

Meeting Agenda
Tahoe Science Advisory Council

Thursday July 19, 2018
10:00 AM – 2:00 PM

Tahoe Center for Environmental Sciences, first floor Rm 119
291 Country Club Drive, Incline Village, NV 89451

Participants: Sudeep Chandra (UNR), Scott Tyler (UNR), Alan Heyvaert (DRI), Adam Watts (DRI), Geoff Schladow (UCD), Steve Sadro (UCD), Max Moritz (UCB), Pat Manley (PSW), Joshua Wilson (PSW), Ramon Naranjo (USGS), Ed Parvin (USGS), Todd Ferrara (CNRA), Zach Hymanson (CNRA), Jennifer Carr (NDEP), Alison Toy (UCD), Jason Kuchnicki (NDEP), Patrick Wright (CTC), Dan Segan (TRPA), Bob Larson (Lahontan Waterboard)

Meeting Summary:

A. Special review of 2017 Lake Tahoe clarity results: (pages 2- 8)

- Lake Tahoe's annual average clarity was anomalously low in 2017. A memo was sent from CA Natural Resources Agency Secretary and NV Director of Natural Resources and Conservation to the Council requesting a special review of the 2017 Lake Tahoe clarity results. This memo also included a request to respond to 10 specific questions. A subcommittee of the Council was assembled to prepare a response to the questions. The subcommittee also reviewed a white paper prepared by UCD representatives that analyzed 2017 Tahoe basin environmental and water quality data. Draft responses to the ten questions and the white paper were discussed with the full Council

B. Council Operations (pages 8 – 12):

- TRPA staff is continuing to work with PSW and UCSB staff to establish new contracts to support work on Council efforts.
- No one offered to step in as a new Council co-chair. Geoff and Alan have both agreed to serve another year, given this outcome. They asked that their term run August to August to be more in sync with the annual Executive Committee meeting.
- Agency representatives and members of the public may have an interest in making presentation to the Council, presumably to obtain Council feedback. The co-chairs discussed the 'rules of engagement' with Council members to ensure these interactions are positive for all parties.
- A draft work plan was distributed to all Council members in advance of the meeting. Council members spent time discussing the work plan, and provide comments.

C. Preparing for Executive Committee Meeting (pages 12 - 15):

- Council members reviewed the draft agenda for the August Ex. Comm. Meeting, and meeting details were discussed. The meeting will focus on three items: a) 2017 Lake clarity results, and answers to the 10 questions, b) an update on the TRPA Threshold update initiative, and c) review and approval of the Council's work plan.

D. Substantive Projects (pages 15 – 20):

- Project leads provided updates for each of the Council's seven substantive projects. Projects are: 1) Peer Review Committee (lead: Scott); 2) criteria for evaluation of

redundant threshold standards (lead: Ramon); 3) data specifications for use in adaptive management (lead: Alan); 4) Decision support framework for the UTR (lead: Geoff); 5) technical evaluation of SEZ standards (lead: Steve); 6) examination of ecological impacts from sustainable recreation (lead: Zach); 7) technical evaluation of VMT standard (lead: Eric). More details for each project can be found beginning on page 15.

E. Council member updates on relevant science topics (pages 20 - 21):

- Geoff mentioned that annual State of the Lake report is available and briefings will occur in July and August.
- Patrick Wright asked about the theme for the upcoming Tahoe summit, and the science focus for that meeting. No one had any specific information. Few details have been communicated from Senator Heller's office, which is organizing the event.

Meeting Notes:

1. Welcome, agenda review, introductions (Alan)

The agenda was reviewed with all meeting participants. No changes were made to the agenda.

2. Special review of 2017 Lake Tahoe clarity results (Geoff)

- a. Lake Tahoe's annual average clarity was anomalously low in 2017. A memo was sent from CA Natural Resources Agency Secretary and NV Director of Natural Resources and Conservation to the Council requesting a special review of the 2017 Lake Tahoe clarity results. This memo also included a request to respond to 10 specific questions. A subcommittee of the Council was assembled to prepare a response to the questions. The subcommittee also reviewed a white paper prepared by UCD representatives that analyzed 2017 Tahoe basin environmental and water quality data.
- b. Going in chronological order (Geoff) average 25 values, time weighted secchi reading. When results are different people want to know why. USGS produces data that assists. Results were surprisingly poor. What led to that, record drought no washing materials year after year therefore accumulated, drought broke and we had the largest winter on record. Met with Bob Larson and Jason Kuchnicki and there was concern in the room, how federal officials would accept this news. Led to idea of white paper, look at the details. At that stage with more data along with Shohei Watanabe, created a draft "press release", which was then rewritten as this "white paper" as we understand it. Not just Geoff's opinions, was sent out to Alan Heyvaert, Sudeep Chandra, John Melack, and Mike Dettinger. Making sure we had some California, Nevada, and Federal review. During this process we received this letter that requests the answer to 10 questions. This is where we are now. White paper has been refined further. We have draft answers. Finalize those 10 answers with TSAC members.

- c. Alan says the object is to canvas a broader audience. If there is anything you want to comment on the white paper too. Do not get too technical with these 10 questions,
- d. Geoff wants Todd's opinion about the level of technicality and detail, what is your boss expecting?
- e. Todd thinks whatever is substantive. Ideally the responses that you provide should be highly readable to people outside of the science community. Researchers can master as well. Described a lot of the questions answered in the white paper to begin with... what should the state agencies be asking?
- f. Geoff says difficult questions to answer, some correct questions were there, answer to dialogue will come down to money. Maybe this should be monitored rather than this? What should we doing to plan for situations like these in the future. These ten questions should get us to the next step.
- g. 6 pages currently maybe we can narrow down to 3 pages. Todd thinks this is on target. Is excited that is being described as a conversation started to facilitate and prep for future questions.
- h. This needs to be a quick discussion, with changes in state government coming up. Geoff
- i. Todd says we want to tee up for the next team coming in. Don't look at this as an ending but the next opportunity.
- j. Alan as well as input from TSAC members we also want input from Todd and Jennifer if we are on target as the general character of our responses. Really want to finish this up by the end of July, it's supposed to go out a week before the executive committee meeting August 6th. Please review ten questions and white paper and add comments and suggestions.
- k. Comments now or via email?
- l. Final version by the end of the month says Alan reviewed on August 6th presentation to executive committee by Alan and Geoff and then entertain questions. Provide an outline about what is needed to address questions sufficiently. Probably the best question and opportunity as scientist as going forward we are prepared to address question like this in the basin especially clarity related. Please add to that. In a general outline sense. Anticipate this being done by Sept-Oct in that range. Once we have our plan outlined along with the white paper, that will go to external peer review committee that Scott is in charge of.
- m. Jennifer from a Nevada state perspective, the historical clarity record is amazing and easy to understand. Brad is interested about the information we need to

know if the lake is healthy. Is clarity the best measurement? What do we really need to know beyond clarity about the ecosystem?

- n. Alan says if we are thinking about the overall health of the lake. Not cost-prohibitive, bigger package to get together.
- o. Weaves into thresholds and other things we are already focused on. He wants a broader messaging (Jen)
- p. Comprehensive perspective of the Tahoe Basin, ultimately we should be going there, but not currently enough time (Alan)
- q. Geoff that is where that conversation starter is going. LTRA state's contribution towards that goal. This is a small crisis that prompted the discussion,
- r. Jennifer says she's not sure how this letter will be used in the future. Management guidance usage. Reads well, balance, and don't be afraid to be too technical. Finding that fine line between technical content but not going too high level. Todd agrees and says that makes sense.
- s. Geoff requests administrative eyes look this document over. If we use a phrase that hits a red button with certain agencies. Todd agrees to do that.
- t. Alan says we still have half an hour. If you have anything to lead off with. Kick start discussion.
- u. Adam comments: Draft responses – clarity, it might be nice early on to explain that clarity is of great interest to the public and legislature, but it is a convenient used, conveyed expression of need to examine other ecological functions. White paper: follow-up by sending to Geoff and others if interested. Generally, prior to peer review 1) editing for grammatical errors and flow, 2) pervasive appeal to mechanisms affecting clarity that are attributable to drought, but no data presented to underlie those supposition, so strongly encourage adding that. 3rd page, 1st key record drought commenced 2012, seems to be implication that this may have caused lack of clarity, lack of sediment transfer, implies chlorophyll is to blame, it's discussed but not clearly enough. 2013 and 2014 should have been improved. Page 5 and 6, chlorophyll measurements, 2016-17 how sensitive clarity measurements are to chlorophyll. Chlorophyll jumps a lot, what there analyses done? Seems like a reasonable explanation for clarity loss. Page 7 those data seem to predict the proposes mechanism, clarity did not increase during the drought, urge an additional exploration of mechanism. Under concluding point on page 10, clarity data for the first 10 months, returning back toward normal trend. Those findings are not presented but should be.
- v. Alan has gotten quite a few comments on the white paper. Thick skinned Geoff, feel free to be open. Develop and refine mechanic models relationships between factors and clarity response. Making these comments are great, this can be used

about plans for going forward, but not all comments will be incorporated for this version of the white paper.

- w. Geoff, one challenge was how far to dig. Explain 2017 but not explain 2014-2016, it's a pretty slippery slope. Plan to read Adam's comments and there are things that should be added. Chlorophyll is hinted at, but perhaps a little further discussion is in order.
- x. Scott says there are a few things about extreme, clarify that in simple words. What does extreme mean? Be clear. Think about that. Saw that in a few places, define what it means. Scott will make edits
- y. Pat climate a contributing factor, other parts are included with this concept of climate change. Does changing climate include the extreme events or are we parsing in this? What factors are you considering aspects of climate change?
- z. Ed says temperature is mentioned several times. In the 10 questions, temperature could be addressed a little more as it's addressed several times in the white paper, include a greater discussion.
- aa. Geoff follows up, these docs are still in draft form. The idea would be to refer back to figure whatever in the white paper, so as not to repeat everything in the white paper.
- bb. Jen for what we may want to convey in the future, investigating the tie between clarity and temperature readings at depth. How are those connected? Don't know if everyone understands the lake turnover, when does it and why? Understanding about lake dynamics might be helpful. Surface layer was warm during the drought and seeing the same effect in 2017 or is it different in terms of temp and stratification.
- cc. Geoff says what was most unique about 2017, got worse in summer, but it should've gotten better in fall and winter, but the low summer levels was what it was. To what extent was lake stratification and contributing factor. USGS work nationally reporting by the water year. One of the key events was a late storm in November that input a lot of sediment. Temp gauge was washed out, was it trapped at the surface, we don't know how much sediment was being flushed in.
- dd. Alan thinks we should really highlight that and that the data is still not available, won't be available after the current water year ends. When's the release?
- ee. Geoff thinks preliminary data should be available. But whether it's possible to get raw data.
- ff. Ramon unfamiliar with lab turnaround. Infer mixing effect from inflows from stream flows.

- gg. Geoff says we need to know temperature of the stream flows. Flows and suspended sediment concentration to the end of 2017
- hh. Jennifer says that's an important thing to point out, if there's a cross agency barrier that we need to break. When is there preliminary data that can be released? When can we get that information in order to answer questions.
- ii. Ed says as soon as the probe gets ripped out you can download data. One year working data at least 1-2 times a year. In the future, data will be published 2-3 times a year, but not sure when that will happen. Sediment data from Scott Hackley is reported quarterly, and then they are taken to Santa Cruz. We need to figure out way to improve timing.
- jj. Alan go to exec. meeting wants to say when the data is available or when we can start doing assessment. Don't have to have assessment done, but when could assessment begin.
- kk. Ed took a load down in spring, Dean Smith is the person to contact. Sediment samples three degrees of, Scott collects, Nancy processes, and Ed delivers.
- ll. Maybe there are better ways to accomplish this.
- mm. Dan says there has been in GS discussions money to provide real time sediment loads, phosphorus, and nitrogen. Access to hopefully real-time data that you would have at the end of the year.
- nn. Alan says we discuss this in the 10 questions. Definitely useful as an agency and science tool. But might be confounding to the public. Wants to get into the monitoring a little bit. For the last question about recommendation for future needs and actions. Important for Brad and John Laird. Can we discuss?
- oo. Max general comments, clarity being a great index, but highlight other ecological things. Fire is not discussed, aside from lake clarity, fire is a great concern. Refer to 2007 angora fire. This might be an open research question, do we know enough about atmospheric deposition, black carbon deposition on snow and how it changes albedo. Do we know anything about atmospheric deposition or smoke effects on lake clarity?
- pp. Geoff thinks this is a great set of questions, basin is smoky because of Yosemite fires. Cutback on atmospheric deposition monitoring. Resources are going unused. Alert stations. Take a full suite of measurements two of them, long term records of fire. We could learn a lot from that, but due to lack of funding no one is looking at it. This could lead to future monitoring opportunities.
- qq. Alan says when you do your review important to discuss important factors to monitor for health of the Tahoe basin. Don't worry about structure just get your important points in about what we are missing for understandability.

- rr. Geoff asks Lake Tahoe West this landscape scale a planning exercise for looking at changing nature of forests. Are your groups looking at effects of fires, controlled burns, smoke? Is there something we can use from your deliberation?
- ss. Pat says, modeling effect fire under various management styles. Use these management approaches that are being considered are likely around the lake depending how well they perform on the west shore. That would include quite a bit more fire and potentially more restoration activity.
- tt. Modeling is helpful for planning monitoring says Geoff.
- uu. Adam feels like an important point to try and include. Aware of only a few people modeling and monitoring on fire and smoke deposition. We are hoping to conduct US Soundings across Tahoe to measure smoke.
- vv. Patrick says maybe if this, we would like water quality agencies to be more involved. Lake Tahoe West, how can we manage forest to improve water quality, most of modeling impacts of treatments on water bodies. Rather than what we can do towards restoring ward, blackwood, to improve clarity consistent not a huge source on land. Trying to bring together agencies, emphasize importance
- ww. Geoff and Alan submitted for 2nd round SNPLMA funds to cover precisely that area. Scope hasn't been worked out or the players. But we have this confluence of activities and ability to provide first suite of answers.
- xx. Dan thinks a bit more discussion about delivery of sediment to the lake, heat driven drought, wasn't low of rain flow, what is an average year, as a 4-year block. Drought we are talking about heat stress on plants, important as we talk about sediment build up. Different relationship, not incredibly dry period, aggregation of temperature, etc.
- yy. Geoff says great premise evaporative drought, etc, good NSF grant, as much. Don't have the data to speak authoritatively about this point. Why we
- zz. Dan role of climate change, that kind of drought is more common. We are expecting more temperatures.
- aaa. 2017 is more to be expected says Ramon
- bbb. Increased frequency Alan
- ccc. Bob Larson asked if we can send out the white paper and 10 questions, they would like a preview to identify any red flags.
- ddd. Ramon says seeing road flushed out. The focus on the in-channel source of nutrients. Huge snow pack that may have eroded sediments out of
- eee. Alan says we want to get this out on the 31st to executive meeting. Zach says the 30th. A week ahead of time. That gives us tomorrow and next week to

finalize this and send out Monday the following week. We need everyone's comments by the end of the day 25th! Is that ok? (ACTION) After this is sent out to the executive committee, should it be posted on the website?

fff. Geoff would be more comfortable getting comments and submitting draft form. Things may come out of exec meeting that might be added. If you have comments but can't, let us know. Wants everything posted on the website on the day of committee executive meeting (ACTION)

ggg. Dan asks to recirculate to everyone.

hhh. Jennifer, whatever you have by noon on the 27th for review.

iii. Zach asked for document by the end of the day on the 29th so that he can send them out to the Executive Committee by August 1st. Work plan, agenda, draft answers to 10 questions, and Council work plan (discussed below). The aim is to send out one package at one time to all executive committee members. (ACTION).

3. Council operations: a) New contracts b) Filling co-chair vacancy c) Council work-plan, d) Presentations to the Council (Zach/Alan)

a. Draft work plan Zach: new contracts, new agreement, finalized and transmitted between resource agencies and TRPA. 150K used to implement things that the council wants to do. Went into effect in the middle of June and will end June 2020. Acknowledges appropriation received last fiscal year and pulls out expectation this 150K per year will become available once the budget has been approved. Contract as a basis to drive other contracting work. Pursuing independent agreements with PSW and UCSB

b. Dan says still in process PSW still working on it. Lawyers met between UCSB and TRPA, using UCD contract already in place, moves forward in short order. Does it affect only John Melack?

c. Pat says that there is no staffing at PSW, grants and agreements staff is just one person who is in communication with TRPA. Exchanging documents but just really backed up. Shared old agreement. Much easier if there is a tangible project to initiate agreement. Combo of factors.

d. Problematic to take over a year to get a simple contract in place. It's outside of our control, please make sure they are aware of the importance before exec. Meeting.

e. All other contracts in place, but still difficult getting Ed on USGS member, too busy, but looking for a replacement. Next agreement will go through when the next USGS person steps up. California severely understaffed. Ed will continue to report all council activities, Anka trying to distribute projects to appropriate

people. Ed to be the main contact, transition may occur in October. Potentially a name in August.

- f. Zach wonders any other entities thinking council changes from representatives.
- g. Alan points out great attendance this meeting. Looking for people to attend meetings. Only have 6 meetings, if you miss 2, you miss what's happening. Please let us know if this just isn't working.
- h. Zach is in last year as program officer. Will have a replacement for Zach at the end of the year.
- i. Work plan includes topic of developing integrated monitoring plan Alan.
- j. Co-chair vacancy. No nominations received. Something to bring up to Exec. Members to council, not properly compensated for the amount of work required. Petition executive council to recognize the amount of work. Wait until after August meeting with executives.
- k. Alan says he and Geoff will continue to co-chair until after the Ex. Comm. meeting. Prefer that term runs from August to August, determine and that way the retiring, continuing, and new all over lap during the exec. Meeting.
- l. Zach says there is an individual (Russ Wigart) who wants to make a presentation to the Council. Generally, it would seem that anyone with a technical issue could make a request to discuss with the council. What is the best way to approach? Anyone who wants an audience with the council can? Are there guidelines? Kinds of feedback they would like from the council?
- m. Alan talked to Russ earlier this week and he, understands the council is operating under the mandate of the state. Someone wants to talk to us, he will write 1-2 pages about the particulars and can present to council, will send out to council, and we can decide if this is relevant to council business and potentially carve out time to address. Encouraged to work with working groups to identify main needs. Working groups come to our forum. Opportunity to raise their main science questions. Actually identifying science questions. Work with to address and identify funding resources to implement program. November maybe.
- n. Geoff says that with working group meetings. Start talking about the science they think they need, what we think they need and start moving forward on a more constructive basis.
- o. Alan says the other idea is to encourage with public or agencies to interact with working groups if they have specific questions or thoughts. Then working groups can work with council. Or work with council by sending out a brief topics discussion to determine relevancy. We don't want to get pulled off in other directions, focus on what TSAC needs to do.

- p. Zach says all members should have received work plan. 2-year work plan starting in July but approved in August. Spending 3 years of state allocated funds over a 2-year period. Overall 75% budget goes to technical and projects, 25% goes to operative and administrative. Broke down priority areas, year one has more specificity than year 2. Some of these projects are better identified than others. Anything to add? Plan is to get this finalized thru the council, proposed work plan that we can bring to exec. Meeting. Decisional reason for the meeting
- q. Alan says we will also be planning develop outline and discuss 10 questions and white paper in great detail as well.
- r. Pat is this an opportunity to expand beyond the immediate. Establish that this is important because of discussion in lake Tahoe West. Broaden this out so that we can see what TSAC contribute to this basin-wide monitoring need.
- s. Patrick Wright describes the uproar of nearshore project, if we pour all this money into near shore then money isn't going into things like deep water etc. Yes we need a comprehensive monitoring plan, but immediate before the threshold plan is backwards. Maybe there's an opportunity to do a blend, to tell agency what's needed for this issue, highlight need for a larger monitoring program once the thresholds are in place. All this focus now, but if there's a mega fire or whatever, but there are tough questions being asked. Not try to take on the entire basin.
- t. Alan was thinking along these lines, expand upon year 2, take that and change that into something about what Patrick is talking about.
- u. Bob is saying from water board perspective is that investments have been made for everything that has been done the same way, same approach and same protocols. Asked UCD provide scope of monitoring work, what are we doing and how should we adjust in our other existing resources? Our concern is that our money being spent on monitoring not useful or not telling us the right things. From a resource management perspective, what do we care about and what do we need to do to monitor? Nice starting point would be what and how we are monitoring and how can we shift these resources into what we really care about?
- v. Alan says that it's something we want to accomplish before executive committee meeting. Share with agency partners make sure we aren't missing something. Say something about how we would move forward.
- w. Pat says the role of the council. Setting the stage for helping agencies make process on their own or in collaboration. Potentially complex, often times, chicken egg situation, investigating can id effective indicators. Rather than trying to build something from every piece
- x. Alan says pat's point is well taken, think what we are doing in terms of clarity gives us a chance to step into the position without going too deep. WE can go there and then expand to a more holistic approach from a science standpoint.

Asks Geoff for confirmation for changes. Take item #2 under year 1 address lake clarity trends add something about ecosystem approach towards lake health. Year 2 under targeted research, how we are expanding on the initial effort to look at the landscape and airshed as a whole.

- y. Geoff doesn't know if he fully understands. Not as difficult as we are thinking about. Never going to be perfect. Previously there was this notion that we had to show status and trends. Now at the TIES steering committee meeting, they want indicators, environmental health and well-being, intention is the same, why is it going down? Thinks we can find a balance of indicating, some that may end up being TRPA thresholds, and maybe it's a basis for predictive modeling. We want to know that the next billion dollars will predict this with this level of uncertainty.
- z. Alan say we need to demonstrate in terms of conceptual framework under which it is justified.
- aa. Case is being made for us. Geoff says
- bb. Scott says we have been given the opportunity, tell them the monitoring that is needed.
- cc. Alan says get those thoughts needed on those 10 questions.
- dd. Geoff what are the monitoring priorities, technology that could be used?
- ee. Alan wants initial response in the response to the 10 questions end of the day on the 25th.
- ff. Zach, changes in work plan? Change one item in year one and year 2, need something from Geoff and Alan, to run by Pat's idea. Get to Zach in the next few days. It's just rewording.
- gg. Patrick says there needs to be a broader effort, what can you do in the short term, surely linked.
- hh. Dan says we have numerous monitoring plans that have never been implemented not in the budget. Cost constraints. Part of this monitoring conversation to include council support as we update thresholds where is the monitoring chain and frequency and part of that implementation.
- ii. TIE steering committee, Jason asks if LTRA funding can be used? No allocation for science like previous LTRA. Is there a possibility of using that funding, it could greatly effect monitoring?
- jj. Wright says pleasantly surprised among TIE steering to implement. Every project funded thru this act shall set aside appropriate funds for monitoring effectiveness and the programmatic level. But it is a challenge how to do that. One approach could be million dollars for AIS, take 10% toward programmatic AIS monitoring

over time, it's not perfect, but that's the reality, a congressional set aside for monitoring isn't going to happen. So you need to attach it to programs that are funded. Figure out how to do this. TSAC is a group, Lahontan is a group, CTC, working together to develop a plan. Leaving this to the local groups to develop a strategy. Assessing progress and understanding how system functions, what's happening if things are working the way it functions. This is what we are doing the next couple of year. Starting with the ideas you put in for research question and requests for monitoring. That will be the basis for which we start.

4. Preparing for 2018 Exec. Comm. Meeting

(Alan/Zach)

- a. Attending for sure will be Geoff, Zach, and Alan. Update about what we have been doing, substantive projects, and work plan.
- b. Zach reviews agenda, following same process as the past with a couple exceptions. Report back on 10 questions, update on TRPA threshold projects in relation to council work, time for council to discuss work plan. Public comment periods, one at the beginning and end. Expect this meeting to have better public attendance with lake clarity issue it will generate more interest. Notice sent out to key public members and stakeholder groups.
- c. Alan asks if Geoff is expected to make a presentation on lake clarity or are we focusing on the 10 questions and white paper?
- d. Crowell and Brad just requested discussion of 10 questions and white paper. But Zach says it might be difficult with the executive members that don't know as much about Tahoe.
- e. Alan says a short presentation that discusses history briefly to do this. 15-20 minute presentation. We must assume that they have read the papers.
- f. Zach expects the main discussion is where to next.
- g. Jennifer agrees and as far as other people coming Jack Landy is bringing director of water division of region 9. Who knows who else.
- h. Zach says expectation in changes in administration. Laird's last meeting and not sure about Crowell. Might have some other guests. Suggests Alan and Geoff can embellish after work plan discussion which is saved for the end. Where the council wants to go in the next two years based on the information that was presented about lake clarity, based on the info about the TRPA threshold update. Danger in that not all questions may not get answers in the detailed required which may be frustrating. This made the most sense.
- i. Jennifer says hopefully we will have Laird making sure we stay on time. It is not something in our control.

- j. Both indicated that they both appreciate the discussion. That's where it's more interesting and most informative. Open to audience member participation. All out of our control.
- k. Alan says it's up to them where they want to focus. Some work going on to secure funding for work that needs to be done. We need to be able to effectively answer these questions and the work plan is designed to do that.
- l. Jen says that Brad is interested in the threshold update.
- m. TRPA to speak largely to the utility of what we are doing, indicate about what their needs have been.
- n. Zach wants a nod from council members that this is looking good. If people have concerns or ideas, it would be helpful to get them out now. How much more attention is needed?
- o. Pat has question about institutional support for co-chairs. Part is funding and part is institutional support and commitment to allow for the position to rotate and allow for the work to happen. Should be discussed.
- p. Zach says will mention in update for council operations and to be embellished by Geoff and Alan. The other point in terms of work plan, under technical workshop, ability fund workshops, another second meeting with EIP working groups.
- q. Not specified in work plan but we do want to mention that. Integrating in Tahoe Basin, we need to be working broadly with our agencies says Alan. Lots of #6 for work plan.
- r. Is this new? Geoff asks, what are we asking them to do?
- s. Zach says this is important because members of the council do not have time.
- t. Alan says we are prohibited from taking support for membership
- u. Jennifer says we have committed My-Linh to TSAC, it's easy for me to pile on more and more work without realizing her time is spoken for with TSAC,
- v. Pat says annual meeting is great opportunity which is here what we are supposed to do and here's how it is working. Seems like the chairs put a lot into it. What are we adjusting to and are the committee members ok with that?
- w. Alan says yes we address this and then leave it up to them and discuss. No debate as to whether or not it should happen.
- x. Is this an informational item? Do they vote on it asks Geoff?

- y. Zach says it is an action item, they haven't had a formal vote. Secretary Laird knows we are trying to achieve a consensus. They do have the opportunity to make changes to it. But ultimately there is a goal of achieving consensus.
- z. Re-affirming staff commitment, how do they said yes? Reminding that they are assigning stuff and Geoff says they are being charged
- aa. Alan wants them to identify and concur that yes the time is represented here and it's appropriate.
- bb. Zach suggests, under 3 when talking about operations, bring up that we are in our 3rd year and it's up and running. It's easy for people to forget the commitment it takes and remind executives, when they are making appointments, they need the institutional support for that. Brings up staffing charges and maybe that's just the reality.
- cc. Alan acknowledges the institution needs to decide how much to support. Might be a need for two new co-chairs. Alan is not supported.
- dd. Zach says we are discussing council participation and then the people who step up as chairs. Chairs and co-chairs can be compensated. We tried to find a direct way to compensate people for participation, only travel and per diem. Some people are fully funded and some people are not. Some of you need summer salaries and some of you do not. There are some things that we can pay for more directly than that other.
- ee. Alan says we discussed earlier about how TSAC members are reluctant to step up because of the time it takes. Want to raise that with the executive committee.
- ff. Zach thinks it's about the institutional discussion. We don't need to be so explicit.
- gg. Alan says so we bring it up and then they discuss?
- hh. Geoff disagrees, they can pay for something
- ii. USGS looking for replacement, we hope they think about the time commitment and maybe thinking about a co-chair. Travel time. Coming to the meeting is a full day commitment.
- jj. Alan the sb360 money is under John Laird, if it's a discussion it is with him. Is this something we raise with him?
- kk. Zach is not sure if the discussion with Laird, funds are way beyond sb360.
- ll. Alan says so we won't discuss funding anyone, but explain the commitment and leave it at that and they can discuss that if they want?

- mm. Zach the thing to think about, if you raise the issue, is there something you specifically want. Want to spend money to fund individuals time that's one thing? It's something to think about it.
- nn. Alan says the point is that right now TSAC members participate, if they have a project they are funded through projects, the issue is prep and meeting time. Whether or not it is worth someone to be a co-chair for the time commitment. We want a functional advisory council and co-chairs should be funded. Institution can support some of their time.
- oo. Zach is confused, every project identifies providing money for co-chairs. Co-chairs have to write work plan, budget, deliverable. It's a project.
- pp. Blanket funding under operations?
- qq. Alan asks if we can tap into the funding if we write up a work plan? Yes
- rr. Zach doesn't think that the funding will entice anyone to step up and be co-chair.
- ss. Pat thinks the Time and money are different issue. Remind appreciate, time people are putting in especially the co-chairs. And then mention that we have rotating needs.
- tt. Alan asks if Zach can introduce that to the executive committee meeting rather than Geoff or Alan pushing for that. Especially given the fact that you're bowing out. I've had a couple years working with the council, express appreciation and give them opportunity to jump on board.
- uu. Co-Chairs going forward, write a contract a work order that assigns a certain amount of time and fund to get that. Alan says not to raise anything with committee as long as things stay proposed in the work plan. If anyone is so inclined, keep that in mind? (ACTION)

5. Substantive project updates¹: Status and next steps (Various)

- a. Alan says thank you to council members for stepping up. If it's done, what came out of it? If it's on going, what are the next steps?
- b. Peer Review: Scott, set-up and prepared to function and awaiting commands.
- c. Alan says the lake clarity research management plan should be coming your way in the next couple of months, Geoff agrees, maybe quicker than that.

¹ Projects are: 1) Peer Review Committee (lead: Scott); 2) criteria for evaluation of redundant threshold standards (lead: Ramon); 3) data specifications for use in adaptive management (lead: Alan); 4) Decision support framework for the UTR (lead: Geoff); 5) technical evaluation of SEZ standards (lead: Steve); 6) examination of ecological impacts from sustainable recreation (lead: Zach); 7) technical evaluation of VMT standard (lead: Eric).

- d. Scott says more than likely we will get external review.
- e. Alan says at the state level there are expectations for that.
- f. Scott says we have Johnny Moore as an external person but asks the council to start thinking about other names.
- g. Alan says if you have names to think of for additional peer reviewers, send them to Scott.
- h. Zach says we need review charge. Looking to perhaps member of the subcommittee to create a draft review charge.
- i. Geoff asks are we reviewing the white paper, the ten questions. Alan thinks the whole packet. Draft to final might be a month, problematic if you're reviewing, careful, not reviewing the questions.
- j. Scott, says the review provides appropriate answers and proper responses to the questions.
- k. Zach, says you need to build into your timeline, time to complete this review and give them time to do this review.
- l. Criteria for redundant threshold standards: Ramon, no update as that was completed.
- m. Dan says TRPA was able eliminate some redundancies so it was helpful. It's good for identifying helpful priorities. Governing board took action in May to reduce 173 to 152. Reorganized water quality chapter, no longer references to external documents, makes it a little clearer.
- n. Bob says it's great for streamlining standards, you can know exactly what standard people are talking about
- o. Alan discusses roles of data and info for management in the thresholds, done in draft form and presented to threshold update initiative presented by Alan and Dan and was well-received. Little complicated and needs to be reorganized. 3 main components to structuring data and info. Largely based on project done earlier, evaluating resource management programs. Part of that identified 4 core principles for resource management program 1) develop focus goals 2) use of conceptual models 3) select goal-related indicators and 4) adaptive management and the 8 programmatic characteristics that we wanted to adopt. We got into that in more details, if you use the core principles and 8 characteristics, what does that look like? Having a conceptual framework to explain how it works, conceptual models how do they function in relation to threshold, and causal results based chains. Making sure they understand what it means when you apply results chains. Look at inputs and outputs.

- p. Decision Support Framework for UTR: Geoff, not much have happened as a result of contracting issues. But it has been fortuitous with the clarity issue, what is the appropriate monitoring, how can we predict, helps make the argument for why upper Truckee is a larger project creating decision support. Upper Truckee has everything and this delay may help crystallize other issues this going forward. Help develop programmatic monitoring. One of the things going forward, at the workshop, talking about adding a more quantitative part and what we thought how everyone seems so overloaded. Makes sense to break things apart, let's get that up and running and if that's successful, we can see how we can get things going. Phase 2 is in our second year work plan.
- q. Zach asks when Geoff anticipates starting this work?
- r. Geoff thinks by mid-September as long as we can get contracts in place. First phase is slated to be complete this time next year.
- s. Patrick says needs to discuss how this aligns with upper Truckee river working group.
- t. Pat says that hopefully the contract will be in place by that.
- u. Zach thinks that UCSB will sign off as the UCD contract as a good model. This is something to consider, is there a plan B if the contracts don't get in place. Maybe UCD takes all the funding and then subcontracts to PSW.
- v. Data specifications, Zach looking for, short paragraph introducing project, work order describes work being done, products are needed. Alan needs to send that to Alison to post. Ramon on your product, can you resend product to Alison. (ACTION)
- w. SEZs standards: Steve – mostly done, Jerry Qualls has done breadth of work with contribution by Ramon, 4 of 5 deliverables are complete, on Steve's calendar to coordinate with Dan and see if that's actually the case. 4-5 page document brief that outlines climate change impacts on SEZs. Largely a review document. By the beginning of August to Dan so it can be completed by the end of August. Send the completed projects to Alison (ACTION) but Steve wants to coordinate with Dan first.
- x. Ramon wants to know does the rest of the council gets to review these 4 of 5 deliverables?
- y. Steve happy to distribute ahead of time. These documents are varying length but some are very long. Conceptual model of SEZs is approximately 20 pages.
- z. Alan says we need a process to lighten the load because that's a lot of work.
- aa. Zach points out that if you give out Scott for peer review there are costs associated with that.

- bb. Steve, says
- cc. Zach says its' the time of the work order prepared it should be incorporated with the timeline and review. Authors will need funding with this.
- dd. Scott thinks that there are two different things being discusses. Is it the Science council review v. peer review? Strength in Council review. Do we vote as a council, yes we approve? This is a way to get people to review.
- ee. Geoff or is it more of a, does anyone have a problem with this?
- ff. Threshold assessments was the first example. Then different resource eval system and got a few responses. Alan's concern is the lack of response from the council, we are very limited. Easy to make this ad hoc. If we are going to promote these as council approved, it might be through the peer review committee.
- gg. Going forward we have to build it in, or a mechanism or expectation to review before being done. Don't worry about it now, but address for future projects. Alan says continue to ad hoc review, very limited, so if we are truly going to make this work, where we think it has the support of the council. Something to think about and develop a process go, going forward.
- hh. Examination of ecological impacts for sustainable recs – Zach: work order written by Devin Middlebrook at TRPA, came up with multi-step work order 1) lit review the types of rec that commonly occur in Tahoe basin 2) evaluate environmental impacts of that rec – completed by Chris Knot 3) Rec Group held off on that discussion for a workshop that was supposed to happen 2 days ago, workshop did not happen, the scientists that were supposed to be involved, were busy with 10 questions, a different approach was going to be more appropriate . Next steps taking a turn of event, another funding source Southern Nevada Public Lands Management Act, at this point, shift funding for this work to SNPLMA project and council work in an advisory and review capacity.
- ii. Alan says we might have a prelim workshop as a technical product of the council. It would be this fall. Let Alan know if you are interested. Reaching out to scientists in the sustainable rec field. David Rolloff at Sac state, expert in rec trails. At UNR, Socioeconomic prof she went to sustainable rec workshop. USGS down in California water resources center, Judy Drexler. Putting together program to address sustainable rec working with TRPA working group, Devin is lead on that. Anyone in organization who is uniquely qualified, send names to Alan. People are identified so off to a good start. Working group excited to bring in socioeconomics. That's why the original work order has shifted.
- jj. Pat suggest on the economic end, Michael Potts, Sam Evans, Tim, 3 folks that work together at UCB working on Lake Tahoe West and Sierra initiative. Nice synergy there, addressing issues related to recreation, already tuned into the basin. PSW, scientist work on ecosystem services as related to recreation, Jose

Sanchez, works in Josh's program. Alan will get contact info from Pat and contact them.

kk. Josh says that he can pull information from Joes who already has contracts with UCD in place to share with council

ll. Zach Paul souvacier, surveys at Tahoe's. Chris (grad student), Elizabeth knows him, social scientist at UNR. Christ is interest in repeating work in Tahoe and he has been in discussion with Elizabeth.

mm. Alan says one of the first thing is get conference in place

nn. Geoff says has grad student from Japan working on sustainable rec. Island that is inundated with people, thinks Lake Tahoe will be an interesting test case.

oo. Patrick says met with Mammoth people, gone thru this with forest service, tying into federal mandates, what's the problem here? Is it transportation? Impacts? Overcrowding? If everyone has it, then it's not a sustainable rec problem, it's people. Zinke hitting on this hard, an effort not just in Tahoe, California recreational access to try to increase low income access to recreation.

pp. Send contact info to Alan.

qq. Ecological work Chris did was well received says Dan. They are taking the process thru visitor use frame work federal level. What they want to focus on next is more on the socio side, visitor experience, how do we measure quality of experience, access, etc? next step of foundation. If this is the visitor experience we are going from, what is the level of impact?

rr. Zach says out of the review, the two forms of recreation in the Tahoe Basin that rose to the top were. Nearshore use (beach or boaters, etc.) and then trail use (hiking, biking, equestrian) working with working group on the science side. Alan and Geoff serve as nearshore experts. Rolloff experts for trail-use. Zach says no they want to get into socio-economic use. Indicators and monitoring strategies and how that info can inform threshold updates.

ss. Technical evaluation of VMT, led by Eric Wilcox at DRI working on 6 topics. 6 topic briefs covering VMT road way condition, VMT affect with road way conditions, roadway conditions and fine sediment, transport of fine particles, nitrogen emission, emissions of automobile past present future, regional nitrogen transport, what drives deposition (wet and dry and total), several labeled as draft, Dan has had a chance to review.

tt. Dan has 2 outstanding briefs that Alan will send to Dan. Topic briefs are done, should we send out to TSAC body? For edits or comments! No rush to do it, but eventually distribute and have it after the summit for review.

uu. Zach asks if they have funding for revisions?

- vv. Alan says they had an extension of funding. Did what Chris did, which was a lot of lit review and summary. 5 of the 6 topic briefs were labeled as draft in anticipation from comments from TSAC and TRPA. If it's just a couple of points here and there they can do it.
 - ww. Zach asks Dan, TRPA contemplating this VMT work would go out for independent peer review?
 - xx. Dan says doesn't think it's necessary for peer review. Use as basin air quality changes that would be peer review worthy. This particular one, no preliminary work.
 - yy. Alan says we will send these out for council members to take a look.
 - zz. Zach says we need to caution that we are already behind and this needs to be completed.
 - aaa. Alan says we have enough between now and the summit.
 - bbb. Zach says question is this something you will be taking to the TRPA governing board. Dan says no, so Zach agrees there is some time to complete this.
 - ccc. Alan says we stepped up and did a lot of work with over and above what was expected. Any other updates on relevant science topics.
6. Council member updates on relevant science topics (Various)
- a. State of the Lake Report, next Thursday night. Geoff says it's happening focus will be clarity a large part. Other exciting science monitoring development, should not be missed.
 - b. Pat no major milestones on the science side. Starting to get results from modeling forest growth, fires, beetles, wildlife, water, for these major scenarios, extreme approaches. Management, no suppression, only mechanical fire, only working. Shaping landscape, those 4 scenarios, getting results, another month or so before we have solid reports. Work in progress for some, progress is being made!
 - c. Patrick Federal summit? Theme? 3 of the 4 senators are confirmed, neither governor confirmed, no speaker confirmed, up in the air. Election year, everyone is busy. It will be pulled together at the last minute. Find it a very handy deadline to get stuff done. If we didn't have this summit, most people don't realize underneath all that, it's a forcing mechanism to get things done. Remind people of this, hot out, some congressman is talking, few areas have that forcing mechanisms.

- d. Zach at the September meeting, agenda, about setting regular meeting time. We will have to do a poll for the September meeting, but then we will set a regular meeting time for future meetings.