LAKE TAHOE ENVIRONMENTAL IMPROVEMENT PROGRAM

TAHOE REGIONAL PLANNING AGENCY

Tahoe Keys Lagoons Aquatic Weed Control Methods Test Joint Draft Environmental Document Hearing and Public Comment

Agenda Item IX.B

TRPA Governing Board
July 22, 2020

Kimberly Caringer, TRPA
Dennis Zabaglo, TRPA
Russell Norman, Lahontan
Jim Good, ESA

Draft Environmental Document: Speakers

- Project purpose and background – Kim Caringer, TRPA
- Proposed Project and alternatives – Dennis Zabaglo, TRPA
- Regulatory framework – Russell Norman, Lahontan Water Board
- Environmental review and findings – Jim Good, ESA
- Next steps – Dennis Zabaglo, TRPA

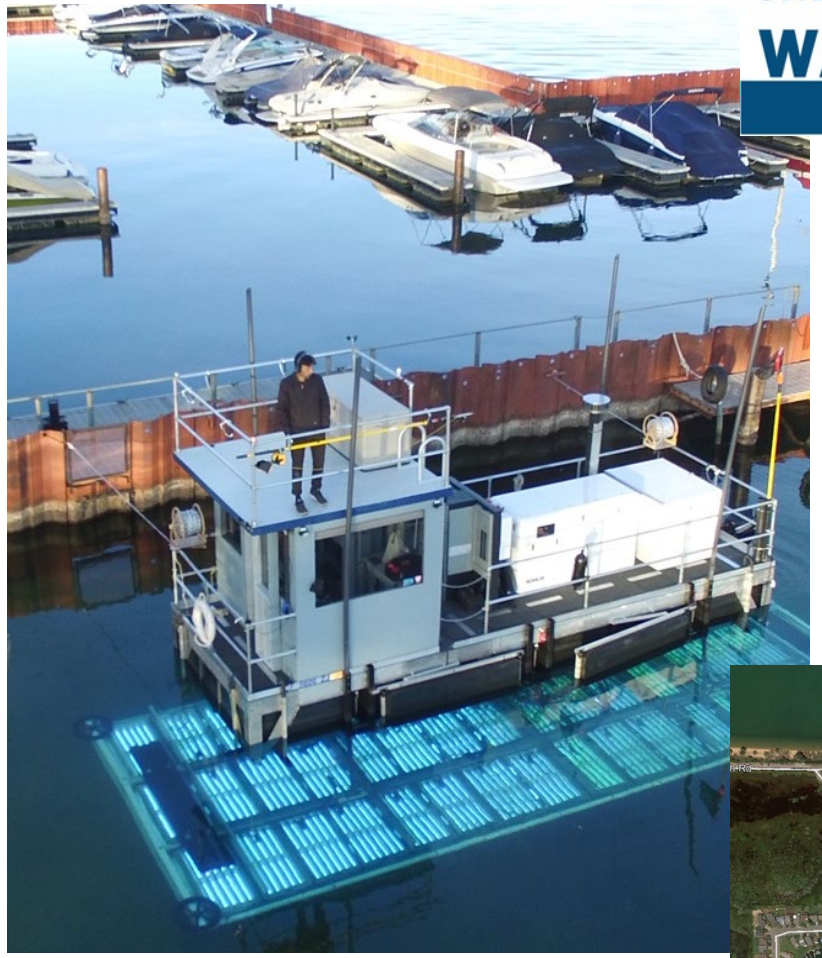
LAKE TAHOE
ENVIRONMENTAL
IMPROVEMENT
PROGRAM

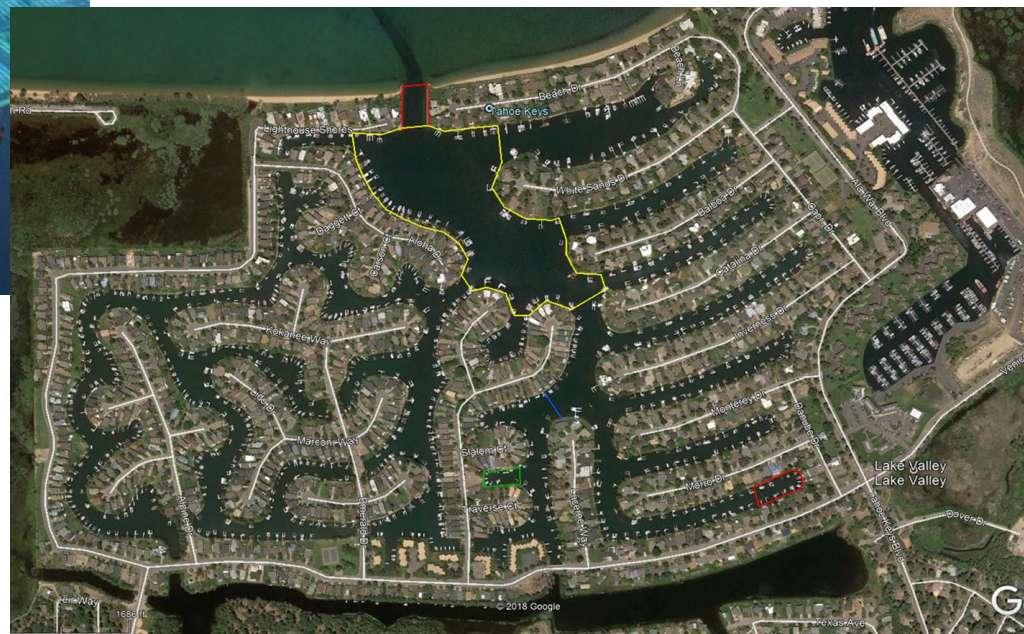
CALIFORNIA
WATER BOARDS
Lahontan - R6

TAHOE
REGIONAL
PLANNING
AGENCY

Tahoe Keys Lagoons

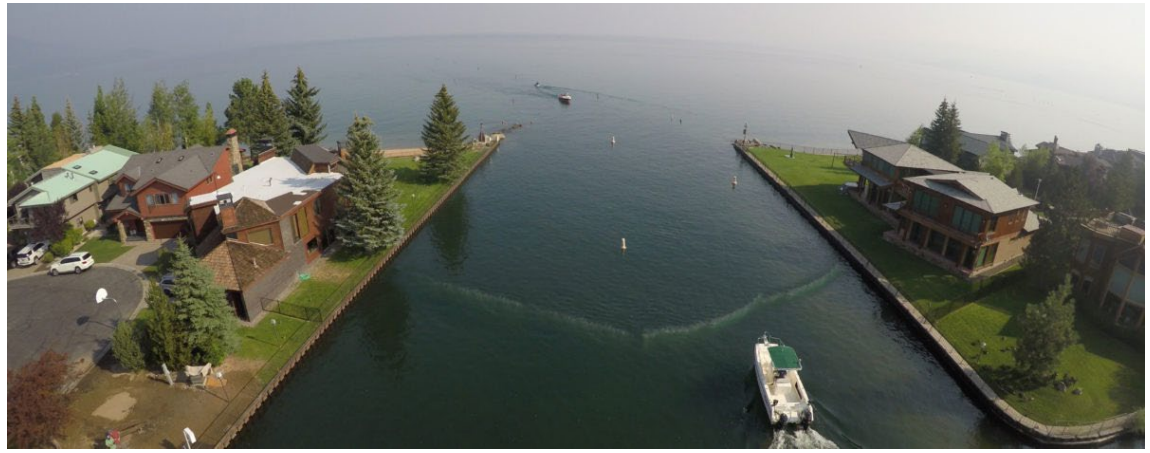
- 30x larger than other projects
- New tools are needed
- Multiple and new methods needed





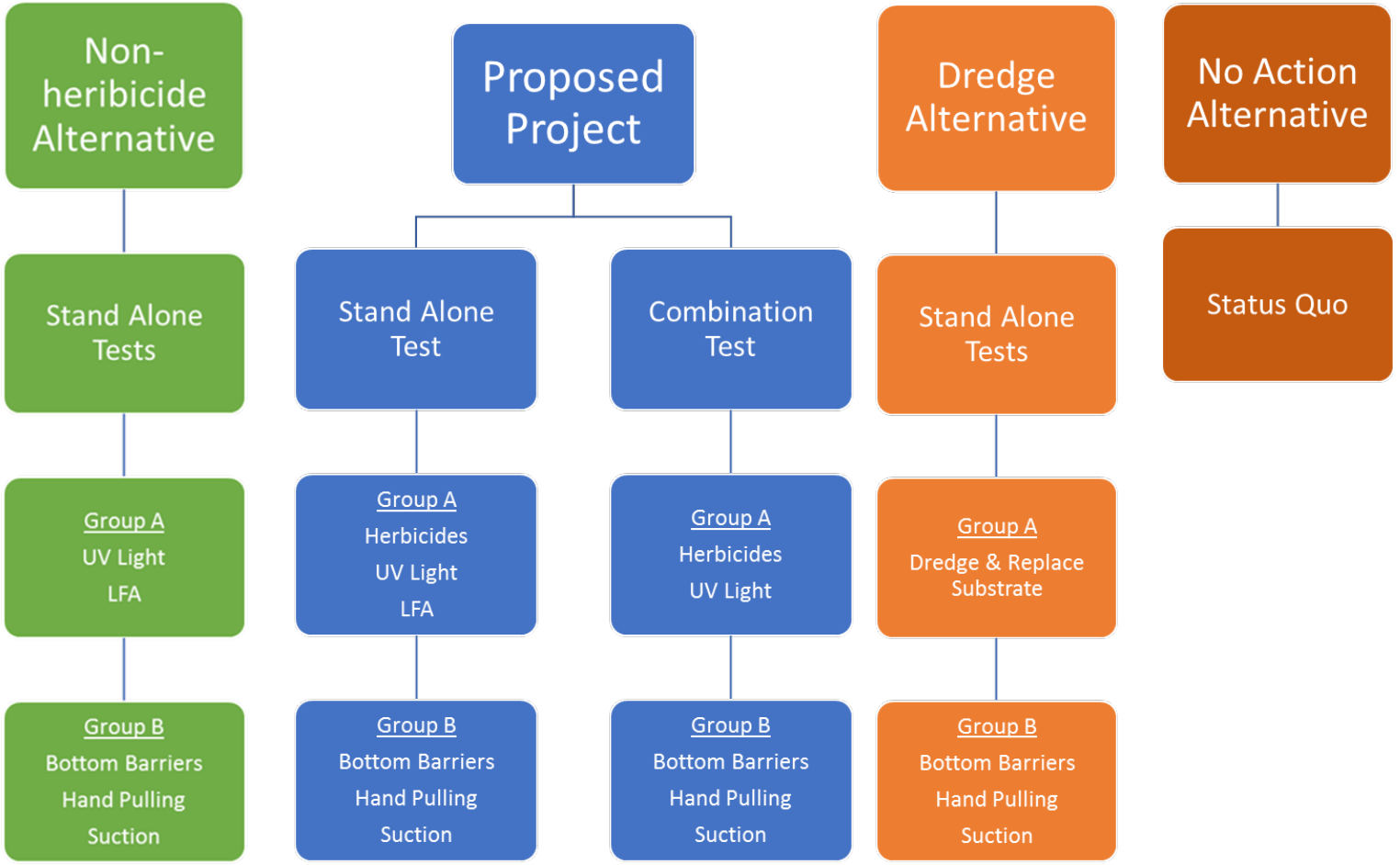
What has happened

- Water quality studies
- Public engagement and scoping
  - Support for testing, physical modifications, herbicide use, and no herbicide use.
- Alternatives developed in response to comments
- Best management practices



Proposed Project- Control Methods Test

- Collaboratively developed
- Comprehensive test
- Stand alone and in combination
- Three-year test
  - Group A 2021
  - Group B 2022-2023



LAKE TAHOE
ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS
Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

Proposed Project

Stand Alone Test

Group A
Herbicides
UV Light
LFA

Group B
Bottom Barriers
Hand Pulling
Suction

Combination Test

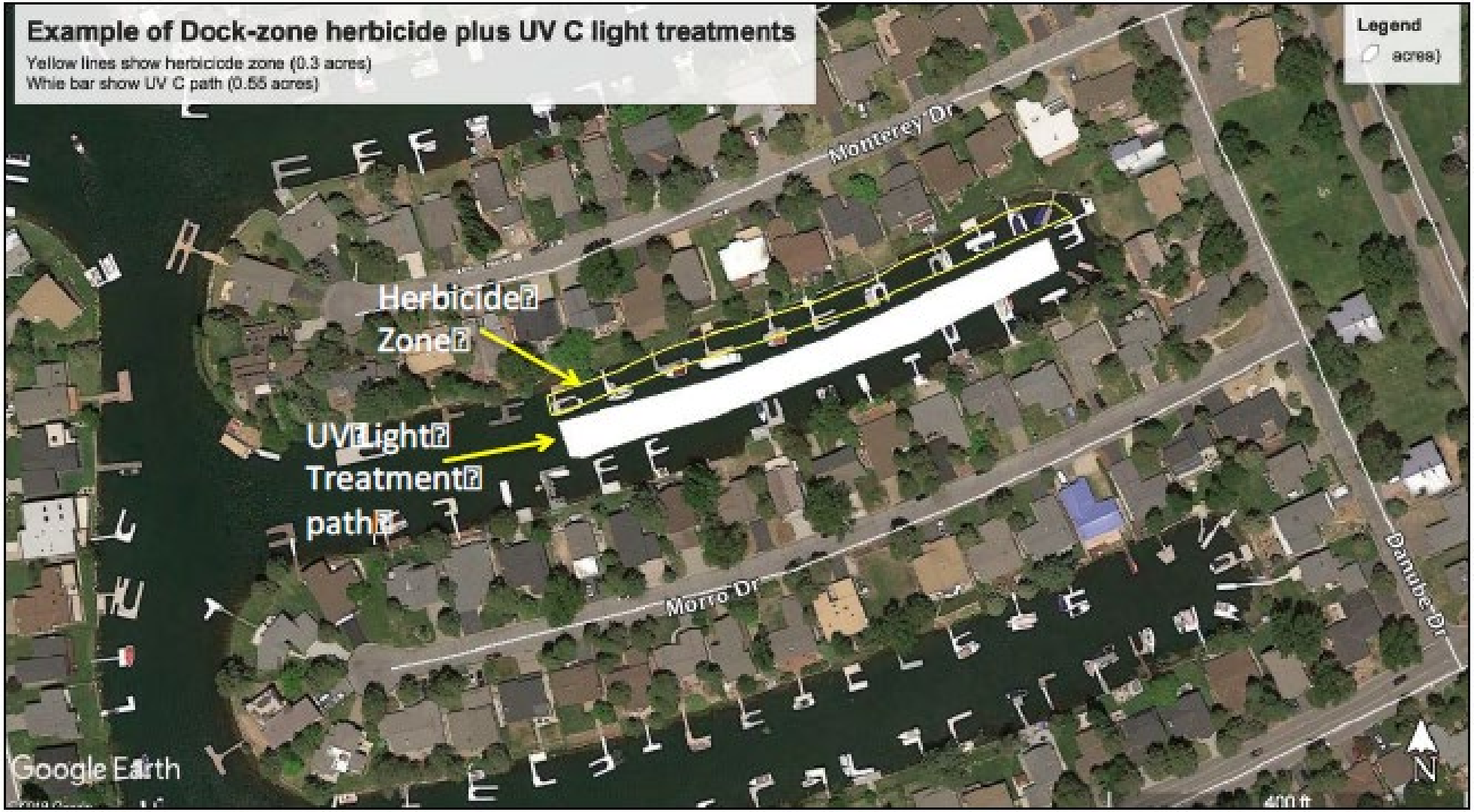
Group A
Herbicides
UV Light

Group B
Bottom Barriers
Hand Pulling
Suction

LAKE TAHOE
ENVIRONMENTAL
IMPROVEMENT
PROGRAM

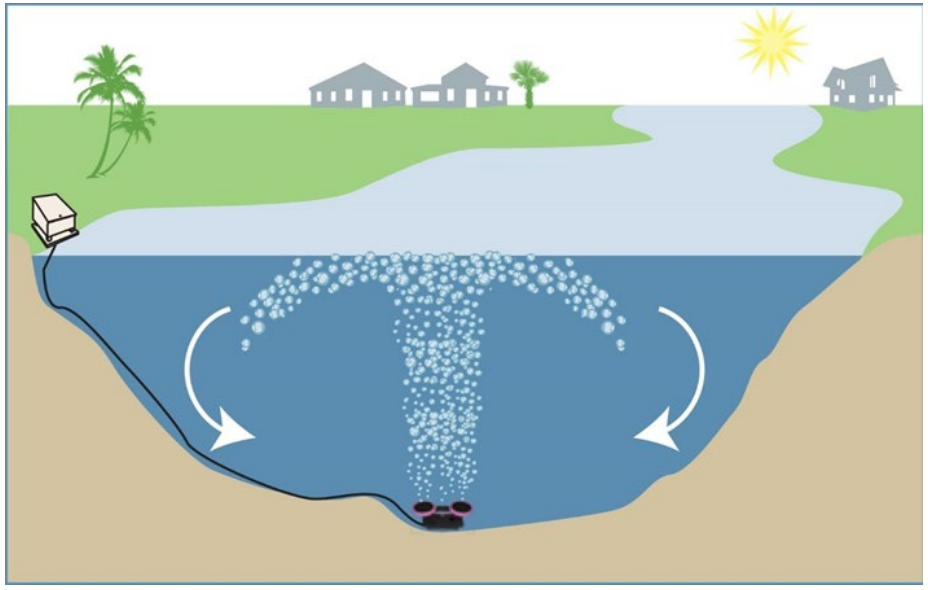
CALIFORNIA
WATER BOARDS
Lahontan - R6

TAHOE
REGIONAL
PLANNING
AGENCY



Non-herbicide Alternative

- UV light
- Laminar Flow Aeration



LAKE TAHOE
ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS
Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

Non-heribicide Alternative

Stand Alone Tests

Group A
UV Light
LFA

Group B
Bottom Barriers
Hand Pulling
Suction

Dredge Alternative

- Dredging
  - Remove organic layer, roots and turions
- Substrate replacement
  - Less suitable habitat

LAKE TAHOE
ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS
Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

Dredge Alternative

Stand Alone Tests

Group A
Dredge & Replace Substrate

Group B
Bottom Barriers
Hand Pulling
Suction

LAKE TAHOE ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

No Action

- Status Quo
- Risk to Lake?

Key Regulatory Considerations

- Proposed Aquatic Herbicide Discharge
  - California Environmental Quality Act (CEQA) & TRPA review required
  - Simpler review for non-chemical methods
- Special Status Water
  - Lake Tahoe and Tahoe Keys Lagoons
  - Designated an Outstanding National Resource Water (ONRW) for **Outstanding Ecological and Recreational Value**

Key Regulatory Considerations (cont'd)

- Enhanced Permitting and Environmental review
  - Lahontan Basin Plan Prohibition Exemption required for pesticide discharges
  - Antidegradation Analysis
    - Highest level of protection for ONRW's
    - Outstanding National resource Waters (ONRWs) Tier 3

Key Regulatory Considerations (cont'd)

- Key Requirements for Basin Plan Prohibition Exemption Consideration
  - Environmental Impact Report per CEQA
  - Federal discharge permit for chemical discharges to waters of the U.S.
  - Compliance with antidegradation policies
  - Demonstrate minimum discharge of chemical substances for effective treatment
  - Description of why non-chemical measures have not effectively addressed the target weeds
  - Peer reviewed pre-project biological MRP and Monitoring, Reporting and Mitigation Program

Key Regulatory Considerations (cont'd)

- Key Considerations – Antidegradation Policy for ONRWs
  - **No Long-term degradation** of baseline water quality
  - **Short-term degradation** allowed
    - In aquatic herbicide application and treatment areas
    - Current EPA guidance – Short-term is "**weeks to months**, not years"
  - **Duration of degradation** of water quality and aquatic life resulting from discharge to be **informed by environmental review and antidegradation analysis**

Approach to Evaluating Water Quality Effects

1. What WQ constituents could be affected?
2. What are the existing baseline conditions?
3. Define potential WQ and environmental health issues
4. Evaluate direct and indirect effects
5. Show your work

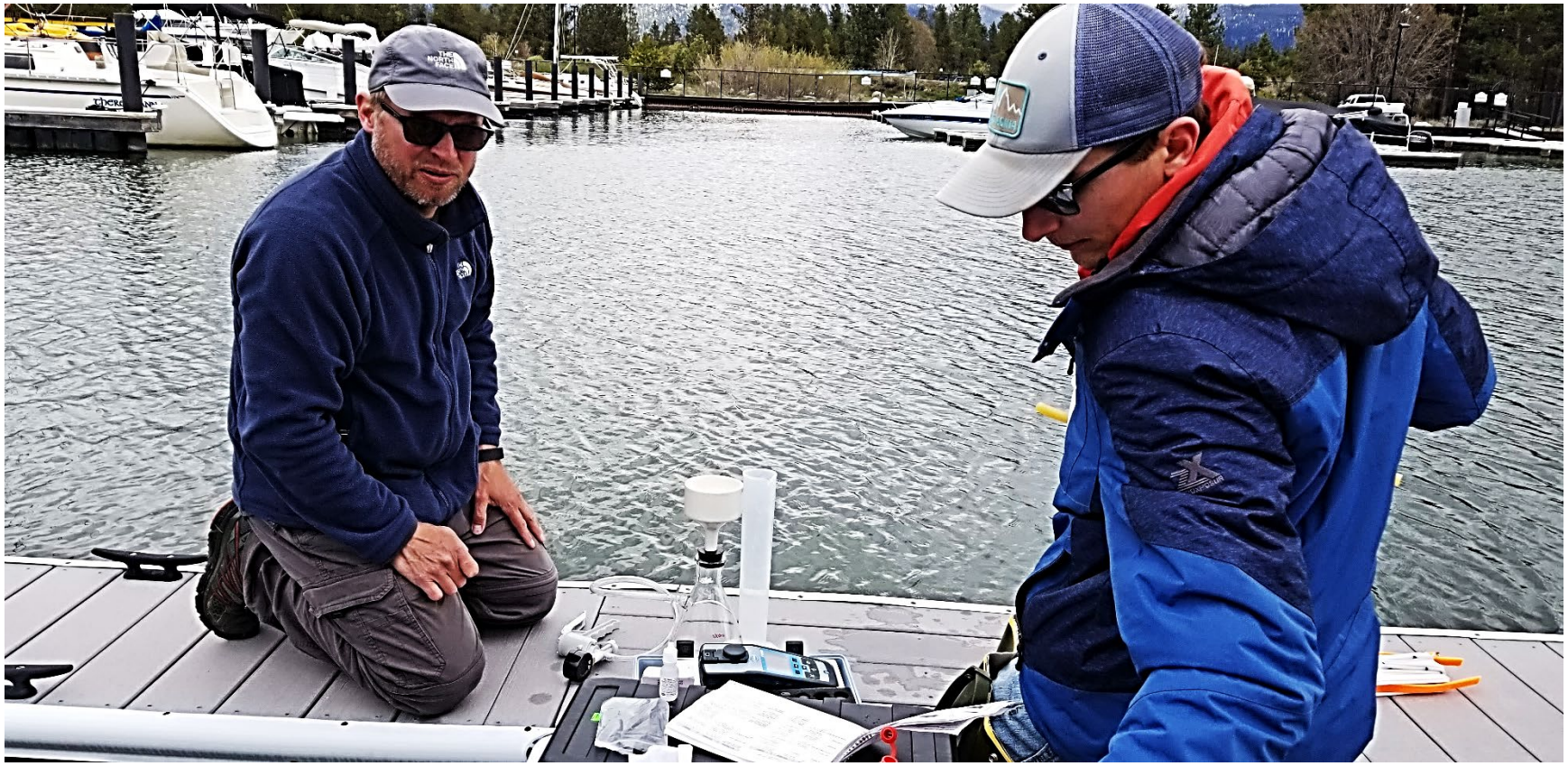
Team effort that included PhD specialists in hydrology, limnology, aquatic plants, fisheries, and aquatic toxicology/risk assessment.

1. WQ Constituents Potentially Affected

Based on IEC/IS and consultation with agency staff:

- Water temperature
- Dissolved oxygen (DO)
- pH
- Turbidity
- Floating materials
- Phosphorus
- Nitrogen
- Harmful algal blooms (HABs)
- Detectable concentrations of herbicides and degradants
- Aluminum

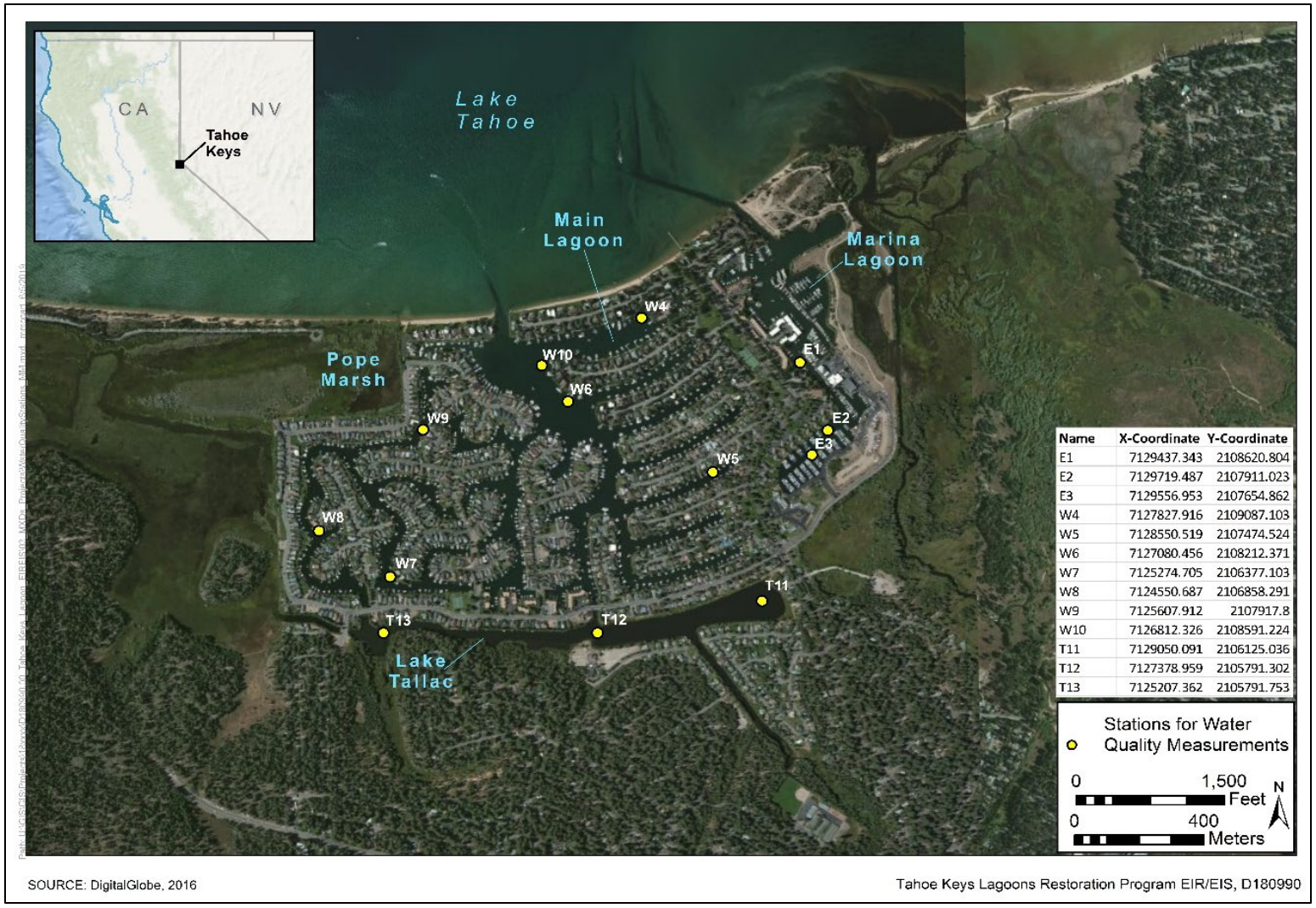
2. 2019 Baseline Data Collection



Baseline Data Collection Activities (App E)

- Continuous at 15-min intervals May - Oct
  - Water temperature, DO, pH, 13 stations shallow & deep
  - Precipitation and lagoon water levels
- Twice monthly
  - Measure depth to groundwater
  - Lagoon water quality profiles (temp, DO, pH, redox)
- Monthly
  - Lagoon water sampling for nutrients, chlorophyll
- Several times
  - Groundwater nutrients
  - Turbidity
- June and October
  - Fish and BMI surveys (App G)
- Once in July
  - Sediment sampling
  - Terrestrial biology and wetland delineation

Baseline Water and Sediment Quality Locations



3. Define potential WQ issues – Environmental Health (Section 3.2)

- EH-1: Herbicide applicator exposure and health
- EH-2: Herbicide persistence
- EH-3: Protecting drinking water supplies
- EH-4: Toxicity to non-target plants and animals
- EH-5: Aluminum toxicity
- EH-6: Harmful algal blooms

3. Define potential WQ issues – Water Quality (Section 3.3.4)

- WQ-1: Water temperature effects
- WQ-2: Sediment disturbance and turbidity
- WQ-3: Dispersal of aquatic weed fragments
- WQ-4: Changes in pH
- WQ-5: Changes in dissolved oxygen
- WQ-6: Increases in total phosphorus
- WQ-7: Increases in total nitrogen

4. Evaluating Direct & Indirect Water Quality Effects

- Methods and assumptions for each issue summarized at the beginning of EH and WQ sections
- Focused on protecting lagoon receiving waters (not relying on lake dilution)
- 3 Key Questions:
  A. How long would herbicide chemicals be detectable?
  B. Would water quality standards be met?
  C. Would beneficial uses be protected?

A. How Long Would Herbicides be Detectable?

- Started with APAP for aquatic herbicides
  - Eliminated penoxsulam – long persistence
  - Based evaluations on max allowable application rates
- Researched lowest attainable lab reporting limits (1 part per billion)
- Based on degradation rates and assuming no dilution:
  - Endothall <80 days
  - Florpyrauxifen-benzyl 6 to 36 days
  - Triclopyr <120 days
- "…weeks to months, not years"

B. Would Water Quality Standards Be Met?

- Baseline study showed that standards not met pre-project:
  - Turbidity
  - Dissolved oxygen
  - pH
  - Total phosphorus
  - Total nitrogen
  - Floating materials
- Would they get worse from CMT, alternative project, or no action?

B. Would Water Quality Standards Be Met?

Things we considered:

- Timing and extent of activities
- Protective measures
- Real-time monitoring and adaptive management
- Additional mitigation
- Monitoring information from other projects

Expected Extent and Duration of Effects

B. Would Water Quality Standards Be Met?

- Turbidity
  - Short-term increases during bottom barrier removal, suction dredging, or discharge of dewatering effluent
  - Minimize and control:
    - Turbidity curtains at test sites
    - Spill control and treatment of dewatering effluent
    - Monitor during activity, adjust as needed to meet permit limits

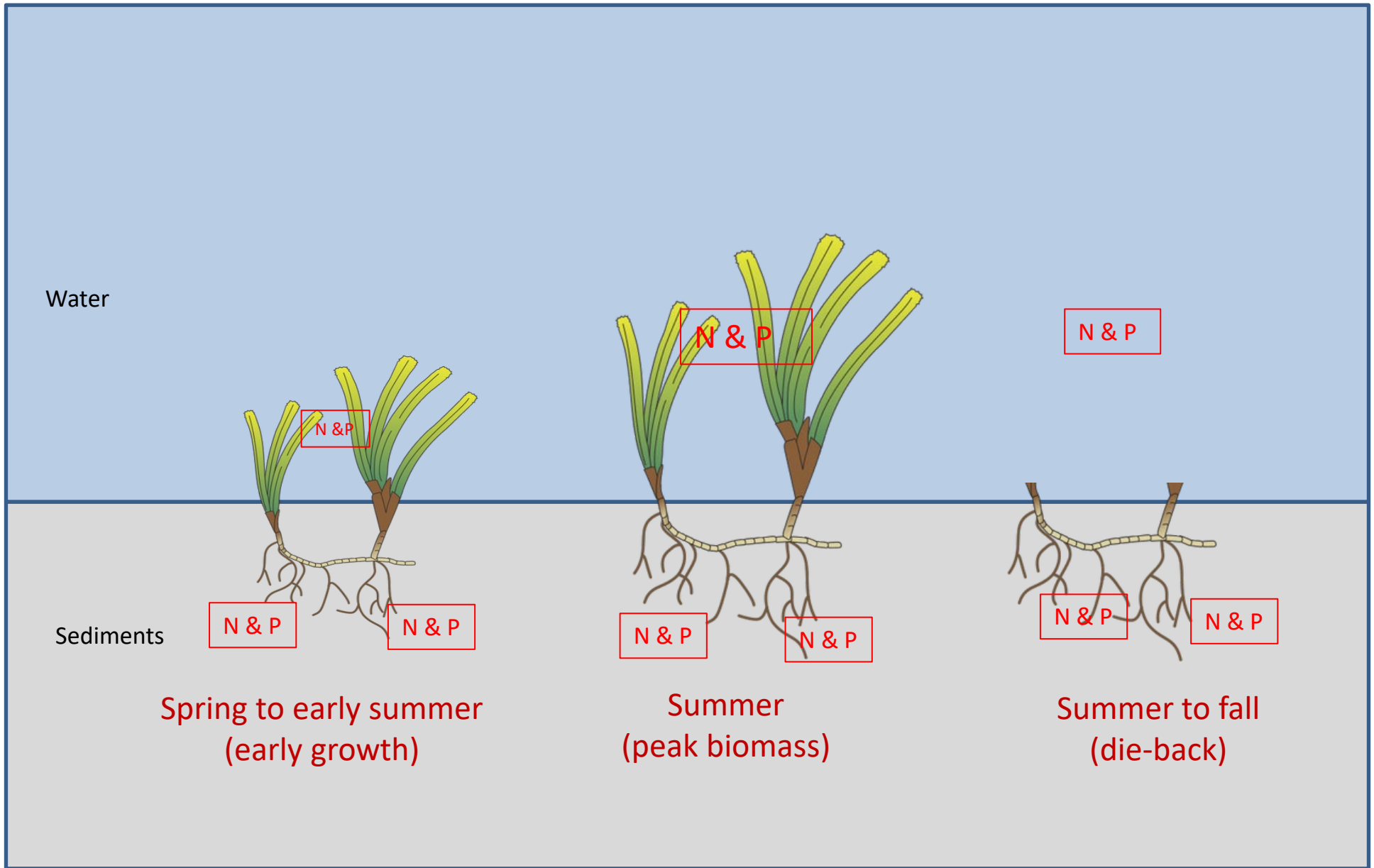
B. Would Water Quality Standards Be Met?

- Dissolved Oxygen
  - No concern for direct oxygen demand from herbicides
  - Minimize/offset oxygen demand from decomposing plants
    - Treatments when plants are small
    - Deploy aeration during decomposition
- pH
  - No concern for direct pH changes from herbicides

B. Would Water Quality Standards Be Met?

- Phosphorus & Nitrogen
  - Nutrient cycling model findings: (App F)
    - Most N and P in plant tissues not water
    - Plant decay biggest N and P source in Main Lagoon
    - External > internal sources in Lake Tallac
    - Algal productivity correlated to Main Lagoon water nutrients, not so in Lake Tallac
  - Minimize temporary increase during weeks of plant decay
    - Treatments when plants are small
    - Could apply Phoslock® to inactivate phosphorus

Air



esassoc.com

C. Would Beneficial Uses Be Protected?

- Potential impacts to human health from herbicides?
  - Product registration, Safety Data Sheets, other literature
  - No potential to exceed drinking water standards
  - No acute risk or chronic exposure for applicators
  - Containment, protective measures, monitoring and contingency plans (APAP) provide safety factor
- Potential for increased HABs occurrence at test sites during nutrient release from decomposing plants?
  - Treat plants when small
  - Aeration so surface waters are not stagnant and warm
  - Phosphorus inactivation
  - Ongoing testing and public notice program

C. Would Beneficial Uses Be Protected?

- Potential impacts to non-target aquatic life from herbicides?
  - Baseline surveys, product registration, Safety Data Sheets, other literature, USEPA risk assessment methods
  - Pre-treatment surveys and adjustments to minimize non-target plant impacts
  - Some loss of individual non-target plants, but negligible impacts to non-target plant communities

C. Would Beneficial Uses Be Protected?

- Other potential impacts to non-target aquatic life?
  - Some non-target individual plants and invertebrates would be burned by UV light or buried by bottom barriers, but negligible impacts to non-target communities
  - Fish and other mobile organisms would swim/crawl away
  - Deoxygenation during plant decomposition managed by aeration
  - Potential aluminum toxicity to fish managed by controlling sediment disturbance and turbidity
  - Rapid recolonization and long-term benefits to native plant and animal communities from aquatic weed control

5. Showing our Work

- Summary of Results: Baseline Water Quality in Tahoe Keys Lagoons (App E)
- Draft Nutrient Loading Technical Memorandum (App F)
- 2019 Fish and Benthic Macroinvertebrate Surveys in Tahoe Keys Lagoons (App G)
- Draft EIR/EIS
  - Section 3.2: Environmental Health
  - Section 3.3.4: Water Quality
  - Section 3.3.5: Aquatic Biology and Ecology
- Antidegradation Analysis Report

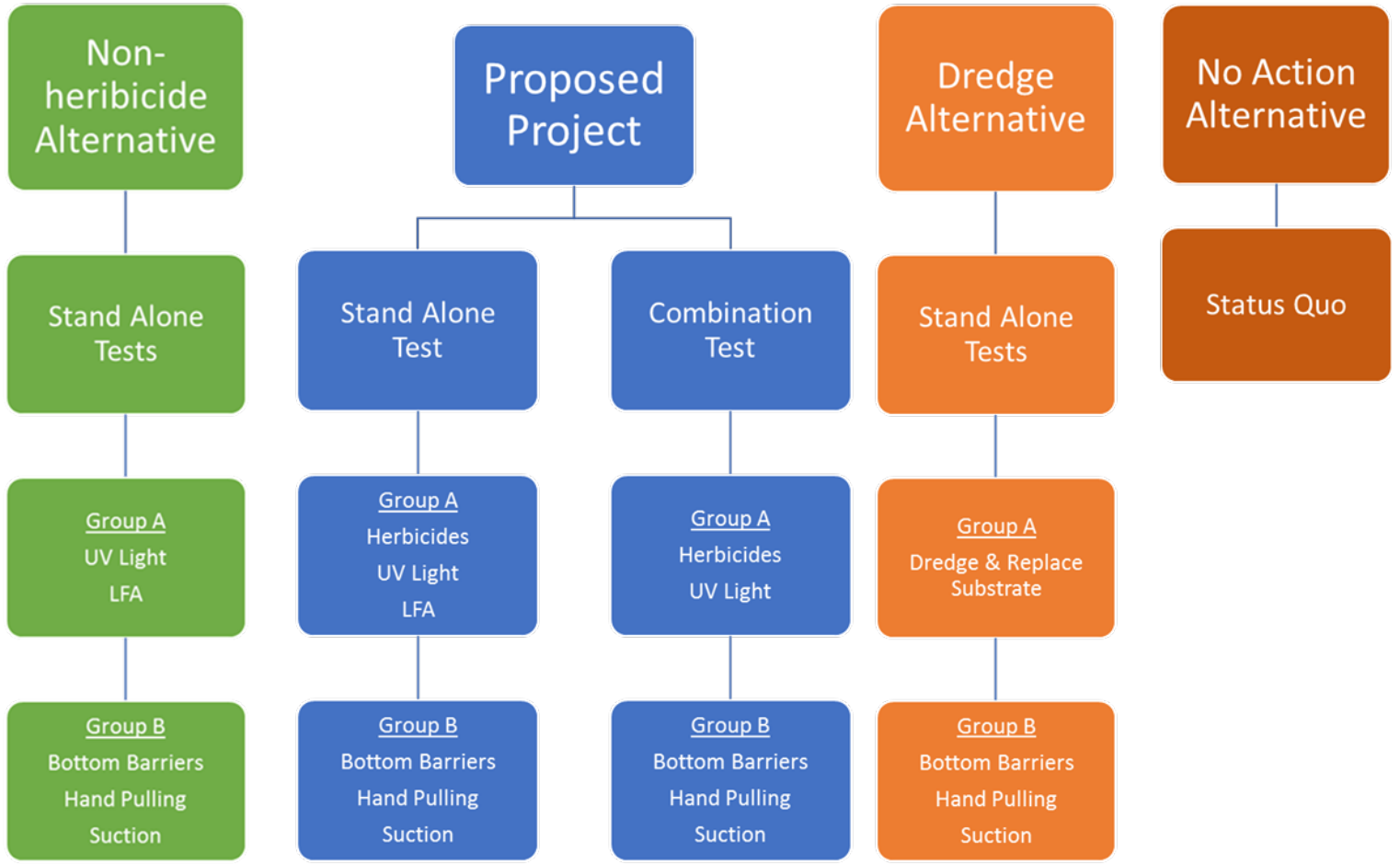
LAKE TAHOE ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

Key Points

- An independent analysis has been conducted
- A test can be implemented safely with appropriate protective measures
- Early season treatment
- Real-time monitoring
- Pre-treatment surveys
- We are seeking your input



Public Comment

- DEIR/DEIS can be found on-line:
  - https://www.trpa.org/document/projects-plans/
- 60-day comment period ends September 3, 2020
- Seeking comments on the technical adequacy of the analysis and alternatives
- Comments via email or mail
  - TahoeKeysWeeds@trpa.org
  - Dennis Zabaglo, Aquatic Resources Program Manager, PO Box 5310, Stateline, NV 89449

Upcoming Milestones

- Public Comment ends — September 3, 2020
- Final EIR/EIS and response to comments — Winter 2020/2021
- EIS/EIR Certification & public hearings — Spring 2021
- Potential test implementation — 2021-2023
  - Group A — 2021
  - Group B — 2022-2023

LAKE TAHOE ENVIRONMENTAL IMPROVEMENT PROGRAM

CALIFORNIA WATER BOARDS Lahontan - R6

TAHOE REGIONAL PLANNING AGENCY

Governing Board Discussion and Public Comment

www.TahoeKeysWeeds.org

www.trpa.org/document/projects-plans/

LAKE TAHOE
ENVIRONMENTAL
IMPROVEMENT
PROGRAM

CALIFORNIA
WATER BOARDS
Lahontan - R6

TAHOE
REGIONAL
PLANNING
AGENCY

Thank You!

www.TahoeKeysWeeds.org

https://www.trpa.org/document/projects-plans/