

TAHOE SCIENCE ADVISORY COUNCIL

NOTES | NOVEMBER 2021 COUNCIL MEETING

Date: Thursday November 18, 2021

Time: 10:00 AM – 1:00 PM

Location: [Zoom](#)

Participating Council Members: [Sudeep Chandra](#) (UNR), [Adrian Harpold](#) (UNR), [Monica Arienzo](#) (DRI), [Tamara Wall](#) (DRI), [Geoff Schladow](#) (UCD), [Steve Sadro](#) (UCD), [Max Moritz](#) (UCSB/DANR), [John Melack](#) (UCSB), [Pat Manley](#) (PSW), [Ramon Naranjo](#) (USGS), [Paul Work](#) (USGS), [Paul Comba](#) (NDEP), [Jim Lawrence](#) (DCNR)

Robert Larsen (CNRA), Alison Toy (UCD)

Agency stakeholders: Domi Fell () Emma Williams (USFS), Brian Judge (LWQCB), Laura Patten (KTB), Jason Kuchnicki (LWQCB)

1. Welcome and Agenda Review (Sudeep)
2. Council Business (Ramon, Sudeep)
 - a. Budget update (see summary document)
 - i. 3-yr operations agreement from CA, \$20K in discretionary funds, prioritizing data synthesis analysis, uplands science to action, and science to action interdisciplinary.
 - b. SNPLMA 18
 - i. 30 million of secondary list, \$12m in projects, some sorting needed for prioritization, USGS, S2A priority
 - ii. Decide how \$12M is divided
 - iii. Waiting on that group, uncertainty on timing
 - iv. Council will likely see resources in the next fiscal year
 - c. Questions/Comments
 - i. Council consultation, if agencies want to take advantage of this, there will be opportunity to discuss later this afternoon.
3. State updates (Jim, Bryan)
 - a. Not much from Jim. NV legislative folks meet every 2 years, but there is a standing meeting for Tahoe. They made all committee assignments EXCEPT for Tahoe and public lands. Hopefully will get it at next meeting in early Dec. Opportunity to get on the agenda and is on Jim's radar. Had a meeting about redistricting, but that's about it. Division of state lands.
 - b. Sudeep question
 - c. Jim funds were largely to put together the state's climate plan.

- d. Ramon requests the climate plan be sent over. Jim will email over (ACTION)
 - e. Tamara was part of the group that put together the climate assessment in front of the plan. Plan largely focused on mitigation, within the state large interest in adaptation as well, but there is currently no funding. Request put into delegation, but nothing has borne fruition at this point.
 - f. Bob says CA state lands is proposing changes to buoy rates to state lands commission in December. Good news for the council and other recipients of those funds. Hopefully no lawsuits. Looking for how the monies will be divided and better engaged with the Council potential nearshore funding. Bryan Cash is stepping in for Lizzie partially at CNRA, Bob will keep everyone updated, reach out to him with CNRA requests.
4. Project updates (see summary document) (Geoff, Sudeep, Ramon)
- a. Lake clarity modeling
 - i. Ethan Deal at Boston University is doing the analysis, running his code to look at the properties of the data to understand the features of the data. We are on schedule.
 - ii. As for the other modeling it is progressing well, we have divided project into several teams. ... Third group looking at food web. Conceptual models for each of these, code them, and “all downhill from there.” Complex and represent processes that we have little to no data on. We can model them, make appropriate assumptions, and go from there. We are defining what we know and what we don’t know and move forward. Things don’t always happen as you expect when it comes to validating and calibrating their models.
 - iii. ...
 - b. Communications – monthly column
 - i. Sudeep bring a focal image beyond the lake. Jointly sign-up, not onerous 800 words max.
 - ii. Bob and Co-chairs will take the lead for the January article
 - iii. Ramon will remind folks lots of new content is available on website, it had been several months since looking on the site. Looks very different, all notes are organized there, helpful to get information out to agencies.
 - c. Caldor fire response & process
 - i. The league and TRPA supporting this effort
 - ii. Work from interagency monitoring team, measuring sediment/nutrient concentration during that first flush. Quantifying changes in the sediment loads there.
 - iii. Talked about supporting Dr. Hughs efforts of vegetation treatments. ...

- iv. Modification from LTMP monitoring at Trout and Upper Truckee to chase more rainstorm events that normally wouldn't contribute as much sedimentation, but now will collect during runoff events. Looking ways of fingerprinting retardants with ammonium nitrate, which will undergo oxidation of ammonia to nitrate in the samples. SNPLMA proposal is to go into uplands area and measure stream loads and calculate changes in runoff using watershed models. Actively watching rain events and watching streamflows and obtaining from existing LTMP sites.
- v. John interim data by January-February so that the Council can have some idea of what the data is showing. Were the contracts written this way? Some info by then will be shared?
- vi. Sudeep can comment on the smoke, yes ideally first calendar quarter of 2022, whether we have all the info together is unsure,...
- vii. Ramon because the way the contract is written for LTMP it is approved on a WY cycle. Collected and processed for approval and might have prelim data (stream flow, turbidity) but will work with UCD and others to try and get analysis data for sediments and nutrients. Not written to provide any sooner. ... Important for feedback from agencies and discuss ways of improving.
- viii. Geoff
- ix. Unfortunately the original proposal to do uplands monitoring was not funded, agencies decided to do additional monitoring in existing sites. Took that proposal and submitted for SNPLMA consideration for post-fire evaluation because we didn't have the funds to get out there and install the gauges. No guarantees that the funds will come through and that wouldn't be until winter. Working to get the gauges installed.
- x. Megan Kelly for NV, wondering if there was a pressure transducer there. Restoration efforts near fountainhead bridge, noticing a lot of ash deposition there. Doing design, engineering, regrading, pebble counts, etc. Install debris catching.
- xi. Yes, one right at the bridge, but near landfill and impounded, thinking about moving it uplands near the fire boundary, now that they are allowing access to the burn area. Would like further discussion on this to better coordinate more.
- xii. Any anecdotal information available re: lake clarity readings since wildfires began (~July on)..?
 1. UNR team in the nearshore area you can see, particularly on the east shore, owing to the hydrodynamics of the lake, all the way up to Glenbrook we are seeing ash, relatively high in comparison to the west and north shore. Much more clumping of Zyngema and other algae at least a visual change. It was one of the warmest temperature years until the fire.
 2. Tahoe Keys, whenever we have smoke coming in we have a die off of

aquatic plants maybe shading or deposition of nutrients, so the water there was brown and murky. Just anecdotal info.

3. Difficult answer because light was down, with less light you can see less into the lake. Since the smoke has cleared Secchi readings are on the low end, we usually expect water to start clearing around now. But we are determining the factors for that.

xiii. Did the lake mix to the bottom?

1. Deep mixing was in March, about 150m, shallow. This current winter in three months time, Ramon will be the second to know.
2. When you have deep mixing you pull nitrates from the lake which can stimulate algal growth, but you're also pulling super clear hypolimnetic water, so the 3D modeling will help us better understand the role of deep mixing. Talking about the data collected over the last few months and what we are hoping to learn from it. Thinking about the likelihood of having a smoky summer, should we be planning on what we are doing next summer? Rather than a rapid response.

xiv. Process for the next extreme event

1. Reactive process this year, how can we get ahead next year for future opportunities of science investigation.
2. Pat has mentioned about trying to understand and inform activities at the landscape scale. Direct some funding support for research that can inform burn and landscape restoration activities, particularly at the landscape scale. It seems like this kind of investment would help balance the significant sediment-focused work that is being funded and implemented.
3. Process was reached out to agency partners and... initiate the convo and continue to frame council priorities in general. Build on that process.

xv. Jason thought overall it was "pretty good" but there were a lot of management questions and it could've been more efficient and it would've been helpful for agencies to chime in first. Interim steps where agencies could weigh in on what was more relevant to them.

xvi. Sudeep thinks this is possible, which is next year, an inter-agency document about scenarios and top questions. Recommends going through a process of integration of S2A plan and fire was noted in uplands and thoughts of going beyond reactionary. Maybe Jason and others would be willing to help.

xvii. John the process at which this was reviewed, 4 people from TSAC who hadn't contributed projects in convo with agencies, just providing science context. Conversely to that, 18 (1-pagers) that were produced and we couldn't evaluate them in an hour and a half. A lot of feedback wasn't given because a lot of evaluation wasn't done. Establish what we are asking people to propose, proposals all over the map, etc. People SHOULD get response. Start

off with a more honed criteria so that scientists know what they are writing for and what is the review process. Doing it more ahead of time and being more deliberative is all I am proposing to do.

- xviii. We can do better refining questions and there can be better iterations. Talked over the last few years about advisory over implementation function.
- xix. Pat thinks that this is a good convo and the process could be improved. This idea of more regular engagement with agencies potentially through either S2A plan. In some sense we might be over complicating that. Carve out time to discuss what are the needs. Come up with a regular type of engagement, set aside time for that would be valuable. Most people aren't focused on forests and uplands and we need to make time for that and bring people with that area of expertise and intentionally bring them in.
- xx. Bob, Alison, and Co-chairs working on a form that can house all agency questions, welcome comment where people can log on and enter info.
- xxi. Dan thought that given the chaotic time, the process was "quite good" for one developed on the fly. Project review process with agencies and council was productive and would be great to revisit. This is what we should do collectively in a couple different realms. More regular engagement and putting aside the amount of time needed would be incredibly useful.
- xxii. Had a conference that had agencies and non-profits attend under the Tahoe Science Consortium. Trying to engage in meetings but difficult to get people to attend over and over again. Maybe a one-day meeting? Fall of 2022? But Sudeep does not want to organize it/.
- xxiii. Adrian maybe a symposium or workshop, maybe breakout sessions, may support this integrated science to action effort that we are doing.
- xxiv. Ramon: perhaps an agency led workshop with council participation?
- xxv. Pat says there was a time when there was funding... no collective. Think we might be entering a period when we can push forward in a rapid way and the idea that we have a lot of questions because we haven't been investing in research in the basin in a cohesive manner and we have climate change that is affecting everything and putting the pressure to answer questions we are already behind in answering. It might not be whittling down to high priority questions, but a backlog of understanding whereas we have typically been ahead. Need science input to augment management questions, to figure out what management investments would be more worthwhile.
- xxvi. Fire is showing us we clearly cannot live in the vacuum of the basin. Integration of Science to Action, we should pick this conversation back up and do some near-term planning around topics that are relevant into the future.

5. Pending projects (Sudeep, Ramon)

a. Clarity Data Synthesis and Analysis Phase 3

- i. In lake data as well as watershed models and the interpretation of seasonal

clarity data, led by Alan Heyvaert. Will develop a series of workshops, general idea is that this info is compiled together, the council will interpret the data and share the summary through a series of workshops. Everyone has the opportunity going into spring to get informed of what the conditions are and specific data questions have opportunities to be addressed. Working through the process to get data for all years, as it is now it's a calendar water year cycle.

- ii. In this year in particular, there will be questions about the impacts of the fire and it will manifest at the start of this WY. This required detailed analyses that don't become available immediate after sampling with exception to the Secchi clarity. Fine particle contributions, phytoplankton, etc. take months and won't be available immediately. Knowing that we are going to need this data by late March we will have to advance that by a month, would've liked to finish by early May but by late May is still advanced by a month. Lot of questions surrounded by the smoke and it's important because these are questions managers are going to have. The whole premise of this project is to set up a conversation between scientists and agencies, will be even better this year. We have been running at a deficit, we are getting to a point where we can do these more efficiently in the future.
- iii. It would be helpful to work through the data sets that are slowing the process down. Attention wanes very quickly and the faster you have data the quicker you can capitalize on that. The clarity press release next year, people will be concerned about something else.
- iv. Some questions are more trackable to immediate data collection and some things inherently take more time.
- v. Also important to recognize with a catastrophic event the temporal and spatial response with precip, accumulation, and run off. We will continue to see effects from this fire next WY. Just because there isn't smoke doesn't mean there still won't be impacts.

b. Integrated Science to Action Plan

c. Urban Load Assessment

- i. Much of the data hasn't been collected in some time. What can we say about this program and successes of removing loads from the lake.
- ii. Getting pen to paper and getting a work order in place with the TMDL people. There has been good discussion and get some ideas down. Bob happy to work with Ramon to get something drafted.
- iii. John says this is an example where it is likely that the people doing the work is not part of TSAC. This potentially goes past the expertise of TSAC, might be looking for a broader scope of people.
- iv. Agreed might be more appropriate as an RFP.
- v. Thought the council was moving more away from developing work orders and more towards RFPs. But yes, the upland work will be more of an RFP.

Reaching out within Council institutions is first.

- vi. Jason would be willing to assist, some iterations on the questions would be helpful.

d. Lake Tahoe Nearshore

- i. ...
- ii. Maybe this and fire could be one of the first topics to having this conversation and move with the S2A folks.
- iii. Warming up to the idea of focused workshops, here's where we are and here's where we are going.

6. Programmatic efforts (Sudeep, Ramon)

a. Rapid response permitting/approval

- i. Conversation with Dan about what is needed for permitting for science studies
- ii. Darcie Collins: Kim Caringer and I are working on a greater Tahoe Cutting the Green Tape effort (through TIE and California Landscape Stewardship Network)... perhaps we can streamline this effort and do the two together
- iii. Bob will help facilitate a meeting of the group.
- iv. Jason: Kim Caringer and I are working on a greater Tahoe Cutting the Green Tape effort (through TIE and California Landscape Stewardship Network)... perhaps we can streamline this effort and do the two together

b. Data coordination and management

- i. On the UC Davis repository for season clarity, but new data being created and evaluated and where that data resides. Coordination of the database either in singular database.
- ii. Like to get agency involvement and science people responsible for the data to create a framework to make this data available to anyone.

c. Sustainable recreation RFQ

- i. One of the priorities for TRPA and couple projects underway. There will be science needs and distribute to this groups a RFQ to see if there are people in your institutions for the correct expertise. Social management issues background. Bob will distribute and do a request for qualification.
- ii. Draft should be out to the Council by the end of the week (ACTION)

d. Council consultation

- i. ...
- ii. Hear from Council members if we want to move forward on this, topics and workload is variable, is this something we want to pursue.

- iii. It's part of our mandate frankly. It's a few hours and you can participate if you want and it's valuable.
- iv. Adrian echoes what John says and we have a peer review committee and different kinds of reviews. A process that differentiates between a formal review and what is a formal review. How do we fund the people with the appropriate expertise. Revise the review document as a way of addressing this. If we have RFPs how does this fit in our review process?
- v. Steve: I agree --in particular I think it helping with crafting the RFPs will do a service to the researcher community when they are crafting their proposals.
- vi. RFPs are very scalable and can be issues on a case by case basis. We can also decide if we have the capacity to address and whether we can just provide some feedback.
- vii. The types of questions that can be brought to the Council, thoughts about nearshore algal monitoring, deferring those changes one year. Is that a good idea or not. Quick consultation with Steve and John, matter of hours, yes it seems reasonable. Encourage other agencies to take advantage of these questions and reach out to Bob for additional input from scientists who can organize a discussion with Council members.
- viii. Pat: I think consultation is a valuable function for the council to support.. I think we need address the perception or reality of what expertise the council has "in house" vs what areas of expertise we need to go outside the council to obtain.. some parity of the process would be important.. for any of these functions..
- e. California Biodiversity Assessment will be held off until next meeting. (ACTION)
- f. If Council members have topics for next meeting, please reach out to Bob (ACTION)

7. Caldor Fire – Burned Area Emergency Response (Emma Williams)

- a. Forest Botanist just started in August, lead resource for Caldor Fire, avoid affects and repair damage being done. Being completed today. Burned area response and coordinator. Currently working on supporting the implementation phase.
- b. Baer assessments and treatments presentation
- c. Did the BAER report recommend maintenance of e.g. road and trail stabilization work?
 - i. The hard work of partners like TAMBA were a big part of reopening trails
 - ii. This will factor in the effectiveness monitoring to see if any stabilization treatments are needed. At this point it is preliminary.
- d. Assess the effectiveness of stabilization efforts
 - i. Monitoring to drive or hike on trails, look for areas failing, culverts failing, losing tread, change in channels upslope of rads, changes in flow patterns, concentration of flows on the surface.

- e. Doing tune-up in response to the sediment moving following the last storm?
Adaptive management strategy.
 - i. Apache is a great example, visited Iroquois circle, areas with lots of depositions, a lot of the landforms are build at the base of an alluvial fan.
 - ii. Went out with geologists and BAER scientists and looking for unnatural responses, looking for an even flow of distribution across the surface. Seeing a lot of braiding of drainage at the base of the hill at some times moving towards home. Looking for things on forest that could contribute to that area. Not a lot of tolls to mitigate sedimentation, recommend coordinating with National Weather Service and educate about risks to flooding in the area. Have had the initial conversations about risks and treatments but don't have a direction yet. Bob to follow with Emma offline.
- f. Any plans for long-term Caldor fire monitoring? Is it something the Council can engage in?
 - i. Initial steps of developing a post-fire Caldor Restoration Plan, looking at hazards and restoration projects. Going to go through an environmental assessment plan and will be a year and half before implementation. Through scoping process, if this is the right forum for initial proposals and input from the Council.
- g. Hill slope real development or sedimentation or erosional features areas that may not have failed due to last storm, but are still in the early stage of failure.
 - i. Not being conducted within the Baer assessment.
 - ii. Only one year to implement treatment before we handover to natural recovery.
 - iii. That type of monitoring of new channel development and new sources of sedimentations seems very valuable.
- h. Getting together an early process, work done to understand fire in the system. Getting ready for future scenarios being reactive to implications. Having scenarios so we can help the BAER team, and then say were we right in our investments. We should pick up some old reports and fund through SNPLMA.
- i. How can we use this to test hydrologic...
- j. Are there any data available from what the BAER team collected, measurements we can build upon as far as monitoring, soil hydrophobicity measurements, etc.
 - i. Primary is the forest reflective mapping
 - ii. Looking at vegetation consumption, burn severity
 - iii. Water repellency, super rapid assessment. Not super detailed measurements but we do have a layer of points of what those different point and measurements that were there that we can absolutely share. We dug down in Chiquarry, even with snowstorms still seeing dry soils at depth.

- iv. We have spatial layers, ravages of burn severity, these are things we can share.
- v. This highlights what was done and what wasn't done. What efforts are being taken to control sedimentation and post-fire monitoring. It would be helpful to continue to engage with this group for longer-term monitoring that isn't on the BAER team's radar.
- vi. Information coming from both ends to help fill in the picture of what is going on. Presented some of the assumptions about why hill-slope treatments weren't proposed based on the potential the sediment capture of meadows and wetlands and beaver dams. Those were all things we were thinking would reduce the risk to water quality, but didn't do the monitoring to test those assumptions. Those are still outstanding questions, were we right? Do we need to build more sediment capture for the future? How do we build resilience towards the next fire?
- vii. Seems like a lot of opportunity for follow-up (emma.williams@usda.gov), we have a habit of going straight to water, but there are a lot of things in the upland that we should be looking into. What are the priorities is a conversation we have a lot with the Council.
- viii. Are our traditional post-fire recovery approaches still valid? Less than 10,000 acre footprint in the basin.
- ix. ...