actual phosphorus reductions and therein exists the uncertainty of the current WQTF. Discussion took place about whether projects could be treated as pilot efforts so that project proponents and the regulators could do monitoring and assessment and allow everyone to learn and be adaptive. Matt St. John stated that he supports the pilot project concept.

The group discussed the challenges of getting a project funded and built when there is uncertainty about the return on investment from a water quality credit trading perspective. Several members returned to a concern that despite RWQCB intentions to incentivize projects and project investments, only actions that actually remove phosphorus generate credits. These members are concerned this can dis-incentivize innovation. Don McEnhill stated that in a market-based system, the City's job is to pay the lowest dollar per pound of phosphate credit that it can. The BRP discussed that some large projects that might create long range significant reductions of total phosphorus (TP) can't be fully proven or therefore credited, and so investors like the City must necessarily fund the lowest cost option for compliance, even if that gets in the way of doing a large-scale restoration project. The panel discussed the need for an adaptive approach, whether through the current framework or a different proposal that can implement pilot efforts but also provide regulatory credits, gather better data on practices that prove effective in reducing loading and/or increasing assimilative capacity, and then can be expanded on over time.

Amelia Whitson and Matt St. John pointed out that the trading framework has considerations to incentivize multi-benefit projects and that there are data sets (e.g. Natural Resource Conservation Service) that can be part of the trading framework and inform the proposals. Further, it was pointed out that in addition to credit banking, applicants can propose to reduce a trading ratio, allow for longer project life and receive long-term credits for the initial investment.

Ben Horenstein stated that he found the constraints identified in the RWQCB proposal to be thoughtful and accurate and that the City and Board probably see said constraints differently. He stated that the discharger community generally supports market-based programs and that the framework does give the City a means to comply (albeit the City still believes that no net loading is problematic). However, he also stated that for the City, the issue is timing and how incentives can feel like more constraints.

Ben Horenstein continued with comments about the RWQCB's assessment of Guiding Principle #2 and the proportional equity assessing legacy discharges by the City versus legacy conditions associated with

agriculture and other past dischargers. Discussion ensued with differing opinions by BRP members about the proportional responsibility that the City should have for legacy urban sources. Most participants agreed that there is role the City has played in past loading of TP and that there is a lack of definitive data about legacy proportions.

In closing this discussion, the Facilitator asked for public comment and there was none. It was agreed that since the RWQCB proposal is essentially a summary of current conditions, taking a straw poll was unnecessary.

Proposal Discussion - Maximizing Watershed Benefit through Multi-Benefit Compliance Option

Sean McNeil presented a proposal jointly prepared and submitted by the City, Russian River Keeper, and The Laguna de Santa Rosa Foundation (Attachment C). This proposal was initially presented at Meeting 2 by Rita Miller of the City but had since been revised and expanded upon. The proposed idea is that a new program would co-exist with the current framework, using the current framework as a "backstop" to ensure compliance. The new program would define how much money would be required during a permit term, and the money would go towards what is most needed in the watershed. Don McEnhill added that as a partner in the joint proposal, a key goal is to create a clear pathway towards restoration. This would address set-up costs for something like an emergent marsh idea. As discussed during the prior proposal, he sees impediments in the trading framework towards restoration projects. Likewise, Wendy Trowbridge, as partner, reiterated that the Foundation wants to see resources go towards removing phosphorous from the Laguna and that they look to the RWQCB to focus the process, allow for iterative learning and achieving regulatory credits while this learning happens.

Amelia Whitson pointed out potential conflicts of the proposal:

- Anti-backsliding: Having two alternative compliance options may be considered backsliding if one option ends up being less stringent in water quality impact reductions. If the flexibility was less stringent, it would need a justification that meets justification requirements.

- Water quality improvements: While use of the proposed program would be beneficial to collect more data and improve knowledge and future projects, there has to be a demonstrable relationship with water quality improvements and that is not clear in the proposal.

Matt St. John pointed out that this proposal would require an amendment to the current permit and asked if the proposed approach would be no less stringent than the current no net loading requirement. Discussion ensued about further refinements of the proposal that would be needed to ensure that it is not as backsliding, nor could it be interpreted as such.

Further discussion took place about whether there is a way to temporarily backslide as a means to ultimately take a big step forward. John Largier stated that backsliding is rate of discharge, not impact, and that is a problem. So much depends at times on how much rain falls on the watershed.

The Facilitator asked Matt St. John and Amelia Whitson if there are parts of this proposal that could be acceptable or revised to be, and/or are there parts that would likely not be reconcilable. Matt St. John stated that the goal in the proposal to support restoration can absolutely be supported but that having an amount of money spent that represents compliance without a tie to water quality improvements is very challenging. There is room to look at it. There may be a key opportunity in the concept of pilot projects because the goal therein would be to achieve water quality improvements. The group remained in a conundrum on how to accommodate the regulatory constraints of potentially not meeting water quality improvement goals early on but with a hope of and/or actual later outcome that generates significant improvements.

Discussion took place about steps being taken throughout the US that are perceived to be moving away from the prescriptive language of federal and state water quality statutes and instead moving toward capitalizing on innovation and creativity as a means to achieve ultimate ecosystem and water quality improvement goals.

Don McEnhill described examples of permits where compliance is averaged. He acknowledged that he is worried about the proposal being tied to dollars and not TP removal. He stated that under the current trading program, money spent is going towards process, not towards direct removal of TP and that he would like to see within a 5-year permit term perhaps year 1 of preparation, some time for permit analysis, etc. such that there is pragmatism in removing TP. He stated that in some ways, he doesn't see a large difference between this proposal and the current water quality trading since there are set-up costs both ways.

Amelia Whitson pointed out that the current trading framework takes into consideration the time it takes to start projects and that it accounts for dollars per TP removal and that she believes there is a thoughtful averaging period to address this.

The Facilitator asked for public comment. A member of the public asked if the proposers believe it would be just the Laguna that would be helped by such a program. Ben Horenstein answered that while the Laguna would be an obvious target of project implementation and water quality improvements, the proposal is considered to have broader geographic benefits than just the Laguna.

David Kuszmar, RWQCB, asked a clarifying question about whether there would be a no net loading effluent limitation still in effect under the proposal. Ben Horenstein stated that this represents discussions to be had within the City and that he doesn't have an answer to this yet. David Kuszmar also asked how the City would expect the regulators to determine compliance if the proposed alternative compliance pathway is used. Is compliance only a factor of whether the City pays its targeted financial contribution? Ben Horenstein stated that the City is open to accepting other requirements and that the proposal need not be tied to paying a fee as the only requirement. David Kuszmar also asked whether there would be any proposed limits to phosphorus discharge under the proposal. Ben Horenstein responded that the net discharge would remain the same as a means to improve water quality but that the methods and locations to achieve that net discharge might differ than under the current framework.

The Facilitator returned to the BRP to ask for any amendments to the proposal before he called a straw poll. Wendy Trowbridge stated that she likes the idea of stakeholders in or out of the watershed being

able to contribute to planning and compliance if there are ways such contributions can be shown to improve the water quality improvement goals in this basin.

Straw Poll

The Facilitator stated that what he hears is an interest for the current proposal to be expanded or refined to include language about averaging water quality improvements over time and to clarify how compliance would be assessed in order to support long term watershed improvements. He also stated that he heard an interest to better define how money spent on project planning and assessment (i.e. "ramp-up" tasks) would be factored into compliance determinations, and an interest in including language about effective targets for assessing compliance under this proposal.

He asked if with such adjustments, anyone would be conceptually opposed to this proposal. No BRP members voiced conceptual opposition.

Proposal Discussion – Expanded Storage and Reuse

Amelia Whitson discussed an idea about expanded storage to help the City increase recycled water reuse (Attachment D). She confirmed that she is not in a position to make a formal proposal but that discussions at Meeting 2 and subsequently between her and Rita Miller had her wondering about the ideas of storage and reuse. She stated that she had not heard much discussion of this but that it does not feel it is exclusive to of any other proposals and that it also may fit within the current WQTF.

City representatives stated that expanded storage is a very rational idea to support maximizing beneficial reuse. They stated, however, that associated costs are a huge constraint (e.g. buying land, engineering and building storage, permitting and mitigation costs to address impacts to special status species).

Discussion ensued with a member asking if additional storage could be part of a recharge project. The City responded that unfortunately there are limited areas of highly permeable soils in the targeted area of improvements which would limit the amount of effective recharge that could be achieved. Using lands for expanded storage facilities that may increase the likelihood of TP migration and potentially impact private landowners if done on private property. A participant asked if the flood bypass model used in the Central Valley could offer some options wherein landowners were historically paid a flowage easement for their property that allowed high waters to be stored on said land indefinitely. The City said this could be an interesting idea to look at. Michael Cohen asked if discharge out of the watershed could be feasible such as discharging into the Petaluma River. This option would provide a more direct discharge route to the Bay and saline water and thus bypass impacts to the Laguna's freshwater system and the Russian River estuary which closes up at certain times of the year from sand bars at its mouth.

Amelia Whitson stated that this idea could extend to other proposed ideas and it might be worthwhile to integrate these ideas into a new proposal and/or the current WQTF. Don McEnhill expressed concern about the idea because increased or expanded reuse may create longer term soil and groundwater quality impacts as pollutants of concern tend to accumulate over time.

The Facilitator asked for public comment and there was none. He proposed that the idea brought forth seems to have some interest by BRP members and that there need to be some caveats that expand the idea. These caveats would include:

- Discussion about associated cost efficiencies as a means to reflect that expanded reuse and storage are interesting ideas but would not be feasible unless they pencil out economically.
- Expanded reuse and storage can't generate redirected water quality effects (e.g. negative impacts if water is moved out of the watershed, negative effects from long term accumulation of constituents of concern such as pesticides, metals, etc.) and so could not be used to offset discharges.
- Broader discussion and ideas about what constitutes "storage".

The BRP agreed with these caveats as being accurate to the discussion thus far. The Facilitator then proposed that given the time of day and the need for some members to leave right at 2 pm, that he not move to take a straw poll on this idea but instead, move on to the BRP outcomes portion of the agenda and call for final straw polls and roll calls at that time. The panel agreed.

Proposal Discussion - Emergent Marsh Phosphorus Bank

During this BRP meeting, the Emergent Marsh proposal was presented after Roll Calls were taken for the Maximizing Watershed Benefit through Multi-Benefit Compliance Option and Expanded Storage and Reuse proposals, because of time constraints for some members, and because Wendy Trowbridge expressed that her proposal is potentially a subset of the RWQCB proposal and may not need to stand alone. The summary of the proposal and ensuing discussion is included in this portion of the Meeting Summary for conceptual consistency.

Wendy Trowbridge described her proposed idea of using a built emergent marsh (Attachment E) that would be treated as a credit "bank" for other parties needing to establish permitted credits to remove and/or assimilate TP.

Discussion ensued about the benefits, drawbacks and rationale of such a project. Wendy Trowbridge described that in her estimation a freshwater marsh doesn't "pencil out" in a cost/benefit analysis. An emergent marsh project might do so. It would also be an effort to address *Ludwigia*. Members stated that it could restore ecologic functions and enhance the wildlife ecology of the Laguna and that multi-benefit compliance is an effect pathway to take for the regulated community. Members asked what it might cost but Wendy Trowbridge does not have that information yet. Panel members suggested this idea could be part of a broader package of future approaches to consider, perhaps embedded in some of the other proposals also discussed by the BRP.

For procedural consistency with the rest of the day, The Facilitator asked to take a straw poll. There was no BRP opposition to the proposal. The Facilitator then asked for public comment and there was none.

BRP Outcomes Discussion
To ensure that the BRP understand the implications of their final roll call on proposed items and also understand what might happen as a result of their work, the Facilitator asked Ben Horenstein to summarize anticipated next steps.

Ben Horenstein stated that he will take the recommendations of the BRP to policymakers in the City and that he expects there will be future discussions with the RWQCB related to these recommendations during potential permit revisions. He reiterated that although the BRP was not given decision-making authority, he hopes that some basis may have been established for some or all of the BRP members to work together again in the future, to expand on the preliminary ideas suggested in the BRP recommendations and to support continuing work with the RWQCB in order to achieve the mutually desired water quality improvements in the Laguna de Santa Rosa watershed.

The Facilitator stated that as part of CCP's contract, he and staff will prepare a Summary Report of the BRP process and its recommendations. Ben Horenstein stated that the City's Board of Public Utilities will receive a presentation of the BRP Summary Report in a public venue.

Final BRP Roll Call
<u>Roll Call on Maximizing Watershed Benefit through Multi-Benefit Compliance Option</u>
Proposed by the City, Riverkeeper & Foundation (with noted needs for adjustments/refinements as previously summarized under Straw Poll)

- Support: Ethan Brown, John Largier, Don McEnhill, Wendy Trowbridge, Michael Cohen
- Can Accept, if not Support: None
- Do not support: None
- Abstain: Amelia Whitson, Matt St. John

<u>Roll Call on Expanded Storage and Reuse</u>
Presented by Amelia Whitson (with noted needs for adjustments/refinements as previously summarized under Straw Poll)

- Support: Wendy Trowbridge, John Largier, Michael Cohen
- Can Accept, if not Support: Don McEnhill, Ethan Brown
- Do not support: None
- Abstain: Amelia Whitson, Matt St. John

<u>Roll Call on Foundation Proposal</u>

- Support: Ethan Brown, John Largier, Don McEnhill, Wendy Trowbridge, Michael Cohen
- Can Accept, if not Support: None
- Do not support: None
- Abstain: Amelia Whitson, Matt St. John

Next Steps
The Facilitator will distribute these materials by the following dates for comment:
Meeting 2 Summary: by June 28

Meeting 3 Summary: July 6
Blue Ribbon Panel Draft Report: TBD

The Panel is asked to provide comments on Meeting Summaries 2 & 3 by July 18.

BRP Adjournment and Acknowledgements

The Facilitator asked for closing comments. Ben Horenstein thanked everyone for their thoughtful participation, particularly the RWQCB and EPA for engaging in the BRP discussions and not just observing. He acknowledged that the BRP's engagement and the depth of their discussion far exceeded the City's expectations. The recommendations provided by the BRP will inform the permit renewal process going forward, and he looks forward to the coming permit negotiations and invites continued engagement by everyone on the panel.

Attachments