TAHOE REGIONAL PLANNING AGENCY
Mail
PO Box 5310
Stateline, NV 89449-5310
Location
128 Market Street
Stateline, NV 89449
Contact
Phone: 775-588-4547
Fax: 775-588-4527
trpa.gov
LAKE TAHOE ENVIRONMENTAL IMPROVEMENT PROGRAM

STAFF REPORT

Date: July 1, 2021

To: TRPA Hearings Officer

From: TRPA Staff

Subject: University of Nevada Reno Water Quality Monitoring Stations, Various Locations within Lake Tahoe, TRPA File EIPS2021-0009, Project Number 570-000-00

Staff Recommendation:
Staff recommends the Hearings Officer make the required findings and approve the project subject to the special conditions in the draft permit.

Required Motions:
In order to approve the proposed project, the Hearings Officer must make the following motions, based on the staff report:

1) A motion to approve the required findings, including a finding of no significant effect; and

2) A motion to approve the proposed project subject to the conditions in the draft permit (see Attachment B).

Staff recommends that the Hearings Officer take the following actions, based on this staff report.

Project Description:
Water quality monitoring data are essential to the collaborative work to restore and protect Lake Tahoe. The project helps to implement the Lake Tahoe Environmental Improvement Program through the installation of up to 30 real-time water quality data collection stations at various locations within Lake Tahoe that will allow the University of Nevada-Reno to monitor nearshore water quality to help scientists and managers better understand the nutrient transport from the watershed to the lake. Lake Tahoe's nearshore water quality including algal growth is intimately tied to the internal dynamics within the lake (e.g. mixing and grazing by animals) and the supply of nutrients from the streams and groundwater entering the lake from the watershed. The project aims to better quantify the relationship and linkage between the watershed and streams to the nearshore algal growth in Lake Tahoe. Twelve of the water quality sensors measuring temperature and oxygen will be placed at the outfall of Glenbrook and Blackwood creeks from shallow (15-20 ft) to deeper (30-60 ft) waters. In the lake, three water quality sensors will be placed on cinder blocks at the 15-20 ft depth centered from the outfall of the creeks and from 150 or so feet on either side of the creek outfall (see Attachment C - Figure 1 for photo of cinderblock design). The other sensors will be deployed in the water column attached to subsurface buoys (float positioned at 9-12 ft. below surface) at approximately 30, 45, and 60 feet of depth (see Attachment C - Figures 2, 3, & 4) to enable maintenance and retrieval from a boat.

Each buoy array will be visited once every two months to download the sensor data. The permit authorizes the installation of up to 30 monitoring sites; 12 locations are currently identified, and 18 additional sites may be identified in the future depending on data needs. Water quality monitoring stations will not be placed in water less than 15 feet deep.

Issues:
The proposed project involves a special use determination (scientific study project) and therefore requires Hearing Officer review in accordance with Chapter 2, Subsection 2.2.2. of the TRPA Code. The project issues and others are discussed in the following staff analysis:

Staff Analysis:

A. Environmental Documentation: The applicant has completed an Initial Environmental Checklist (IEC) to assess the potential environmental impacts of the project. No significant environmental impacts were identified, and staff has concluded that the project will not have a significant adverse effect on the environment. A copy of the completed IEC will be made available at the Hearings Officer hearing and at the TRPA offices.

B. Land Use/Plan Area Statement: The project area lies within the Lake Tahoe lakezone where scientific study projects are permissible uses. The project will not change or alter any existing uses within Lake Tahoe. This project, as conditioned in the Draft Permit, is consistent with the Regional Plan and will not adversely affect implementation of Land Use or implementation of sub-elements of the Regional Plan.

Contact Information:
For questions regarding this agenda item, please contact Paul Nielsen at (530) 318-6025 or at pnielsen@trpa.gov.

Attachments:
A. Required Findings
B. Draft Permit
C. Detailed Project Description and Visual Exhibits

Attachment A

Required Findings

Required Findings
UNR Nearshore Monitoring

Required Findings:
The following is a list of the required findings as set forth in Chapters 4 and 80 of the TRPA Code. Following each finding, Agency staff has indicated if there is sufficient evidence contained in the record to make the applicable findings or has briefly summarized the evidence on which the finding can be made.

1. Chapter 4.4.1 – Required Findings:

    a. The project is consistent with and will not adversely affect implementation of the Regional Plan, including all applicable Goals and Policies, Plan Area Statements and maps, the Code and other TRPA plans and programs.

    Land Use: The project area lies within the Lake Tahoe lakezone. The project is designed to not change existing uses within the project area. The project would effectively implement goals and policies of the TRPA Regional Plan. Therefore, this project, as conditioned in the Draft Permit, is consistent with the Regional Plan and will not adversely affect implementation of Land Use or implementation of sub-elements of the Regional Plan.

    Transportation: This project will not adversely affect implementation of the Transportation Element of the Regional Plan. The project involves the installation of water quality monitoring stations in Lake Tahoe and does not involve or affect transportation related infrastructure or generated vehicle trips.

    Conservation: The project may benefit water quality in the long term by improving our understanding of linkages between the lake and surrounding watershed and the drivers of aquatic algae, nutrient loading, and lake clarity. No negative impacts to cultural or historic resources area are expected.

    Recreation: This project will not affect recreation. The top of the recovery float will be suspended in the water column no higher than nine feet below the surface of Lake Tahoe. The applicant must also maintain conformance with all US Coast Guard requirements for use of the watercraft on Lake Tahoe, including avoidance of navigational hazards.

    Public Service and Facilities: This project will not affect public services or facilities. The project will utilize existing boat-launching facilities for the launch and retrieval of the monitoring equipment. No other public service facilities are needed to serve the project.

    Implementation: This project involves the installation of water quality monitoring stations and will not affect the Implementation Element of the Regional Plan

b. The project will not cause the environmental threshold carrying capacities to be exceeded.

TRPA staff has reviewed the Initial Environmental Checklist (IEC) (Attachment D of the staff report), and Article (V)g "Findings" in accordance with Chapter 4, Subsection 6.4 of the TRPA Code of Ordinances. All responses contained on the checklist indicate compliance with the environmental threshold carrying capacities. A copy of the completed (V)g checklist is available as part of the project record which will be available at the public hearing.

c. Wherever federal, state or local air and water quality standards applicable for the Region, whichever are strictest, must be attained and maintained pursuant to Article V (g) of the TRPA Compact, the project meets or exceeds such standards.

(Refer to paragraph 1.b, above)

2. Chapter 80.3.1 – Findings Required for Lakezone, Shorezone, and Lagoon Projects. Review of Projects in the Shorezone and Lakezone; Required Findings.

A project in the shorezone or lakezone shall not be approved unless TRPA finds that:

a. General Environmental Findings. TRPA must analyze and make the required environmental findings pursuant to Chapter 3, Environmental Documentation. In addition, such environmental findings must demonstrate that the project will not adversely impact Littoral processes, fish spawning, backshore stability, or onshore wildlife habitat, including wildfowl nesting areas.

The applicant has submitted a TRPA Initial Environmental Checklist and TRPA staff has completed the V(g) checklist to make a finding of no significant effect. The proposed monitoring stations will be located in Lake Tahoe; therefore, the project will not adversely affect backshore stability or onshore wildlife habitat. Monitoring equipment anchors (75 lb. cinder blocks) will be located on the lakebed with water-depths greater than 15 feet; therefore, it is unlikely that the project will impact littoral processes or fish spawning. The anchors will not penetrate the lake bottom like a pier piling and the facilities are not permanent structures and therefore impacts to fish habitat are considered insignificant. The project may have a beneficial impact on water quality by improving understanding on nearshore in lake dynamics and informing management.

b. Accessory Facilities - There are sufficient accessory facilities to accommodate the project.

Sufficient accessory facilities exist to accommodate the project. The project will utilize existing boat-launching facilities for the launch and retrieval of all watercraft and monitoring equipment.

c. Compatibility - The project is compatible with existing shorezone and lakezone uses or structures on, or in the immediate vicinity of, the littoral parcel; or that modifications of such existing uses or structures will be undertaken to assure compatibility.

The structures will not be visible from adjacent properties and will not impact navigation and recreation uses. No additional permanent shorezone structures are authorized under this permit.

d. Use - The use proposed in the foreshore or nearshore is water dependent.

The project is water dependent by its very nature.

e. Hazardous Materials - Measures will be taken to prevent spills or discharges of hazardous materials.

There are no hazardous materials associated with the proposed water quality monitoring stations.

f. Construction - Construction and access techniques will be used to minimize disturbance to the ground and vegetation.

No disturbance to the ground or terrestrial vegetation is allowed or proposed.

g. Navigation and Safety - The project will not adversely impact navigation or create a threat to public safety as determined by those agencies with jurisdiction over a lake's navigable waters.

The project proponent will be required to obtain permits from the applicable agencies with jurisdiction over Lake Tahoe's navigable waters. Since the top of the submerged recovery buoy will be nine feet below the top of the surface of the water the project is not expected to adversely impact navigation.

h. Other Agency Comments - TRPA has solicited comments from those public agencies having jurisdiction over the nearshore and foreshore and all such comments received were considered by TRPA prior to action being taken on the project.

The project was discussed at the June 17, 2021 Tahoe Basin Shoreline Review Committee meeting. The US Army Corps of Engineers stated in the June 17 meeting the anchoring of the proposed cinder block anchors to the bottom of the lakebed using metal rebar stakes is prohibited in order to avoid potential impacts to cultural resources.

3. 80.3.3. Additional Findings for Special Use Projects.

a. The project, and the related use, is of such a nature, scale, density, intensity, and type to be appropriate for the project area, and the surrounding area.

The project will not be visible from land. The water quality monitors will be anchored to the bottom of the lake. The monitors have a relatively small footprint and will not damage or alter the surrounding area.

b. The project, and the related use, will not injure or disturb the health, safety, environmental quality, enjoyment of property, or general welfare of the persons or property in the neighborhood, or in the Region.

The project will not be visible from land and will not result in any sound or light generation and is not expected to result in injury or disturbance of the health, safety, environmental quality, enjoyment of property, or general welfare of the persons or property in the neighborhood, or in the Region. The project will provide valuable information that will inform restoration work and protection of the lake and the surrounding watershed.

c. The applicant has taken reasonable steps to protect the land, water, and air resources of both the applicant's property and that of surrounding property owners.

The project is designed to improve water quality by providing additional information on the impact of activities on land and process of nutrients through the installation of water quality monitors that do not rely on the use of hazardous materials and will not impact the land, air water resources of surrounding property owners.

d. The project, and the related use, will not change the character of the neighborhood, detrimentally affect or alter the purpose of any applicable plan area statement, community, redevelopment, specific, or master plan.

(Refer to paragraph 2.c, above)

Attachment B

Draft Permit

DRAFT PERMIT

PROJECT DESCRIPTION: Installation of up to 30 real-time water quality monitoring stations.

FILE #: EIPC2021-0009 Project Number: 570-000-00

PERMITTEE(S): University of Nevada-Reno

COUNTY/LOCATION: Up to 30 monitoring stations within Lake Tahoe

Having made the findings required by Agency ordinances and rules, the TRPA Hearings Officer approved the project on July 8, 2021 subject to the special conditions found in this permit. This permit shall expire on July 8, 2024 without further notice unless the construction has commenced prior to this date and diligently pursued thereafter. Commencement of construction consists of installation of monitoring equipment. Diligent pursuit is defined as completion of the project within the approved construction schedule. This permit may be renewed prior to expiration with written request from the permittee.

NO ACTIVITY SHALL COMMENCE UNTIL:

(1) TRPA RECEIVES A COPY OF THIS PERMIT UPON WHICH THE PERMITTEE(S) HAS ACKNOWLEDGED RECEIPT OF THE PERMIT AND ACCEPTANCE OF THE CONTENTS OF THE PERMIT;

(2) ALL PRE-PROJECT CONDITIONS OF APPROVAL ARE SATISFIED AS EVIDENCED BY TRPA'S ACKNOWLEDGEMENT OF THIS PERMIT; AND,

(3) THE PERMITTEE OBTAINS ALL NECESSARY PERMITS. THE TRPA PERMIT AND OTHER PERMITS ARE INDEPENDENT OF EACH OTHER AND MAY HAVE DIFFERENT EXPIRATION DATES AND RULES REGARDING EXTENSIONS; A TRPA INSPECTION HAS BEEN CONDUCTED WITH THE BOAT OWNER AND THE OPERATOR, AND A COMMERCIAL OPERATION SCHEDULE SUBMITTED.

_____ _____

TRPA Executive Director/Designee Date

PERMITTEE'S ACCEPTANCE: I have read the permit and the conditions of approval and understand and accept them. I also understand that I am responsible for compliance with all the conditions of the permit and am responsible for my agents' and employees' compliance with the permit conditions. I also understand that if the property is sold, I remain liable for the permit conditions until or unless the new owner acknowledges the transfer of the permit and notifies TRPA in writing of such acceptance. I also understand that certain mitigation fees associated with this permit are non-refundable once paid to TRPA. I understand that it is my sole responsibility to obtain any and all required approvals from any other state, local or federal agencies that may have jurisdiction over this project whether or not they are listed in this permit.

Signature of Permittee(s) _____ Date_____

TRPA PROJECT NUMBER 570-000-00
FILE NO. EIPC 2021-0009

Required plans determined to be in conformance with approval: Date: _____

TRPA ACKNOWLEDGEMENT: The permittee has complied with all pre-project conditions of approval as of this date:

_____ _____
TRPA Executive Director/Designee Date

SPECIAL CONDITIONS

1. This project is part of the Lake Tahoe Environmental Improvement Program (EIP), project number 04.01.01.0164 - Making the smart connection: new sensor real-time technologies and ecosystem models to understand nearshore greening in Lake Tahoe. Water quality monitoring data are essential to the collaborative work to restore and protect lake Tahoe. The project helps to implement the Lake Tahoe Environmental Improvement Program through the installation of up to 30 real-time water quality data collection stations at various locations within Lake Tahoe that will allow the University of Nevada-Reno to monitor nearshore water quality to help scientists and managers better understand the nutrient transport from the watershed to the lake.

   Twelve of the water quality sensors measuring temperature and oxygen will be placed at the outfall of Glenbrook and Blackwood creeks from shallow (15- 20 ft) to deeper (30-60 ft) waters. In the lake, three water quality sensors will be placed on cinder blocks at the 15-20 ft depth centered from the outfall of the creeks and from 150 or so feet on either side of the creek outfall. The other sensors will be deployed in the water column attached to subsurface buoys (float positioned at 9-12 ft. below surface) at approximately 30, 45, and 60 feet of depth to enable maintenance and retrieval from a boat. Each buoy array will be visited once every two months to download the sensor data. The permit authorizes the installation of up to 30 monitoring sites; 12 locations are currently identified, and 18 additional sites may be identified in the future depending on data needs. Water quality monitoring stations will not be placed in water less than 15 feet deep.

2. The permit is valid for a period of ten years. The water quality monitors shall be removed after ten years unless a subsequent permit is issued that allows the monitoring stations to remain.

3. This permit specifically authorizes up to 30 real-time water quality data collection stations to be installed in the nearshore of lake Tahoe. Twelve of the locations are approved with this permit and prior to the installation of any additional monitoring stations, the permittee shall submit a site plan showing the location of the additional monitoring station locations to TRPA in order for TRPA to review and determined consistency with this approval and environmental analysis.

4. Prior to permit acknowledgement, the applicant shall submit a one-page plan showing a typical installation with each component labelled and a note indicating that the top of the recovery buoy shall not be less than nine feet from the surface of lake Tahoe at any time. in addition the plan shall not include the placement of metal rebar into the lake bottom.

5. Prior to permit acknowledgement, the permittee shall submit all necessary permits and approvals from other agencies including but not limited to the California State Lands Commission, Nevada State Lands Commission, Nevada Division of Environmental Protection, US Army Core of Engineers, and the Lahontan Regional Water Quality Control Board.

6. Prior to installation of any data collection station the applicant shall submit a schedule of work with dates of installation, monitoring, reporting and removal.

7. Prior to installation of each data collection station the permittee shall notify the TRPA Research and Analysis Principal Natural Resources Analyst or Division Manager of the general location and days of installation.

8. This permit does not authorize any movement or relocation of lakebed material. Disturbance of the lake bottom shall be avoided at all times.

9. Data collection stations will not interfere with or prevent access to any other structures in Lake Tahoe.

10. Data collection stations will be secured to the lake bottom without the use of rebar and in a manner than does not involve penetration of the lake bottom.

11. Any scientific reports generated as a result of data gathered shall be submitted to TRPA at the time of report finalization.

12. At the end of the monitoring period, or for monitors that have been inactive for more than two years, all components of the data collection stations shall be removed from lakes and structures.

13. It is the permittee's responsibility to maintain conformance with all US Coast Guard requirements for use of the watercraft on Lake Tahoe. It is the permittee's responsibility to obtain authorization and maintain compliance with all applicable state, federal, and local regulations at all times.

14. All boating operations conducted within 600 feet of the waterline of Lake Tahoe shall observe the no-wake-zone and may not create a wake or exceed 5 MPH.

15. All project and employee vehicles, including trailers, shall be parked on existing paved surfaces in a designated, legal parking area.

16. This approval is based on the permittee's representation that all plans and information contained in the subject application are true and correct. Should any information or representation submitted in connection with the project application be incorrect or untrue, TRPA may rescind this approval or take other appropriate action.

17. The stated conditions of this permit shall be adhered to throughout the lifetime of this operation. This permit may be revoked if at any time the operation is out of compliance with the conditions of this permit.

18. The discharge of petroleum products, waste and litter, or earthen materials to the waters of the Lake Tahoe Basin is prohibited.

19. The project may be subject to the permitting requirements of other agencies with jurisdiction over the proposed project activities.

20. To the maximum extent allowable by law, the Permittee agrees to indemnify, defend, and holdharmless TRPA, its Governing Board (including individual members), its Planning Commission (including individual members), its agents, and its employees (collectively, TRPA) from and against any and all suits, losses, damages, injuries, liabilities, and claims by any person (a) for any injury (including death) or damage to person or property or (b) to set aside, attack, void, modify, amend, or annul any actions of TRPA. The foregoing indemnity obligation applies, without limitation, to any and all suits, losses, damages, injuries, liabilities, and claims by any person from any cause whatsoever arising out of or in connection with either directly or indirectly, and in whole or in part (1) the processing, conditioning, issuance, administrative appeal, or implementation of this permit; (2) any failure to comply with all applicable laws and regulations; or (3) the design, installation, or operation of any improvements, regardless of whether the actions or omissions are alleged to be caused by TRPA or Permittee.

    Included within the Permittee's indemnity obligation set forth herein, the Permittee agrees to pay all fees of TRPA's attorneys and all other costs and expenses of defenses as they are incurred, including reimbursement of TRPA as necessary for any and all costs and/or fees incurred by TRPA for actions arising directly or indirectly from issuance or implementation of this permit. TRPA will have the sole and exclusive control (including the right to be represented by attorneys of TRPA's choosing) over the defense of any claims against TRPA and over their settlement, compromise, or other disposition. Permittee shall also pay all costs, including attorneys' fees, incurred by TRPA to enforce this indemnification agreement. If any judgment is rendered against TRPA in any action subject to this indemnification, the Permittee shall, at its expense, satisfy and discharge the same.

END OF PERMIT

Attachment C

Detailed Project Description and Visual Exhibits

Project: Understanding the connections between upstream processes and the nearshore water quality of Glenbrook and Blackwood Creek Bays

Principal investigators :**Drs. Joanna Blaszczak & Sudeep Chandra, UNR**

Brief project description:

Lake Tahoe's nearshore water quality including algal growth is intimately tied to the internal dynamics within the lake (e.g. mixing and grazing by animals) and the supply of nutrients from the streams and groundwater entering the lake from the watershed. Our goals are to understand the linkage between the watershed and streams to the nearshore algal growth in Lake Tahoe. We will evaluate these linkages and monitor the water quality of the nearshore habitat by placing water quality sensors measuring temperature and oxygen in Glenbrook creek and Blackwood creek and at the outfalls of both creeks from shallow (15- 20 ft) to deeper (30-60 ft) waters. In the lake, three water quality sensors will be placed on cinder blocks at the 15-20 ft depth centered from the outfall of the creeks and from 150 or so feet on either side of the creek outfall (see Figure 1 for photo of cinderblock design). The other set of three sensors will need to be deployed in the water column attached to subsurface buoys (float positioned at 9-12 ft. below surface) at approximately 30, 45, and 60 feet of depth (see Figures 2, 3, & 4) to enable maintenance and retrieval from a boat. Each buoy array would be visited once every two months to download the sensor data, which would be uploaded to a public-facing data portal after QA/QC within six months of data collection. This work will support research by a Ph.D. student and undergraduate students at the University of Nevada, Reno.

Figures:

Figure 1. Example of sensor cinderblock deployment design for nearshore locations.. This design is only appropriate for the closest locations where the sensor can be assumed to capture most of the water column. Oxygen and water temperature sensors are in white and have automated wipers attached to ensure minimal biofouling during two-month deployments.

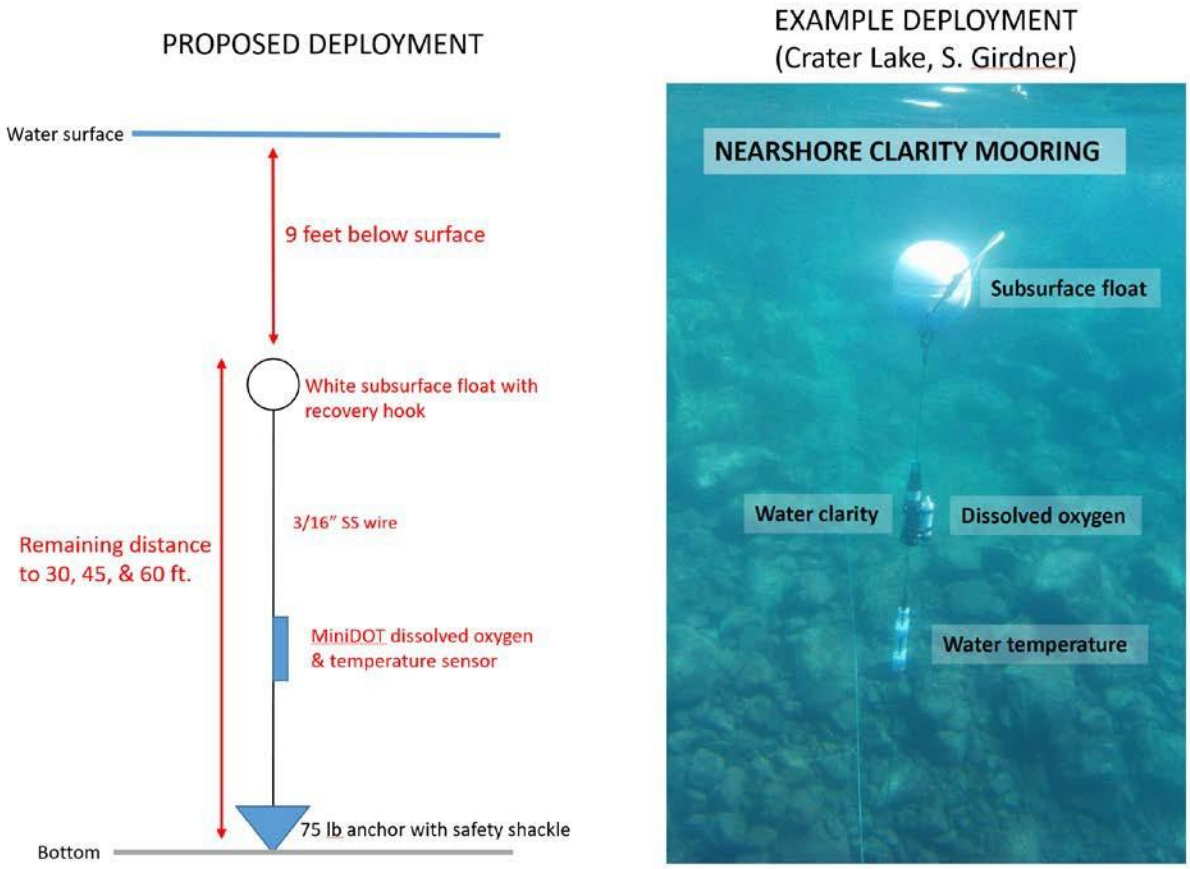

Figure 2. Proposed subsurface buoy design for buoys deployed at 30, 45, and 60 ft. of total water depth, and an example photograph of a subsurface float and sensor deployment from Crater Lake (photo from Scott Girdner, Fisheries Biologist at Crater Lake NP). Our proposed subsurface float would be deeper at 9 feet below the surface. The high-frequency sensor attached would collect dissolved oxygen and temperature data every 10 minutes during day and night. Sensors will be attached to an upright wire mooring that is anchored to the bottom with a 75 lb anchor and the white subsurface float would be 9 ft. below the water's surface.

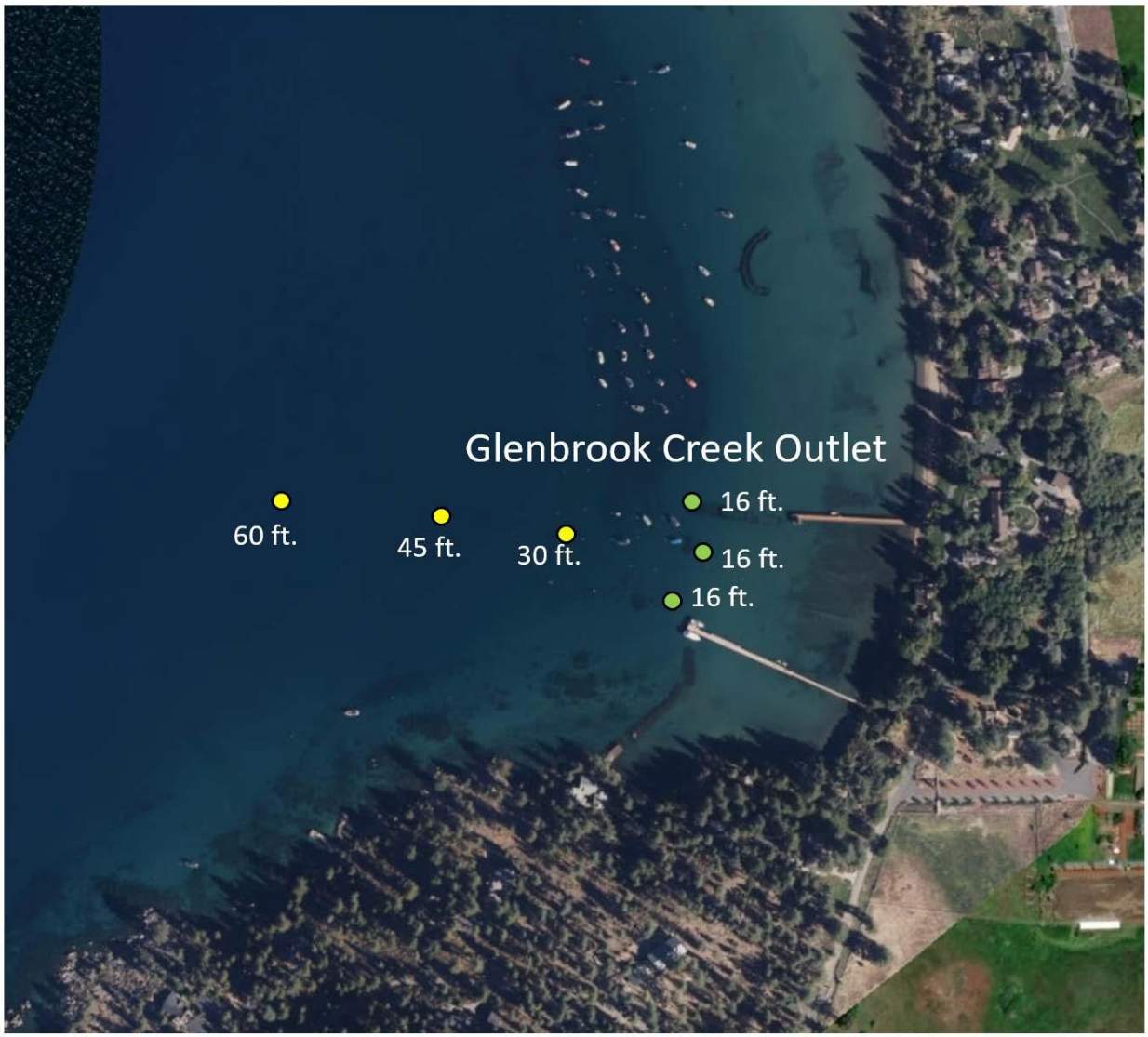

Figure 3. Map of proposed subsurface sensor locations at the outlet of Glenbrook Creek on the east shore of Lake Tahoe. Subsurface buoy locations are approximated on the map as yellow circles at 30, 45, 60 ft. of water depth aligned with the creek outlet. The 16 ft depth cinderblock deployments are green circles because they will not be buoys. We have access to this area through Sudeep Chandra's connections with property owners in the community.

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Mail
PO Box 5310
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Location
128 Market Street
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Contact
Phone: 775-588-4547
Fax: 775-588-4527
www.trpa.org

Figure 4. Map of proposed subsurface sensor locations at the outlet of Blackwood Creek on the west shore of Lake Tahoe. Subsurface buoy locations are approximated on the map as yellow circles at 30, 45, 60 ft. of water depth aligned with the creek outlet. The 16 ft depth cinderblock deployments are green circles because they will not be buoys. We have access to this area through public beach access off of Tallac Ave.