Final Report

TRRP Refinements



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TRRP Refinements

Prepared for:

Trinity River Restoration Program (TRRP)

FINAL REPORT

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Trinity River – Sawmill Side Channel restoration site, photographed in April 2017 <u>http://www.trrp.net/restoration/channel-rehab/rehabilitation-concepts/</u> (accessed August 01, 2018)



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1 2.0 Introduction

Headwaters Corporation was contracted by the U.S. Bureau of Reclamation to complete the seven tasks identified in the Trinity River Restoration Program Refinements Solicitation (#R17PS00533). As described in the Solicitation, the scope of this work is to review the goals and mandates of the Trinity River Flow Evaluation Study (TRFE) and Record of Decision (ROD), identify refinements to Trinity River Restoration Program (TRRP or Program) management and functions that will better serve those goals and mandates, and assist the Department of the Interior (DOI) in implementing the refinements. Specific tasks include:

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10	Tasks 1-2	Review of Key TRRP Documents
11	Task 3	TRRP Interviews
12	Task 4	Summarize Strengths/Weaknesses of TRRP Organizational Structure
13	Task 5	Present TRRP Refinement Recommendations
14	Task 6	Facilitate Discussion with the Trinity Management Council (TMC) about
15		the Refinement Recommendations/Power Point Presentation/Final Report
16	Task 7	Remain Available to Assist with Oversight & Implementation of
17		Refinement Recommendations
18		

This report to the TRRP is the combined deliverable for Tasks 5 and 6 and serves as the overall final report for the Refinements work. This final report summarizes our recommendations for TRRP refinements from Task 5 and also includes findings from previous tasks as appendices. The purpose of Task 6 was to discuss the refinement recommendations with the Trinity Management Council (TMC) and attempt to reach a majority consensus on actionable items.

25 Methodology

Task 5 corresponds to Step 5 of our Adaptive Management Program Evaluation 26 27 Framework (AMPEF) which includes detailing recommendations for TRRP reform/refinements. These recommendations are based on document review in Tasks 1-2, interviews in Task 3, 28 development of the TRRP strengths/weaknesses document in Task 4, prior experience with the 29 TRRP, and our work with the Platte River Recovery Implementation Program (PRRIP) and other 30 similar programs around the country. During performance of these tasks, we implemented our 31 AMPEF which involved completing a qualitative "health assessment" of the structure and function 32 of key TRRP governance and AM components/subcomponents; developing a rating of the 33 Likelihood of governance or AM component/subcomponent failure; developing a Consequence 34 rating for the consequences of governance or AM component/subcomponent failure; and 35 combining these into an overall Risk rating. These three ratings provide an easy and quick 36 assessment of potential governance or AM failures that are likely to occur, TRRP strengths and 37 weaknesses, and potential implications for overall Program success or failure. 38

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We also assessed the TRRP's fit in a proposed ideal typology for an adaptive management program. This entailed a qualitative evaluation of the level of science communication and data synthesis in the TRRP, as well as the level of decision-making centralization or sharing within the TMC on behalf of the TRRP. The intent of this step was to provide a predictive tool for the TRRP to identify the presence or absence of conditions likely to promote the successful implementation of AM in the TRRP.



This report presents our final recommendations for TRRP refinement. These recommendations were discussed with the full TMC in August 2018 to get feedback on the veracity of these recommendations and develop a plan for implementation. The recommendations remain the same after that meeting and after reviewing written comments received from TRRP participants. Based on feedback from the TMC and TRRP staff, Headwaters understands the TRRP intends to move forward with implementing these refinement recommendations with the help of an independent facilitator.

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54 **Summary of Refinement Recommendations**

55 For quick reference, the following comprise our primary recommendations for TRRP 56 refinement:

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58 1) <u>Cooperative Agreement to amend ROD</u>

The current ROD is signed by the Department of the Interior (by extension, the Bureau of 59 Reclamation and the U.S. Fish and Wildlife Service) and the Hoopa Valley Tribe. This document 60 gives foundational force to the TRRP and provides a set of management actions and 61 implementation guidance. But, given weaknesses in the current TRRP governance structure, 62 changes are recommended to improve program decision-making. This structural change should be 63 codified in the ROD after being negotiated by TRRP participants. The Cooperative Agreement 64 tool was used by parties to the Platte River Recovery Implementation Program (PRRIP) to provide 65 those parties with the space and time to negotiate and agree on a collaborative decision-making 66 structure in addition to all other components of that program. We believe this tool can be 67 successfully used again for the TRRP to develop a new approach to governance and decision-68 making. We are not prescribing what the TRRP decision-making structure should look like at this 69 point – that is the job of the TRRP. Rather, we are recommending development of an enforceable 70 tool supported at the highest level of the Department of the Interior to give TRRP participants the 71 72 room to create a new structure.

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74 2) <u>ROD Amendment – TRRP Program Document</u>

The current ROD can and should stand, but the Cooperative Agreement should give TRRP 75 participants (Signatories and non-signatories) the ability to develop a single foundational 76 document that can guide TRRP implementation and decision-making - a TRRP Program 77 Document. Ultimately amending the existing ROD by adding this negotiated, agreed-upon 78 Program Document will keep the current ROD in place but result in a single guidance document 79 for the TRRP. Based on our review of the TRRP, this step is needed to avoid having to reference 80 multiple "foundational" documents that are not always clear and sometimes contradictory and to 81 house all critical TRRP information and guidance in one place. 82

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84 3) Adaptive Management Plan

The ROD provides a set of management actions for the TRRP and both the ROD and the EIS/EIR suggest implementation of Adaptive Environmental Assessment and Management (AEAM, which is the progenitor of adaptive management or AM). Documents like the Integrated Assessment Plan (IAP) provide details that are commonly found in an AM Plan but that has never been formally adopted by the TRRP. If the TRRP is going to implement AM under a new foundational Program

Document, it needs to develop an official AM Plan to guide implementation of AM for the TRRP.



- Headwaters recommends the following process for implementing these TRRP refinements:
- 92
- The TRRP will need help to implement these refinement recommendations. We recommend facilitation for this process. A skilled facilitator will set meetings and develop agendas, run the meetings, write all TRRP documents, keep the group on task, and report back to high-level Signatories on progress. This will build independence and trust into the process, ensure the completion of tasks, and help the TRRP work through challenges. The TRRP should seek an independent facilitator through a competitive selection process.
- 99 *Estimated time for completion* Four (4) months (September 2018-December 2018)
- The selected facilitator will establish the process of work, but it is expected that much of this work would occur through facilitated 1-3-day workshops off-site, possibly in Redding or Sacramento (or at least rotating between Eureka and Weaverville). While this approach will require a large time commitment and travel on the part of TRRP negotiators, it is tested way of getting important work done while building trust and commitment to success.
- This effort will largely be the work of the TRRP itself (Signatories and others that comprise the re-organized TMC). The approach will require TRRP participants to do homework between meetings and contribute a large majority of the content that will make up the TRRP Program Document and the AM Plan.
- Signatories and non-signatories would negotiate the organizational structure of the program, the decision-making process, program financial management, and other higher-level administrative features. Technical representatives would negotiate the AM Plan in parallel with that process with final approval by the TMC negotiators.
- During the next 2.5 years of negotiation and document development, the TRRP should continue to implement current ROD management actions and fund monitoring and other projects that are currently led by the Tribes.



1 3.0 TRRP Refinement Recommendations

Before detailing the TRRP refinement recommendations, the Headwaters Team believes it is useful to consider our key findings from each of the previous TRRP Refinements tasks. Consistent themes from these tasks have helped point us to a set of refinement recommendations that are intended to help the TRRP address clear and significant challenges that are intended to help improve organizational structure, science and decision-making processes, strategic planning and budgeting processes, information flow processes, performance, and other actions necessary to achieve the goals of the TRFE and the ROD.

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10 Key Findings from Tasks 1-2 – TRRP Document Review

Existence - Why does the TRRP exist? This is an existential question that requires some 11 attention. Does the TRRP exist merely to implement the technical flow recommendations (and 12 other management actions) specified in the TRFE and mandated by legislation, the 13 Implementation Plan, and the ROD? If so, opportunities for AM may be limited as may the 14 ability of the TRRP to operate as a truly collaborative program with inclusive decision-making. 15 Or, does the TRRP exist to implement a negotiated set of goals, objectives, and actions as a 16 collaborative program, and as a program implementing a true AM Plan? Are the specifics such 17 as annual flow and sediment volumes flexible enough to accommodate implementation of 18 AM? We cannot answer these questions, but those answers will drive what steps the TRRP 19 takes to address the issues identified with the presence and clarity of statements of Program 20 purpose, goals, and objectives. 21

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Document cascade – Current statements of goals and objectives are disaggregated into multiple
 foundational documents and related supporting documents. In some cases, that language is
 either absent or unclear. To move forward, the Program needs a single foundational document
 that pulls this information and guidance together with clarity and that represents a negotiated
 way forward.

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Negotiation – The statements of goals and objectives are not currently negotiated by TRRP 29 decision-makers and partners. Objectives and management actions have been prescribed 30 through Congressional action, the TRFE, the Implementation Plan, and the ROD. These 31 documents are not clearly unified. Based on our experience, we would expect a single, 32 negotiated Final Program Document that provides all the structure and function for the 33 Program and that is cross-linked as the true Preferred Alternative in the EIS/EIR and ROD. 34 The "Implementation Plan" would be part of the Final Program Document, not an Appendix 35 in the EIS/EIR. This step will require substantial work by and trust on the part of the TMC to 36 fix but would put the TRRP on more solid footing in terms of vision, direction, and action. 37

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"Science pile" – The TRRP is bounded by mandated science documents. Ideally, science should be applied through AM but implemented within the negotiated context of the Program. Science is just one input to decision-making and should not be determinative to the entire Program. Applying science without clear goals/objectives or a clear collaborative structure means building a "science pile" – a Program will conduct good science and collect substantial data, but why? What do you do with it? Why/how does it matter to decision-makers? This



appears to be a fundamental challenge with the TRRP based on our work so far. We will 45 explore this more in the key findings from Task 3. 46

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The TRRP should be empowered to negotiate and settle on these key components: purpose; long-term goal; long-term and time-specified objectives; descriptors of water, land, time, and 49 ability to modify TRRP or be flexible in response to learning; AM Plan; implementation 50 framework; and management actions

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53 Key Findings from Task 3 – TRRP Interviews

O: What is the TRRP goal? 54

A: In general, there was a wide range of answers offered for this seemingly basic foundational 55 question. While the word "fish" was used frequently, answers diverged from there. A small number 56 of interviewees brought up the specific escapement numbers in the EIS/EIR as the centerpiece of 57 the TRRP goal, but generally the "fish goal" (as these numbers were frequently referred to) was 58 noted as being outdated and neither realistic nor achievable. There seemed to be consensus that if 59 the Program were to re-focus on fish escapement numbers for the Trinity River, numeric goals 60 should be revised. Several interviewees discussed the goal in the context of restoring fish 61 populations to pre-dam levels, but also cautioned that pre-dam fish population estimates were 62 either non-existent or unreliable. Some interviewees said another aspect of the goal is to increase 63 harvest but noted the competition between trying to increase adult escapement while also trying to 64 increase harvest. Several interviewees pointed to the goal statement drafted in the Integrated 65 Assessment Plan (IAP) as being the best overall statement of a TRRP goal, but all were quick to 66 state that the IAP and its goal statement have never been formally adopted by the TMC. 67 Interviewees did point to the difficulty of reaching a fish population-based goal when salmon 68 migrate and are influenced by harvest, ocean conditions, climate change, and a host of other factors 69 outside the control of the TRRP. In these cases, interviewees focused on in-river conditions as a 70 more achievable goal and several also suggested broadening the TRRP goal to be more inclusive 71 of river form and function and include a wider range of riverine species. 72

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Q: What does the history of the TRRP tell us about its function today? 74

A: The general response from interviewees is that the TRRP was built based on the scientific 75 aspects of the Flow Evaluation Study, which itself was modeled on the Glen Canyon Adaptive 76 Management Program. As pointed out by several interviewees, the focus in both cases was on the 77 scientific aspects and not on the organizational or governance aspects. Several interviewees 78 detailed how the Flow Evaluation Study came to be, how the Hoopa Valley Tribe was added as a 79 key part of the study team, and how the process was driven largely by a small number of key 80 people in Washington, DC at the highest levels of the Interior and Justice Departments (and 81 including the Washington, DC-based attorney for the Hoopa Valley Tribe). Based on interviewee 82 responses, it appears the Record of Decision (ROD) for the TRRP was one of the last items signed 83 by Secretary Babbitt before the change of Administration and once that change happened all 84 connections between the TRRP and upper-level decision-makers in DC was lost. Key points raised 85 in the interviews: 86

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After the ROD was signed, the TRRP was "kicked down" into lower levels of the Bureau of 88 Reclamation (Reclamation) which had not been highly involved in development of the Flow 89 Evaluation Study or the ROD. At that point, the TRRP became more focused on habitat 90



restoration projects and less focused on flow management. That has manifested itself today in a focus of TRRP action and money on increasingly large construction projects, with little attention paid to more process-based restoration through the application of flow. This issue has

- been exacerbated by ambiguities in the ROD and the Implementation Plan.
- The organizational structure contained in the Implementation Plan, and which the TRRP operates under now, was quickly cobbled together based on the organizational structure of the Glen Canyon Adaptive Management Program. Interviewees involved in this effort stated this structure was thrown into the Implementation Plan quickly without much thought as to its application in or modification for the TRRP.
- Some interviewees said the science side of the Program was built on the early principles of Adaptive Environmental Assessment and Management (AEAM) which tends to focus more on modeling and heavy technical aspects. AEAM was the foundation of adaptive management (AM) which today tends to have a broader connotation in large-scale programs like the TRRP.
- *Editorial Comment* there was a strong emphasis on the part of several interviewees as to the influence of the Glen Canyon Adaptive Management Program and a desire to return to something more like that program in terms of structure and function. From the perspectives of full implementation of true adaptive management and a working governance structure, that program is not widely considered a success. See the article titled <u>"Collaborative Planning and Adaptive Management in Glen Canyon: A Cautionary Tale"</u> and several other articles with the same theme.

112 **Q: What is the overall health of the TRRP?**

- A: In many cases, interviewees described the TRRP as "a jobs program" for program partners. 113 This description focused on the TRRP being more about money for program partners and 114 associated projects (monitoring, research, and implementation) and less about a focus on 115 restoration of fish populations. Interviewees noted this as a "lost opportunity" given that the TRRP 116 is widely viewed as having "everything it needs" - ample budget, controllable water, and 117 experienced staff – to be a leader among large-scale river restoration programs. However, there is 118 an acknowledgement that the TRRP has not been a model program in the past and is currently a 119 long way from being a model program. Some reasons stated in the interviews: 120
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- The culture of the overall TRRP was described as "a meeting culture" not a "doing culture".
- TRRP leadership was frequently described as "lacking".
- The lack of a strategic plan and common vision for the TRRP is viewed as a significant impediment to progress on the goals and objectives.
- The TRRP is viewed as lacking transparency. Issues are decided behind closed doors, quid pro quo deals are struck between partners, and any negative or unexpected outcomes regarding construction projects or monitoring are suppressed.
- Staff turnover at the Bureau of Reclamation and the U.S. Fish and Wildlife Service is viewed as a significant issue that contributes to the lack of a consistent vision/mission of the TRRP.
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132 Q: How well does the Trinity Management Council (TMC) function?

A: Most interviewees described the TMC as either being ineffective at decision-making or, at a minimum, uncertain as to its role in the TRRP decision-making process. The lack of clarity about

the TMC's ability or authority to make decisions on behalf of the TRRP and what those decisions



are were cited by most interviewees as a central problem within the TRRP. Key aspects of thisissue stated in interviews include:

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- Interviewees noted struggles for power and control on the TMC. The Department of Interior (DOI) agencies were described as the co-leads of the TRRP but with Reclamation viewed as having the power as a function of controlling the majority of the funding.
- Several interviewees noted confusion over the Hoopa Valley Tribe signing the ROD and
 whether that made the Tribe a TRRP co-lead or simply meant they agreed to the ROD.
- Most interviewees said that when new members join the TMC there is little to no formal orientation. Members are expected to educate themselves about the TRRP and the TMC and are frequently not given documents that provide a history of the TRRP.
- Several interviewees noted that the TMC seems to make technical decisions on TRRP
 implementation and evaluation based on the budget and not on program science.
- Interviewees with knowledge of the early history of the TRRP said the initial design for the TMC was to have Regional Directors and similar higher-level administrative managers sit on the TMC. However, over time responsibility for participating in the TMC has gradually been delegated down to more junior agency/partner staff.
- Many interviewees said the requirement of a supermajority for TMC voting is a major
 impediment to moving forward on issues such as the budget, bylaws, and addition of new TMC
 members.
- The culture of the TMC is viewed as one that rewards "bad behavior" of its members.
- Leadership on TMC is viewed as weak, likely stemming from a lack of awareness of an agreement on what the TRRP is doing and where it is going
- The TMC was generally noted by interviewees as being resistant to change and unable/unwilling to implement the recommendations of previous TRRP reviews (TMC Subcommittee Report, CDR Situation Assessment, etc.).
- Some interviewees believe the TMC should operate as a Board of Directors for the TRRP, but there is a sense that TMC partners are too conflicted to fulfill that role.
- While not shared widely in the interviews, there was an opinion offered that the TMC does not really make decisions for the TRRP but only makes recommendations to the DOI, and ultimately Reclamation makes the decisions for the TRRP.
- Several interviewees stated an observation that the TMC does not listen to the Trinity River
 Adaptive Management Working Group (TAMWG)¹ or consider their input important, and the
 TMC only gives the appearance of taking public comment and input.

Q: What is the overall health of the TRRP organization and funding structures?

- A: Interviewees were mixed in their opinions about what is working, what is not working, and what could be done to improve TRRP structure and function. Notable responses include:
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Interviewees indicated there is limited TRRP identity. People identify themselves as working
 for their specific agency/entity and not for the TRRP. A sense of team or collaborative spirit
 within the Program it not fully shared by all parties.



¹ In November 2017, the Department of Interior ordered the TAMWG to be "administratively inactive".

- Several interviewees pointed to a lack of continuity in leadership as a problem for the TRRP.
 There is no consistent TRRP vision/plan so each new agency head brings their own interests and focus to the program, some of which frequently are not consistent with the TRRP goal.
- Several interviewees stated that all TRRP partners should have higher level administrators at the table, i.e., DOI Regional Directors, Tribal Chairs, Directors of State Agencies. Others would like to see the TMC just approve (or recommend) the annual budget and that would be the extent of their involvement. Still others would like to see the TMC terminated since decisions are subject to change by the federal agencies, during the Tribal Government-to-Government process, or through direct lobbying in Washington, DC.
- Several interviewees brought up the idea of independent implementation for the TRRP, though 187 different options were discussed. One set of interviewees mentioned the example of the Platte 188 River Recovery Implementation Program where a private consulting firm provides the 189 Executive Director and program staff. Another set of interviewees referred to the Glen Canyon 190 Adaptive Management Program and its model of involvement of the U.S. Geological Survey 191 (USGS) as the scientific arm of the program. Some interviewees felt that some form of 192 independent implementation is a necessity, but others are convinced that it would either never 193 be allowed or, if attempted, would never work. 194
- Regarding the role of the federal agencies in staffing the TRRP, some interviewees focused on staff in the Weaverville office as being the unit that should be transferred to an independent entity, like the USGS or a private contractor. Another option would be to continue to house TRRP staff from different agencies/entities but that the Executive Director (ED) should have direct supervisory authority over all TRRP staff housed at that office. There was no clear model described that was viewed as a way to overcome seeming internal difficulty in the relationship between Reclamation TRRP staff and Service TRRP staff.
- Several interviewees discussed the current structure of the TRRP with multiple design teams as opposed to a single, unified program staff charged with implementation.
- The concept of "base funding" was mentioned by several interviewees. This was mentioned as a possible tool to help get over budget conflicts related to "legacy" projects versus "adaptive management" projects, and to provide financial security for some of the agencies/entities that are not tied to a specific monitoring or research activity.
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Q: How does the TRRP handle the issue of "conflict of interest"?

A: This was a significant concern noted by nearly all interviewees. Interviewees stated that TMC members are voting on budgets that benefit their agencies/entities in staffing, construction projects, and monitoring and see this as a significant conflict of interest. The concept of base funding (mentioned above) was noted as one possible remedy, but there was significant concern raised by multiple interviewees that this conflict of interest in the budget, how money is allocated to projects, and how decisions are made about this allocation is a potential fatal flaw for the TRRP.

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217 **Q: Has the TRRP ever been audited?**

A: A significant number of interviewees believed that an audit of the TRRP should be done to account for how the money has been spent and the results of those expenditures. It was apparent this issue was raised not in the sense of financial malfeasance, but rather as means to increase transparency about TRRP spending and associated results. Several interviewees stated that nobody at the state or federal level is asking the TRRP to show results against goals or milestones, or to account for how federal dollars have been spent over many years. Many interviewees wanted more



transparency regarding the amount of funds that go to agency/entity salaries versus how much
 TRRP funding goes to restoration construction projects, overall implementation, and program
 science.

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228 Q: What is the relationship between the TRRP partners?

A: Several interviewees viewed the DOI agencies (Reclamation and Service) as having a great 229 deal of animosity towards each other and not working together effectively. The Memorandum of 230 Understanding (MOU) between Reclamation and the Service expired over a year ago and a 231 revision has not been signed by either agency. Some interviewees felt finalizing this MOU was 232 critical because it outlines how the Executive Director, Science Coordinator, and Implementation 233 Branch Chief will work together as a staff leadership team for the TRRP. Many interviewees 234 described a feeling of distrust of the Tribes by other TRRP partners. Interviewees viewed the two 235 Tribes are as not getting along which translates into difficulties at the TMC level. 236

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238 **Q: What is the public perception of the TRRP?**

A: There was a clear consensus among interviewees that the public perception of the TRRP is poor. Explanations included:

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- A lack of information about results being provided to the public, damage caused by projects to private lands, and lack of local jobs resulting from TRRP.
- Several interviewees noted the public's unrealistic expectations for river restoration. When the TRRP builds a restoration project, the public expects a fish increase the next year. When that does not happen, the public is critical of the TRRP.
- Several interviewees commented that the TRRP had done a "poor job" with outreach to private landowners in the past.
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250 Q: What is the TRRP's view of adaptive management?

A: While interviewees generally agreed that adaptive management is supposed to be part of the 251 TRRP, there was no agreement as to how (or if) the TRRP defines adaptive management and 252 whether the TRRP is implementing adaptive management at all (or whether it wants to, or whether 253 it can). In general, there was no clarity among interviewees as to what questions the TRRP is trying 254 to answer, what hypotheses are to be "tested" through program implementation, how to synthesize 255 information to make it useful for decision-makers, and how (or if) decision-makers on the TMC 256 would even use such information. TRRP science is viewed by many as being a lower priority in 257 the budget than construction projects. Many interviewees described science (or adaptive 258 management) as receiving what is left over in the budget after construction projects are funded. 259 The TRRP was described as data rich but information poor. For example, there is a belief that the 260 TRRP is creating more habitat for fish and producing more juvenile fish, but there are no reports 261 showing these results and making these connections. 262

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Generally, there was agreement among the interviewees that the TRRP is not operating under an agreed-to Adaptive Management Plan. Some interviewees pointed to the IAP as being the best example of an adaptive management guidance document for the TRRP, but there was a general consensus among interviewees that the IAP is not being used in that way. Several interviewees described the IAP as an "everything and the kitchen sink" document that does not prioritize objectives, thus making it too unwieldy to be useful. Other interviewees called it a "wish list" that



would be helpful if funding were unlimited to implement the numerous objectives/projects. Some interviewees did say they used the IAP to cite objectives in writing project proposals because it is

- so broad that most any project can be justified.
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274 Q: What is the role of independent science in the TRRP?

A: Most interviewees said that the Science Advisory Board (SAB) is underutilized in the TRRP. 275 There is a belief that the TRRP is not getting its money's worth out of the SAB and that there is 276 not enough interaction between the SAB and the TMC. Several interviewees said this may stem 277 from a lack of clarity about who is in charge of the SAB and how their annual work plan is 278 developed and administered. Some interviewees noted that SAB members are currently being used 279 on an individual basis for certain TRRP agencies or entities instead of providing overarching 280 programmatic reviews for the TMC. Several interviewees noted the SAB is supposed to have five 281 members but that has apparently dwindled down to three members as of 2017. 282

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284 Key Findings from Task 4 – TRRP Strengths & Weaknesses Summary

- **People** The core strength of the TRRP as currently constructed is its people. Especially 285 through the Task 3 interview process, it became clear that TMC members, TAMWG members, 286 Program staff, and members of AEAM and Implementation Teams are passionate about the 287 Trinity River, its resources, and the TRRP itself. This translates into keen interest in seeing the 288 Program move forward and be successful, and to tackle recommended changes to achieve that 289 success. There is an extraordinary level of institutional knowledge contained within the people 290 of the TRRP. Several individuals that authored the TRFE and had a hand in the other 291 foundational documents still work on TRRP issues. There is strong interest in the TRRP on the 292 part of landowners, river users, and the public generally which can translate into support for 293 the Program locally but also at the state and federal level. 294
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- **Technical capacity** The TRRP is comprised of very talented personnel that serve as staff in the ED Office and that serve the TRRP as members of the TMC, TAMWG, and the AEAM and Implementation Teams. The Program conducts a large amount of rigorous science at a very high level, forming the foundation of information that is critical to the future success of the TRRP. This technical capacity can be mobilized to develop and help implement a true, rigorous AM Plan for the TRRP.
- Raw material for refining the TRRP structure The TRFE, ROD, Implementation Plan, IAP, and a multitude of other TRRP documents contain much of the guidance and information necessary to build an official and negotiated TRRP Program Document (as a central foundational document) and an AM Plan. A good deal of the institutional knowledge used to develop those documents remains available to the TRRP, and the work of the Program over many years has it poised to assess and synthesize learning in a way that will help to chart a course forward for the TRRP.
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- **Consistent funding** As compared to other similar programs, the TRRP has enjoyed and appears will continue to enjoy a remarkably consistent pattern of annual funding for Program activities. This is a testament to the Program's ability to complete construction projects and its importance at the federal level, particularly in the Bureau of Reclamation and in Congress.



Generally, the Trinity River management system is locked in a rigidity trap where current 315 management, conflicts, and a flow of money remain relatively stable while adaptive 316 management, learning, and policy changes remain elusive, keeping the system resilient but 317 susceptible to disturbance.^{2,3} Reviews of attempts at adaptive management in other similar 318 large-scale systems like the Trinity River point to the need to put in place an appropriate 319 collaborative governance structure before beginning adaptive management or any attempt at 320 science learning and exploration of management options.⁴ This means using leadership, trust, 321 and an ability to incorporate change and surprise to build an adaptive governance structure for 322 the TRRP that fits the scale of the problem and that will serve as the necessary condition to 323 actually develop and implement an AM Plan.^{5,6,7} 324

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335

Lack of clear goals/objectives – As identified through document review in Tasks 1-2 and the 326 interviews in Task 3, there is no agreed-upon Program goal statement and there is a lack of 327 clarity among TRRP decision-makers as to the overall Program goal and related objectives. 328 This has been identified before as a significant impediment to TRRP forward progress; the 329 2008 CDR Situation Assessment flagged this issue as a "fundamental disagreement". Without 330 clarity on the TRRP goals and objectives, decision-making cannot be tied back to a central 331 vision and set of organizing principles, and adaptive management will not succeed because it 332 must be tied back to goals and objectives. It is imperative that the TRRP resolve this central 333 weakness once and for all to avoid remaining mired in its current state. 334

Decision-making not shared – While the TMC is the decision-making body for the TRRP 336 and its membership does include a variety of Tribal, federal, state, and local partners, questions 337 remain about relative balance between TMC members and the influence each entity has on 338 TRRP decisions. The TAMWG serves as a sounding board for stakeholders, but that group 339 does not have a vote at the TMC level, so those stakeholders are not really part of the decision-340 making process. It is not clear why the stakeholder group is labeled an "Adaptive Management 341 Working Group" since adaptive management needs to be part of the overall structure of the 342 TRRP and stakeholders need to be part of TRRP decision-making. The TAMWG seems to 343 function largely like the Missouri River Recovery Implementation Committee (MRRIC), a 344 large and unwieldy stakeholder group that is merely advisory to the ultimate decision-maker 345 on the Missouri River, the U.S. Army Corps of Engineers. Additionally, the TAMWG has now 346 been rendered "administratively inactive" by the Department of Interior thus completely 347 isolating stakeholder input from the functions of the TRRP and propagating further divisions 348 among TRRP interests. 349

- 350
- **Decision-making process** There is significant internal concern within the TRRP about issues 351 of "conflict of interest", how TRRP money is distributed to Program projects and to Program 352 entities, and how this all influences TRRP decision-making and progress. TMC decisions are 353

⁷ Chaffin, B.C., Gosnell, H., Cosens, B.A. 2014. A decade of adaptive governance scholarship: synthesis and future directions. Ecology and Society, 19(3):56.



² Gunderson, L.H., Holling, C.S., and Allen, C.R. 2010. The evolution of an idea – the past, present, and future of ecological resilience. in FOUNDATIONS OF ECOLOGICAL RESILIENCE 423-444 (L.H. Gunderson et al. eds., 2010).

³ Gunderson, L.H., Garmestani, A., Rizzardi, K.W., Ruhl, J.B., and Light, A. 2014. Escaping a rigidity trap: governance and adaptive capacity to climate change in the Everglades social ecological system. *Idaho Law Review*, 51:127-156.

Lee, K.N. 1999. Appraising adaptive management. Conservation Ecology, 3(2):3.

⁵ Dietz, T., Ostrom, E., Stern, P.C. 2003. The struggle to govern the commons. Science, 302:1907-1911.

⁶ Folke, C., Hahn, T., Olsson, P., Norberg, J. 2005. Adaptive governance of social-ecological systems. Annu. Rev. Environ. Resour., 30:441-473.

formalized via voting through a super-majority process that requires six out of eight votes to move something forward, often leaving one or two entities (often the same entities time and time again) disaffected with the decisions made by the TMC and forcing them to take actions outside of the regular TRRP process. This perpetuates feelings of mistrust and suspicion about what decisions are made and why.

359

Role of ED and ED Office – The Executive Director and Program staff are highly capable, 360 committed to the TRRP, and perform excellent work on behalf of the Program. However, 361 Program implementation is staffed by a mix of Reclamation employees, Service employees, 362 and employees of other TRRP entities. There is a very limited TRRP identity and people 363 identify themselves as working for their specific agency and not the Program. A sense of team 364 or collaborative spirit within the Program it not fully shared by all parties. There is internal 365 friction between staff of the two lead federal agencies (Reclamation and Service) with no clear 366 mandate for the ED to maintain a unified staff in the ED Office. Work at the technical level of 367 the TRRP and on-the-ground projects involve different groups of people from multiple 368 agencies and entities making coordinated oversight of the TRRP a nearly impossible task for 369 the ED. It is difficult for the ED and Program staff to play an "honest broker" role 370 implementing the TRRP and delivering information to the TMC for decision-making when 371 those individuals are all employees of agencies and entities that sit at the decision-making table 372 as members of the TMC – this is a problem in nearly all large-scale river restoration/adaptive 373 management programs across the U.S., housed both in Reclamation and in the Corps of 374 Engineers. 375

376

Coordination and communication – This weakness is an extension of issues identified above 377 with the ED and ED Office, but also of general organizational weaknesses within the TRRP. 378 The TRRP is loosely structured similarly to the Glen Canyon Adaptive Management Program 379 but as some TRRP interviewees admitted, this structure was never well-understood or adapted 380 to function according to the needs of the TRRP. That structure has remained over the years and 381 has led to issues with transparency, purpose, redundancies, and breakdowns in communication 382 within the TRRP and between the TRRP and outside interests. Lack of clarity in coordination 383 and communication within the TRRP is exacerbated by a lack of clarity on Program goals and 384 objectives. 385

• **Time scale** – The TRRP seems to be operating on a perpetual time basis; if funds arrive each year, the Program will continue its work. While good from a jobs perspective, to what end is the TRRP conducting this annual work? An agreed-upon time scale for implementation (maybe in increments to allow for possible extensions when/if more time is needed for learning and adjustment), paired with clear goals and objectives and a better-functioning governance approach, will essentially force the TRRP to focus its work and move toward resolving critical uncertainties and assessing progress toward milestones.

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Lack of AM Plan – This weakness is self-explanatory – the TRRP is supposed to be an AEAM organization but has no agreed-upon AM Plan to implement. For every person that pointed to the Integrated Assessment Plan (IAP) as that plan, there are two people that point out the IAP has never been formally adopted by the TMC and is not regularly used or referred to as the Program is implemented. If the TRRP does not put an AM Plan on paper that provides a clear



roadmap of goals, objectives, management objectives, hypotheses, Big Questions, monitoring
 plans, data analysis plans, data synthesis plans, and tools for feeding useful scientific and
 technical information to the TMC for use in TRRP decision-making, then the TRRP will
 continue to fail to implement adaptive management.

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Data synthesis – To its credit, the TRRP is beginning synthesis reporting as of 2017. However, it is not clear how such reports will be used, or if they will be used, in TRRP decision-making.
 Without a clear set of TRRP goals and objectives and an AM Plan, synthesis reporting likely will not be effective in helping the TRRP with decision-making.

- Independent science review Given the original intent of the TRRP to function as an AEAM organization, the robust technical capacity within the TRRP, and important science conducted by the Program, it is curious that a stronger relationship has not been built between the TRRP and its Science Advisory Board (SAB). The SAB is underutilized, does not appear to regularly report to or interact with the TMC, and does not seem to operate under a specific TRRP charter or annual work plan that is approved by the TMC.
- 416

In terms of the AM typology, the TRRP is really just conducting a version of trial-and-error. 417 As the Headwaters Team learned during the interviews, there is no agreement as to how (or if) 418 the TRRP defines adaptive management and whether the TRRP is implementing adaptive 419 management at all (or whether it wants to, or whether it can). In terms of the typology, without 420 an AM Plan and a clear process for utilizing adaptive management within the TRRP, all the 421 good science being conducted by the Program is largely falling into an ever-expanding 422 "science pile". While the TMC is inclusive of several Tribal, federal, state, and local entities, 423 there is no true shared decision-making in the TRRP since stakeholders are kept at arm's length 424 and TMC voting procedures do not foster a climate of consensus decision-making. Given the 425 information contained in the foundational documents and the IAP, the technical capacity within 426 the TRRP, and the passion of those working for the Program on the Trinity River, the TRRP 427 can move itself into the upper right quadrant of the ideal adaptive management typology 428 (where AM is successful) by re-organizing its structure (adaptive governance) and re-focusing 429 its efforts to build and implement a TRRP Adaptive Management Plan. 430



431 **Refinement Recommendations**

The Headwaters Team does not believe the challenges and weaknesses identified above will be 432 fixed with a top-down solution from the Bureau of Reclamation, with a short series of workshops 433 as suggested before, or by a series of motions from the TMC. Rather, refining the TRRP will 434 require a complete re-organization of the program, assuming there is a desire to build and 435 implement such a program. This assumption underlies all of our recommendations and is the first 436 step that needs to be taken by the parties that comprise the TRRP. The ROD states that "restoration 437 must provide a meaningful fishery" as part of trust obligations to the Hoopa Valley Tribe and the 438 Yurok Tribe and also to ensure recreational, commercial, and sport fisheries. After nearly two 439 decades of implementation, our work in the Trinity River basin on Tasks 1-4 suggests the TRRP 440 has not achieved this milestone. Is this a function of ongoing uncertainty about flow releases from 441 Lewiston Dam, habitat restoration, and gravel augmentation and the resulting impacts on fish 442 populations? Is it a function of factors outside the control of the TRRP (ocean conditions, Klamath 443 River conditions, harvest below the program area, etc.)? Is enough known about the ability of 444 TRRP management actions to affect fish populations that the program does not need to implement 445 adaptive management but rather just implement management? 446

447

These are all variations of a foundational question for the TRRP, and thus we ask again – Why 448 does the TRRP exist? If enough is known about the impact of the technical flow recommendations 449 (and other management actions) specified in the TRFE and mandated by legislation, the 450 Implementation Plan, and the ROD on fish populations, then AM is not warranted and the TRRP 451 can focus on implementing management actions in the long term less as a restoration program and 452 more as management program that is largely driven by the ROD signatories (Department of the 453 Interior and Hoopa Valley Tribe). If instead there is still significant uncertainty as to the response 454 of fish populations to TRRP management actions within the program area, then the TRRP should 455 tackle this challenge under a new construct as recommended below. The TRRP has to clearly 456 answer this question itself. 457

458

If TRRP participants believe there are uncertainties that can be addressed collaboratively through 459 adaptive management, if management actions can be implemented to reduce those uncertainties, 460 and if TRRP participants can negotiate and operate under a redesigned collaborative decision-461 making structure, then our refinement recommendations can provide a way forward. The 462 recommendations below build on key strengths of the TRRP (people, technical capacity, and the 463 raw material for refining the TRRP structure) to address key TRRP weaknesses and build a 464 program that can be successful in the long term. These recommendations are offered as a means 465 to improve TRRP structure and function within the confines of the current ROD and the preferred 466 alternative in the EIS/EIR. We do not believe these refinement recommendations require 467 development of a completely new ROD or commencement of a new NEPA process. 468

469

470 1. <u>Cooperative Agreement to amend ROD</u>

The current ROD is signed by the Department of the Interior (by extension, the Bureau of Reclamation and the U.S. Fish and Wildlife Service) and the Hoopa Valley Tribe. This document gives foundational force to the TRRP and provides a set of management actions and implementation guidance. But, given weaknesses in the current TRRP governance structure, changes are recommended to improve program decision-making. This structural change should be codified in the ROD after being negotiated by TRRP participants. The Cooperative Agreement



tool was used by parties to the Platte River Recovery Implementation Program (PRRIP) to provide 477 those parties with the space and time to negotiate and agree on a collaborative decision-making 478 structure in addition to all other components of that program. We believe this tool can be 479 successfully used again for the TRRP to develop a new approach to governance and decision-480 making. We are not prescribing what the TRRP decision-making structure should look like at this 481 point - that is the job of the TRRP. Rather, we are recommending development of an enforceable 482 tool supported at the highest level of the Department of the Interior to give TRRP participants the 483 room to create a new structure. 484

- 485
- Reasoning The TRRP needs authority and a template to re-structure in a way that will ensure success. A Cooperative Agreement would give high-level support for TRRP to enter into negotiations to develop this new structure and write a Final Program Document. This will also be the opportunity for the TRRP to negotiate and resolve balance of power and decision-making issues that currently hamper program progress.
- Critical path Determine who would sign a Cooperative Agreement. The DOI (Bureau of Reclamation and U.S. Fish and Wildlife Service) and Hoopa Valley Tribe are a given, but consideration needs to be given to adding additional parties, namely the Yurok Tribe (Tribal Chair) and the State of California (Governor). There also needs to be discussion of the role of the Department of Commerce (NOAA Fisheries – NMFS) and the Department of Agriculture (Forest Service) given their current role on the TMC and the high-profile role they play in implementation of the TRRP and the reach of their regulatory role on TRRP actions.
- The ultimate purpose of a Cooperative Agreement would be to set the bounds for negotiation and development of a single, unified Program Agreement. This should include identification of non-signatory parties that will be part of the negotiation process and that will be expected to be a part of the TMC in the future.
- **Key TRRP weaknesses addressed** Decision-making not shared, governance structure and process.
- *Estimated time for completion* Six (6) months (January 2019-June 2019).
- **2. ROD Amendment TRRP Program Document**

The current ROD can and should stand, but the Cooperative Agreement should give TRRP 507 participants (Signatories and non-signatories) the ability to develop a single foundational 508 document that can guide TRRP implementation and decision-making - a TRRP Program 509 Document. Ultimately amending the existing ROD by adding this negotiated, agreed-upon 510 Program Document will keep the current ROD in place but result in a single guidance document 511 for the TRRP. Based on our review of the TRRP, this step is needed to avoid having to reference 512 multiple "foundational" documents that are not always clear and sometimes contradictory and to 513 house all critical TRRP information and guidance in one place. 514

515

- Reasoning The TRRP needs to operate under a single foundational document that sets
 program goals and objectives and provides a roadmap for implementing adaptive management,
 program activities, organizational structure and function, and financial obligations and
 management. This will codify all program activities in a single document that will serve as the
 long-term reference manual for the TRRP.
- **Critical path** Establish and agree on the TRRP purpose, goals, and objectives why, what, and how.



- This process will include negotiating a revised TRRP organizational structure. This structure should be made to fit the parties involved and the needs of the TRRP, but at a minimum should include a revised TMC that includes stakeholders at the decision-making table, higher-level TMC representation; a plan for consensus decision-making, and a revision to the technical committee structure of the TRRP.
- TRRP parties need to provide clarity on the financial structure of the Program. This means developing a plan for identifying and tracking funding contributions on an annual basis and indexing of federal funds, likely reserving funding for certain Tribal actions, and developing a long-term budget for TRRP implementation.
- At this stage, the TRRP needs to consider a new structure for the Executive Director (ED) and 532 associated staff. We recommend the TRRP establish a unified ED Office. The TRRP ED 533 should have full authority for day-to-day implementation activities and be directly linked to 534 the re-structured TMC, and all staff should report directly to the ED and be responsible for 535 program work to the ED. All staff should identify as TRRP staff, not as individuals from other 536 agencies/entities that happen to do TRRP work. This unified model could take the form of an 537 independent ED and staff, considering the process used by the PRRIP to do the same but 538 adapting the idea to fit the needs of the TRRP. Under that approach, current TRRP staff would 539 need to remain with their agencies to work on a re-organized TRRP as representatives of those 540 agencies/entities. In the TRRP, this also will mean retention of Tribal staff and expertise to 541 work on projects that may or may not be part of the TRRP Final Program Document but that 542 contribute to overall TRRP understanding and that relate to trust obligations identified in the 543 ROD. That activity should be funded in a consistent, transparent manner that may be separate 544 from the TRRP and that insulates the TRRP from the issue of conflict of interest that was a 545 prevalent theme in our review of the program. Another approach might be for Reclamation to 546 retain the ED position but adjust staffing so that all staff members identify as TRRP staff. That 547 might mean staff contributions from the Fish and Wildlife Service, the Tribes, and other 548 entities but all of those staff members would be direct reports to the ED, not to their respective 549 agencies/entities. If the TRRP retains the current leadership model of ED, Implementation 550 Branch Chief, and Science Coordinator, all three of those positions should be from the same 551 entity, should be considered Program staff, and should be fully overseen by and report to the 552 ED. This issue will be a priority for negotiation and the TRRP will have to determine for itself 553 the best approach for re-structuring the ED and staff given the current challenges and the 554 unique integration of the Tribes into program implementation. 555
- This will also be an opportunity for TRRP negotiators to discuss the program's time scale. In our experience, determining an agreed-upon time period for program implementation, assessment, and approved funding provides an important milestone to track progress and keep activities focused on achieving goals and objectives.
- Key TRRP weaknesses addressed Lack of clear goals/objectives, decision-making not
 shared, organizational structure, role of ED and ED Office, lack of cohesion in TRRP staffing,
 coordination and communication, time scale.
- **Estimated time for completion** Two (2) years (July 2019-June 2021).
- 564

565 3. Adaptive Management Plan

The ROD provides a set of management actions for the TRRP and both the ROD and the EIS/EIR suggest implementation of Adaptive Environmental Assessment and Management (AEAM, which is the progenitor of adaptive management or AM). Documents like the Integrated Assessment Plan



(IAP) provide details that are commonly found in an AM Plan but that has never been formally adopted by the TRRP. If the TRRP is going to implement AM under a new foundational Program

571 Document, it needs to develop an official AM Plan to guide implementation of AM for the TRRP.

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- Reasoning The TRRP needs a negotiated, agreed-upon AM Plan to guide implementation.
 This plan would be part of the Final Program Document and would identify critical hypotheses,
 Big Questions, monitoring protocols, and plans for data analysis and synthesis.
- Critical path Key components of an AM Plan for the TRRP: Big Questions (what you don't know but want to learn), conceptual models, hypotheses, management actions, experimental design, monitoring, data analysis and synthesis plans.
- Build off existing foundational documents and the IAP. There is an enormous amount of raw material within the TRRP that can make the process of developing an agreed-upon AM Plan quicker and smoother than most programs that have to start from scratch.
- The AM Plan should be nested within goals and objectives of TRRP that emerge from the negotiation process of the Program Document. This is also the time for the TRRP to be explicit about what the program can control/influence and what it can't (Klamath River, ocean fisheries, harvest, etc.).
- **Key TRRP weaknesses addressed** Lack of AM Plan, need to identify and agree on key hypotheses and Big Questions, data synthesis, independent science review.
- Estimated time for completion Two (2) years (July 2019-June 2021); in parallel with Refinement Recommendation #2 above.

⁵⁹¹ **Process for Implementing Refinement Recommendations**

• The TRRP will need help to implement these refinement recommendations. We recommend facilitation for this process. A skilled facilitator will set meetings and develop agendas, run the meetings, write all TRRP documents, keep the group on task, and report back to high-level Signatories on progress. This will build independence and trust into the process, ensure the completion of tasks, and help the TRRP work through challenges. The TRRP should seek an independent facilitator through a competitive selection process.

598 *Estimated time for completion* – Four (4) months (September 2018-December 2018)

- The selected facilitator will establish the process of work, but it is expected that much of this work would occur through facilitated 1-3-day workshops off-site, possibly in Redding or Sacramento (or at least rotating between Eureka and Weaverville). While this approach will require a large time commitment and travel on the part of TRRP negotiators, it is tested way of getting important work done while building trust and commitment to success.
- This effort will largely be the work of the TRRP itself (Signatories and others that comprise the re-organized TMC). The approach will require TRRP participants to do homework between meetings and contribute a large majority of the content that will make up the TRRP Program Document and the AM Plan.
- Signatories and non-signatories would negotiate the organizational structure of the program, the decision-making process, program financial management, and other higher-level administrative features. Technical representatives would negotiate the AM Plan in parallel with that process with final approval by the TMC negotiators.
- During the next 2.5 years of negotiation and document development, the TRRP should continue to implement current ROD management actions and fund monitoring and other projects that are currently led by the Tribes.



1 4.0 Next Steps

Chad Smith of Headwaters will complete Task 7 of the TRRP Refinements work by remaining available for one year (through November 2019) to assist with oversight and implementation of the refinement recommendations. Smith will participate via conference call in the TRRP Refinements workshop on December 5, 2018 and will remain available to the TRRP and their independent facilitator to provide guidance and advice on implementing the refinement recommendations.



Appendix A: Tasks 1-2 Report – Review of Key TRRP Documents 1 (August 23, 2017) 2

3 Introduction 4

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Headwaters Corporation was contracted by the U.S. Bureau of Reclamation to complete the seven 6 tasks identified in the Trinity River Restoration Program Refinements Solicitation (#R17PS00533). As 7 8 described in the Solicitation, the scope of this work is to review the goals and mandates of the Trinity River Flow Evaluation Study (TRFE) and Record of Decision (ROD), identify refinements to Trinity River 9 Restoration Program (TRRP or Program) management and functions that will better serve those goals and 10 mandates, and assist the Department of the Interior (DOI) in implementing the refinements. Specific tasks 11 include: 12

- 13 Review of Key TRRP Documents Tasks 1-2 14 Task 3 **TRRP** Interviews 15 Task 4 Summarize Strengths/Weaknesses of TRRP Organizational Structure 16 Task 5 Present Strengths & Weaknesses Document to Coordination Team and Develop Actionable 17 **Recommendations for Program Refinements** 18 Task 6 Facilitate Discussion Among the Trinity Management Council (TMC), Trinity Adaptive 19 Management Working Group (TAMWG), and TRRP on Actionable Items/Power Point 20 Presentation/Final Report 21 Task 7 Remain Available to Assist with Oversight & Implementation of Recommendations 22
- 23

This report to the TRRP is the deliverable for Tasks 1-2 and summarizes our key findings. The 24 purpose of Tasks 1-2 was to evaluate TRRP foundational, formative, and assessment documents to identify 25 program goals and objectives, as well as key components and sub-components of both governance and 26 adaptive management in accordance with implementing our Adaptive Management Program Evaluation 27 Framework (AMPEF). The full AMPEF is described in detail in Appendix A. 28

Methodology 30

We developed a document review template to allow for consistent review and reporting of all TRRP 31 32 documents, and to capture key aspects for reporting back to the TRRP. An example of that review template is included as Appendix B. In total, eighteen (18) documents were reviewed (see Section 6.0) with an initial 33 focus on the three primary foundational documents: 34

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- 1999 Trinity River Flow Evaluation Study (TRFE) 36 ٠
- 2000 Trinity River Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) 37 •
- 2000 Record of Decision (ROD) 38

All documents were reviewed for language identifying TRRP goals and objectives. This review 40 was comprehensive, but also informed by our previous experience with the TRRP and our work with other 41 similar programs such as the Platte River Recovery Implementation Program (PRRIP). The documents 42 were also reviewed for the governance components (and associated sub-components) of Legitimacy, 43 Structure/Process, and the Decision-Making Process and the components (and associated sub-components) 44 that correspond to the six steps of adaptive management (AM) – Assess, Design, Implement, Monitor, 45 Evaluate, and Adjust. 46

This document review provided insight into the foundations of the TRRP and has helped to prepare 48 our team for detailed evaluation and discussions during our work on the remaining tasks. Document review 49 and reference will continue during the remainder of the tasks, particularly during Task 3 when we will pair 50



- information gathered so far and information gathered from in-depth interviews with TRRP decision-makersand participants.
- 54 Our philosophy in approaching review of a program like the TRRP is grounded in two main 55 principles:
- A focus on the question of "Why?" Why does this Program exist? This means ensuring that
 management actions, adaptive management, and other Program activities are directed at helping
 decision-makers actually make decisions ("need to know" not "nice to know") that move the Program
 toward achieving its goals and objectives.
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2) Determining if the Program is organized around negotiated and agreed-to goals and objectives.

Focusing on the "people issues" of governance, decision-making, and the composition of TRRP partners and affected resources can lead to a tangible set of questions and issues that best address the "Why?" question and will lead to a common of understanding of where the TRRP is headed (goals and objectives). Regarding adaptive management (AM), it is important for decision-makers to have a common understanding of an AM definition that best fits the purposes and goals of the Program. Application of AM at a large scale can only be effective when designed to help restoration programs with decision-making that leads to achieving goals and objectives.

To assist the TRRP with evaluting our initial assessments of goals and objectives and our scoping of critical components of governance and AM, the following icons and colors are used to visually summarize our basic findings. The icons and colors are intended to provided the TRRP with a quick and visual means to see where the Program stands and offer a simple tracking device as the Program moves forward. Categories include:



Purpose/goal/objective language present and clear and provides direction for the TRRP. Governance/AM components – key indicators present.



Purpose/goal/objective language unclear and needs to be revised by the TRRP. Governance/AM components – key indicators not clearly evident or in development.



Purpose/goal/objective language not present and needs to be developed by the TRRP. Governance/AM components – key indicators absent.

A Review Draft of this report was distributed to the Coordination Team for their review and
 comment. Appendix C is a table of those comments with responses from the Headwaters Corporation
 Team to each comment.



80 TRRP Goals and Objectives

It is imperative for large-scale recovery/restoration/adaptive management programs like the TRRP to provide a clear articulation of their purpose and overall goal. All decisions made by a program's decisionmaking body should relate back to satisfying this purpose and goal, and more detailed objectives, management actions, and the overall AM framework should generate information important for this decision-making. Failure to clearly identify these key program building blocks is an early indicator that a program may be drifting away from a central focus that can account for measures of progress and success.

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Our team used the following definitions to guide our review of TRRP documents:

91 <u>Purpose</u> – Descriptive statement of why the program exists and the context for program design and action.

93 <u>Goal</u> – A broad statement of desired outcomes that forms direction for the program and guides 94 implementation. This may be somewhat intangible, while underlying objectives are tangible and 95 measurable.

97 <u>Objectives</u> – The proposed means of achieving a goal. These disaggregate goals into a logical hierarchy 98 of desired attributes of the system.

Management Objectives – Even more specific and measurable statements of outcomes the program is trying
 to achieve that should facilitate evaluation of adaptive management effectiveness.

103 The TRRP may utilize different definitions when evaluating its own work, but for our purposes we 104 used the definitions above to help identify critical language. We reviewed TRRP documents for clear 105 statements of the Program's purpose, goals, and objectives. Where we did not discover clear statements of 106 these terms, we tried to identify language that could be categorized accordingly.

107

TRRP Purpose

We first reviewed TRRP documents to find language pointing to the highest-order purpose of the Program. In our experience, purpose language tends to be the plainest explanation of the negotiated context for the "Why?" question.⁸ It is expected that the purpose language would encompass the underlying resource issues (e.g. anadromous fish populations), compliance (e.g. Endangered Species Act [ESA]), use (e.g. flow releases and fisheries), and the legitimacy of the program itself (e.g. organizational structure).

108

Appendix C of the Final EIS/EIR, commonly referred to as the "Implementation Plan," states the 109 purpose of the TRRP is to "restore the basin's fish and wildlife populations to those that existed prior to 110 construction of the Trinity River Diversion (TRD) and to implement measures to restore fish and wildlife 111 habitat in the Trinity River." This language appears to be a derivation of the stated "Purpose and Need" 112 language (a requirement of the National Environmental Policy Act process) in the Implementation Plan 113 which is to "restore and maintain the natural production of anadromous fish on the Trinity River below the 114 mainstem downstream of Lewiston Dam." The purpose language clearly captures the underlying resource 115 issue, namely concern about fish populations, and touches on use issues ("implement measures"). There is 116 no language regarding ESA or other compliance, and the purpose statement does not mention any kind of 117 collaborative approach or organizational structure on which to build the TRRP and implement the plan. 118 This language also does not specifically capture the legally-mandated requirement to uphold the federal 119 government's tribal trust obligations regarding Trinity River fisheries. 120

⁸ For example, a clear statement of purpose can be found on Page 1 of the Final Program Document for the Platte River Recovery Implementation Program (PRRIP) and bounds the entire set of goals, objectives, and management objectives that follow.



With the TRFE and the ROD generally silent on broad purpose language, the language from the 121 EIS/EIR is the most direct for a TRRP purpose statement. Because the statement does not include all the 122 expected components of a strong purpose statement, some discussion and editing among TRRP decision-123 makers is recommended to strengthen and broaden the language so it matches the intended direction of the 124 TRRP. However, as discussed below, this same language is also identified as the long-term goal of the 125 126 Program so work is recommended to clarify differences between the overall purpose of the Program and desired outcomes. 127

128

TRRP Goal

Our review of documents next focused on identifying goal language that directly relates to broad outcomes for the TRRP. It is expected that goal language would necessarily be more specific than purpose language and focused on achieving some result related to anadromous fisheries, habitat, and/or Trinity River function.

129

The three primary foundational documents provide mixed guidance on a clear statement of the 130 overall Program goal. The TRFE concludes that "a modified flow regime, a reconfigured channel, and 131 strategy for sediment management are necessary to have a functioning alluvial river that will provide the 132 diverse habitat required to restore and maintain the fishery resources of the Trinity River." This could be 133 construed as goal language that captures outcomes related both to fisheries and to river form/function. The 134 TRFE is largely a technical report with recommendations that are more accurately described as objectives 135 (see below). Additional references to Program goals in the TRFE circle back to the relevant Congressional 136 legislation. 137

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The Executive Summary of the Final EIS/EIR includes specific salmonid population numbers as 139 "goals" for the TRRP. Those numbers are included in Table ES-2 which is reproduced below: 140

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TABLE ES-2 Trinity River Restoration Program Goals and Recent Escapement Estimates						
Population Inriver Goals Recent Escapements as Percentage of Goals Hatchery Goals Total Goals						
Fall Chinook	62,000	20%	9,000	71,000		
Spring Chinook	6,000	40%	3,000	9,000		
Coho	1,400	14%	2,100	3,500		
Winter Steelhead	40,000	5%	10,000	50,000		

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This table is not referenced later in Appendix C of the EIS/EIR (the Implementation Plan) or in the 143 ROD so it is unclear whether these numbers remain a firm part of an overall Program goal, whether they 144 are population targets used as metrics of Program progress, or whether they are used at all in Program 145 decision-making. 146

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The Implementation Plan refers to the "restoration goal"⁹ as stated in the 1984 Trinity River Basin 148 Fish and Wildlife Management Act and expanded in the 1996 re-authorization - "to restore the basin's fish 149 and wildlife populations to those that existed prior to construction of the TRD and implement measures to 150 restore fish and wildlife habitat in the Trinity River, as measured by returning adult anadromous fish 151 spawners and the ability of dependent tribal, commercial, and sport fishers to enjoy the benefits of 152 restoration through a harvestable fishery resource." There is also brief mention of this language in the 153 TRFE as the long-term goal of the TRRP. 154

⁹ The term "restoration goal" is also used as part of the settlement that established the San Joaquin River Restoration Program and prescribed flows from Friant Dam.



The ROD refers to the "ultimate goal" of the TRRP being "restoring the fishery resources of the 155 Trinity River." There is also reference to the "restoration goal" as being implementation of the preferred 156 alternative from the Implementation Plan as detailed in the Implementation Plan. The ROD then directs 157 DOI agencies to implement the preferred alternative because it "best meets the statutory and trust (Hoopa 158 Valley and Yurok tribes) obligations of the Department to restore and maintain the Trinity River's 159 anadromous fishery resources, based on the best available scientific information, while also continuing to 160 provide water supplies for beneficial uses and power generation as a function of Reclamation's Central 161 Vallev Project (CVP)." 162

The 2009 Integrated Assessment Plan (IAP) includes a draft Program goal statement that was used to guide development of the IAP but was never adopted by the TMC as the official Program goal:

"The goal of the Program is to restore and sustain natural production of anadromous fish populations
downstream of Lewiston Dam to pre-dam levels, to facilitate dependent tribal, commercial, and sport
fisheries' full participation in the benefits of restoration via enhanced harvest opportunities. The Program
strategy for accomplishing this goal restores and perpetually maintains fish and wildlife resources
(including threatened and endangered species) by restoring the processes that produce a healthy alluvial
river ecosystem. The above restoration strategy will be achieved by implementing management actions in
a science-based adaptive management program."

This goal statement has been used as recently as 2017 as part of the TRRP Science Budget Briefing documents assembled for the July 27, 2017 TMC meeting. Interestingly, the IAP includes the following explanatory language:

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"The first sentence of the goal statement focuses on fish, and incorporates the language of fishery goals 179 from such foundational documents as the Trinity River Basin Fish and Wildlife Management Act (1984) 180 amended in 1996, Central Valley Project Improvement Act (1992), and the ROD. The second sentence of 181 the goal mentions both fish and wildlife, and very briefly describes the restoration strategy. Threatened and 182 endangered species are mentioned to ensure compliance with the Endangered Species Act. The words on 183 the restoration strategy (i.e., "restoring the processes that produce a healthy alluvial river ecosystem") are 184 meant to concisely reflect the intent of the TRFE and ROD. The third sentence of the goal statement reflects 185 the commitment in the ROD, TRFE, and Implementation Plan to a science-based, adaptive environmental 186 assessment and management program." 187 188

This explanatory language mirrors our description above of what strong Program purpose language 189 should include. Given that this is largely the language of the purpose statement in the Implementation Plan, 190 there is a mixing of purpose and goal language in the TRRP foundational documents. In most cases, 191 language identified as a "goal" for the TRRP is more accurately defined as a purpose statement for the 192 Program. The IAP "goal statement" quoted above is best identified as a more complete statement of the 193 TRRP purpose. Frequent references to restoring Trinity River fisheries appears in most forms of both 194 purpose and goal statements in various documents - the ROD identifies this as the Program's ultimate goal 195 and the EIS/EIR identifies specific fish population numbers as goals. So, is the goal to "restore Trinity 196 River fisheries"? Is it to "restore and sustain natural production of five anadromous fish populations 197 downstream of Lewiston Dam to pre-dam levels"? Is it to "restore the processes that produce a healthy 198 alluvial river ecosystem"? Is it just to hit the fish population numbers identified in Table ES-2 of EIS/EIR? 199 This lack of clarity is likely a tripping point for the Program and certainly is a driver of the what the 2008 200 CDR Situation Assessment identified as "fundamental disagreement" over the goal of the TRRP. We note 201 this as an early and critical red flag and recommend this be addressed by the TRRP. 202



TRRP Objectives

Our review of documents next focused on identifying specific and measurable objectives and detailed management objectives for the TRRP. At this stage, language should provide quantitative guidance and metrics for reporting progress toward achieving the Program's goal and evaluating the effectiveness of AM actions.

The foundational documents and other important TRRP documents do provide information that could be construed as guidance for set of higher-order objectives related to more specific management objectives (see below). We initially identified three "objectives":

206 <u>Annual Flow Regime</u>

The ROD includes a total volume of water released annually from the Trinity River Division (TRD) ranging from 369,000-815,000 acre-feet. That annual volume is further specified in the ROD based on water-year class as described in Table 1 (reproduced below):

ROD TABLE 1 Annual Flow Volumes	S		
Water-Year Class	Volume (acre-feet)	Peak Flow (cfs)	Peak Flow Duration (days)
Critically Dry	369,000	1,500	36
Dry	453,000	4,500	5
Normal	647,000	6,000	5
Wet	701,000	8,500	5
Extremely Wet	815,000	11,000	5

These annual flow volumes are based on TRFE recommendations and are included in the Implementation Plan, which also provides guidance on Trinity River temperature objectives and ramping rate criteria for Lewiston Dam. The ROD states that the daily release schedule "may be adjusted" according to annual hydrology but the annual flow volumes specified above "may not be changed."

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215 <u>Mechanical Channel Rehabilitation</u>

The ROD and Implementation Plan identify channel rehabilitation at 44 project sites and sidechannel rehabilitation at three project sites.

219 Sediment Management

As with the flow objective, the ROD includes a range of coarse sediment introductions from 0-67,000 cubic yards annually. That annual volume is further specified in the ROD based on water-year class as described in Table 2 (reproduced below):

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ROD TABLE 2 Annual Coarse Sediment Introduction				
Water-Year Class	Volume (yd ³ /year)			
Critically Dry	0			
Dry	150-250			
Normal	1,800-2,200			
Wet	10,000-18,000			
Extremely Wet	31,000-67,000			

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The Implementation Plan further refines the Table 2 ranges by estimating a specific volume of annual coarse sediment augmentation for each water-year class. A footnote to Table 5 in the Implementation Plan (which provides the specific estimated annual volumes) states: *"The AEAM process will monitor and test these hypotheses and recommend augmentation volumes on an annual basis based upon the results of previous years augmentation and monitoring."* This suggests the recommend volumes are to be seen more

as hypotheses rather than actual Program objectives.



While these appear to be a starting point for Program objectives, the language is treated differently in and between TRRP documents. The TRFE identifies annual water volumes and flow recommendations, channel rehabilitation, and sediment management as "management actions" that are part of an overall management strategy. Similarly, the IAP refers to this same set of items as "management actions."

Regarding more specific management objectives, TRRP documents appear to provide ample guidance on specific management objectives that can lead into development and implementation of an AM Plan. In some cases, those management objectives are explicit and can simply be organized and renamed specifically as TRRP management objectives. In other cases, the language may not be presented as a management objective but metrics are provided that could be re-worded as a measurable objective for Program management actions.

The TRFE includes a set of what can best be described as management objectives. For example, the flow-related management objectives specified in the TRFE are:

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- 246 1) Releases to provide suitable salmonid spawning and rearing habitat,
- 247 2) Releases to mimic the spring snowmelt hydrograph (the high flow in the spring resulting from the
 248 melting snowpack and the gradual decrease in flow following the peak) to satisfy flow-related
 249 geomorphic and riparian vegetation objectives necessary for the creation and maintenance of diverse
 250 salmonid habitats and assist smolt outmigration, and
- *Releases to meet appropriate water-temperature objectives for holding/spawning adult salmonids and outmigrating salmonid smolts.*
- The IAP recommends a set of six "primary objectives" that can best be identified as management objectives for the Program. These objectives include:
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- 257 1) Create and maintain spatially complex channel morphology.
- 2) Increase/improve habitats for freshwater life stages of anadromous fish to the extent necessary to meet
 or exceed productions goals.
- *3) Restore and maintain natural production of anadromous fish populations.*
- 4) Restore and sustain natural production of anadromous fish populations downstream of Lewiston Dam
 to pre-dam levels, to facilitate dependent tribal, commercial, and sport fisheries' full participation in
 the benefits of restoration via enhanced harvest opportunities.
- 264 5) Establish and maintain riparian vegetation that supports fish and wildlife.
- 6) Rehabilitate and protect wildlife habitat and maintain or enhance wildlife populations following implementation.
 - While all this language is instructive in terms of TRRP objectives, there are some outstanding issues:
- 1) Are these truly objectives to be achieved over a certain time, or are they mandates that must be met in 270 perpetuity? Though the flow and sediment objectives are initially presented as a range, that range is 271 then followed by specific volumes according to multiple water-year classes. That suggests volumes 272 mandated by conclusions from the TRFE that must be adhered to in terms of implementation, as 273 opposed to negotiated volumes that the Program will attempt to meet over a negotiated period of time. 274 Dam releases and sediment augmentation are variably referred to in the foundational documents as 275 "components," "elements," and "management actions." That suggests these items may exist more as 276 mandated management actions rather than negotiated TRRP objectives. 277
- 279 2) How, or if, these objectives are linked to negotiated, numerical goals for anadromous fish populations
 (i.e. Table ES-2 from the EIS/EIR included above) is not entirely clear.



- 3) The path from Program objectives to hypotheses in an Adaptive Management Plan for the TRRP is not
 clear. With at least one foundational document referring to objective numbers as "hypotheses" and with
 the specificity of annual volumes, it is unclear how much flexibility exists within the objectives of the
 Program to implement true adaptive management.
- Establishing higher-order but specific objectives is an important step to ensure that management actions and associated TRRP science learning can be communicated back to decision-makers and effectively linked to the TRRP goal. We recommend some attention be paid by the Program to ensure language related to Program objectives is clear and linked back to the overall goal. While management objective language can be found in several TRRP documents, multiple sets of management objectives need to be unified and tightly linked not only to TRRP goals and objectives but also uncertainties, hypotheses, and other aspects of the as-yet-to-be developed TRRP AM Plan.



293 Key Findings

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Based on our review of TRRP documents, these are our primary initial findings regarding the status of goal and objective language in the TRRP. Interestingly, each of these issues came up as a challenge to forward progress within the Program during the July 27, 2017 TMC Budget Meeting. Our review and understanding of Program goals and objectives will continue during subsequent tasks so these initial findings may adjust as we continue the TRRP Refinements work.

- 1) Existence Why does the TRRP exist? This is an existential question that requires some attention. Does 301 the TRRP exist merely to implement the technical flow recommendations (and other management 302 actions) specified in the TRFE and mandated by legislation, the Implementation Plan, and the ROD? If 303 so, opportunities for AM may be limited as may the ability of the TRRP to operate as a truly 304 collaborative program with inclusive decision-making. Or, does the TRRP exist to implement a 305 negotiated set of goals, objectives, and actions as a collaborative program, and as a program 306 implementing a true AM Plan? Are the specifics such as annual flow and sediment volumes flexible 307 enough to accommodate implementation of AM? We are not clear on the answers to these questions, 308 but those answers will drive what steps the TRRP takes to address the issues identified with the presence 309 and clarity of statements of Program purpose, goals, and objectives. 310
- 2) Document cascade Current statements of goals and objectives are disaggregated into multiple
 foundational documents and related supporting documents. In some cases, that language is either absent
 or unclear. To move forward, the Program needs a single foundational document that pulls this
 information and guidance together with clarity and that represents a negotiated way forward.
- 3) Negotiation The statements of goals and objectives are not currently negotiated by TRRP decision-317 makers and partners. Objectives and management actions have been prescribed through Congressional 318 action, the TRFE, the Implementation Plan, and the ROD. These documents are not clearly unified. 319 Based on our experience, we would expect a single, negotiated Final Program Document that provides 320 all the structure and function for the Program and that is cross-linked as the true Preferred Alternative 321 322 in the EIS/EIR and ROD. The "Implementation Plan" would be part of the Final Program Document, not an Appendix in the EIS/EIR. This step will require substantial work by and trust on the part of the 323 TMC to fix but would put the TRRP on more solid footing in terms of vision, direction, and action. 324
- 4) "Science pile" The TRRP is bounded by mandated science documents. Ideally, science should be applied through AM but implemented within the negotiated context of the Program. Science is just one input to decision-making and should not be determinative to the entire Program. Applying science without clear goals/objectives or a clear collaborative structure means building a "science pile" a Program will conduct good science and collect substantial data, but why? What do you do with it? Why/how does it matter to decision-makers? This appears to be a fundamental challenge with the TRRP based on our work so far. We will explore this more during the interviews in Task 3.
- 5) The TRRP should be empowered to negotiate and settle on these key components:

335 336 <u>WHY</u>

- 337 \rightarrow Purpose
- $338 \qquad \rightarrow \text{ Long-term goal}$
- \rightarrow Long-term and time-specified objectives

341 <u>HOW</u>



344 → Implementation framework (AM Plan, management objectives, management strategies)
 345

346 <u>WHAT</u>

 $347 \rightarrow$ Management actions



348 **TRRP Governance and Adaptive Management**

Tasks 1-2 also served as part of the initial scoping step for implementing our Adaptive Management 350 Program Evaluation Framework (AMPEF; see Appendix A). Scoping is focused on key governance 351 components and sub-components that appear to be critical. The initial set of components/sub-components 352 expected to be of particular relevance for the TRRP are based on a literature review of governance analyses, 353 legislative and implementation reviews of several large adaptive management plans across the U.S., 354 discussions with governance and adaptive management experts from many of these programs, and from 355 personal experience implementing adaptive management for the PRRIP and working on adaptive 356 management and governance issues in the Middle Rio Grande, Everglades, and other systems. 357

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The information below is our initial rapid qualitative assessment of key governance and AM components of the TRRP based so far only on our review of TRRP documents and our general understanding of the Program. This is just our initial insight and represents introductory thinking about the health of these components and their possible relationship to TRRP success or failure. This early thinking will be paired with information from the TRRP interviews in Task 3 to achieve a deeper understanding.

365 Governance Components

The discussion and tables below describe three governance components and their sub-components that regularly stand out as imperative in matching "good governance" with adaptive management in programs like the TRRP. Key sub-components and indicators are also identified that would be expected for the TRRP to be successful in establishing and maintaining a functioning governance structure. Refinements will occur during implementation of the AMPEF in the TRRP through document review, subsequent interviews, and overall evaluation of the Program.

373 Legitimacy

This component means a Program is accountable and enabled with decision responsibility. As implementation occurs and decisions are made, the Program is responsive to constituencies both above and below the level of the decision-making body (e.g. both elected or appointed officials and stakeholders).

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Governance Component	Sub-Components	Key Indicators – Initial Insight
Legitimacy	 Accountability Responsiveness to constituencies 	 The TRRP is legitimate as directed by legislation and related statutory authority, as noted in the Implementation Plan – <i>"the proposed action is supported by legislative, executive, and judicial authorities and decisions."</i> Authorizing legislation and a set of foundational documents provide guidance for the development and implementation of the TRRP. The life-cycle of the TRRP is not clearly specified, but annual appropriations have kept the Program moving forward. There is a mix of goal and objective language in the foundational documents. Clarification, revision, and specification is required, but the raw materials are present.

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379 Structure/Capacity

This component refers to a polycentric organizational structure with a centralized decision-making 380 body but with explicit support from advisory committees and appropriate levels of authority. There is clear 381 coordination among governance levels within the Program (e.g. coordination and communication between 382 the decision-making body and supporting advisory committees). The scale of the Program represents 383 manageable geography on the ground but is also tied to relevance of key decision-makers. Ideally, 384 stakeholders are directly involved in decision-making. Overall, there is clear and regular communication 385 among and between decision-makers, technical personnel, Program staff, and independent science advisors. 386 387 Technical capacity is present and adequate within the Program to deliver information useful to decisionmakers. 388



Governance Component	Sub-Components	Key Indicators – Initial Insight
Structure/Capacity	 Polycentric Coordination Scale (geography) Scale (time) Stakeholders involved in decision-making Communication Technical capacity 	 The decision-making body should be the TMC but there is some language in documents that suggests decision-making by both the TMC and the Executive Director. The TMC is inclusive of key tribal, federal, state, and local agencies, but does not engage other stakeholders directly in decision-making. The geographic scale of the TRRP is relevant and manageable. The time scale of the TRRP is not specified. The TRRP has technical staff capacity related to the most relevant data needs for decision-making. There appears to be regular communication within the TRRP and among decision-making entities but that communication does not appear to always be effective. Communication between the TMC and the TAMWG and other advisory committees needs work. This is a significant issue for the TRRP. The Program does maintain a web site with current and historic information.

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Decision-Making Process

This component refers to shared decision-making among management agencies and stakeholders with a fair and transparent process for making decisions by consensus. Decisions should be tied to the processes described in the foundational document and linked to Program goals and objectives. There is a means for resolving disputes and decisions that do not reach consensus. The Program can respond to change and surprise (uncertainty) and incorporate learning into decision-making.

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Governance Component	Sub-Components	Key Indicators – Initial Insight
Decision-Making Process	 Shared decision-making Fair and transparent Consensus Decisions linked to goals/objectives Dispute resolution Adapt to surprises Ability to incorporate learning into decision- making 	 Decision-making is not shared, at least not inclusive of some level of stakeholders beyond agencies. It is not clear how or if the TMC works to achieve consensus with all decisions. With a lack of clarity on goals and objectives and without an AM Plan, it is not clear how science is moved out of the "science pile" and into decision-making. This also relates to uncertainty about how the TRRP responds to science learning and surprises in the response of anadromous fisheries and the form/function of the Trinity River to management actions.

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Adaptive Management (AM) Components

The second category of evaluation in this step is built around the structure of AM itself. This 399 scoping step centers on a hybrid approach of evaluating AM against implementation of each of the six key 400 steps. The discussion and tables below describe the six steps or components of AM that, if present, are 401 considered to constitute successful AM. Key sub-components and indicators are also identified that would 402 be expected for the TRRP to be successful in implementing a full cycle of AM through the 'Adjust' 403 component with a clear indication of the learning from AM being utilized in the decision-making process. 404 As with the governance components, refinements will occur during implementation of the AMPEF in the 405 TRRP through document review, subsequent interviews, and overall evaluation of the Program. 406

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General Observation

The TRFE, Implementation Plan, and ROD all call for development of an AEAM Program, or AM Program. While documents like the IAP contain some of the important details that are necessary to build a true AM Plan, the TRRP does not appear to be operating under or implementing a negotiated and agreed-to AM Plan. With no Program AM Plan, there is no agreed-to definition of AM for the Program that is written down in a TRRP foundational or guidance document. All of this means the TRRP is being challenged by a lack of direction in its science program and decision-making is most likely disconnected from data that is being collected. This challenge is exacerbated by ambiguity in Program goals and objectives. The Implementation Plan does provide an example set of hypotheses and objectives for



implementing peak flows during an Extremely Wet Year. The IAP builds on this kind of detail for a series of Program hypotheses, management objectives, and management actions. However, it is not clear what the standing of the IAP is within the Program, whether it has been officially adopted, and how it relates to the TRRP foundational documents. Ideally, this kind of detail would be wrapped up within a TRRP AM Plan. We note the lack of an AM Plan and a definition of AM as critical red flags for the TRRP that we recommend addressing.

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409 Assess

This component addresses problem definition and agreement. Decisions will be affected by science information so a roadmap of goals, objectives, hypotheses, and actions is established accordingly. There is a collaborative process for agreement and decisions. This component represents the building blocks of AM.

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AM Component	9,	Sub-Components	Key Indicators – Initial Insight
Assess		Problem definition and agreement Roadmap of goals, objectives, hypotheses Decisions affected by information Collaborative process to develop this information	 Goals and objectives not clear. No AM Plan, Program definition of AM not agreed to and written down. Critical uncertainties (what don't we know but want to learn) and Conceptual Ecological Models (CEM) and/or conceptual management models can be found in documents like the IAP but are not finalized and agreed-to by the TMC/TRRP. Similar for other AM specifics (alternative management actions, indicators/triggers, spatial and temporal bounds, assumptions). No clear indication of how what is learned will be used for decisions. Largely technical information mandated from top-down or only science teams, not developed and negotiated collaboratively.

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415 Design

This component addresses explicit management objectives, management actions, and monitoring/research protocols designed to deliver information relative to priority hypotheses and questions from decision-makers.

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AM Component	Sub-Components		Key Indicators – Initial Insight
Design	Management objectives Management actions Monitoring/research protocols tailored to hypotheses and key questions from decision-makers	•	Active or passive AM? – driven by the overall structure of the TRRP and whether the Program is going to just implement mandated actions or operate as a collaborative program with an AM Plan that includes alternative management actions. Lack of clarity about measurable objectives/management actions. Modeling, monitoring, and data management plans may be present but are not tied to a TRRP AM Plan (it does not exist). TRRP time scale and budget processes seem to focus just on annual appropriations without a long-term plan.

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Implement

This component represents the machinery of AM on the ground. The program has a clear process for implementation of management actions and monitoring (implementation, effectiveness, and validation) with project oversight.

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AM Component	Sub-Components	Key Indicators – Initial Insight
Implement	 Plan for implementation of management actions and monitoring Project oversight 	 Management action and monitoring are being implemented, just not according to an AM Plan. TRRP staff retain project oversight.



427 Monitor

This component means the Program is conducting the monitoring (implementation, effectiveness, validation) and research necessary to provide data most responsive to answer AM hypotheses and decisionmaker questions.

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AM Component	Ş	Sub-Components	Key Indicators – Initial Insight
Monitor		Effectiveness monitoring Validation monitoring Plan for analysis of monitoring data	 Monitoring is being implemented, just not according to an AM Plan. No document has been developed or agreed-to by the TMC/TRRP that guides all levels of monitoring and that contains regularly-updated protocols.

⁴³²

433 Evaluate

This component represents a critical element – this is the path from data collection to management decision-making. Clear statements of what was learned and what it means for Program goals, objectives, hypotheses, and decision-making.

436 437

AM Component	Sub-Components	Key Indicators – Initial Insight
Evaluate	 Data analysis Data synthesis Telling the "story" of AM Independent science review Reporting 	 The TRRP has conducted a good amount of data analysis to date, but no true synthesis; discussions about synthesis are underway, but without a clear direction in terms of goals/objectives and an AM Plan it is hard to see how synthesis documents can be developed. The SAB provides some independent science review. Not clear what the current mission and focus of the SAB is and what regular reporting and communication to the TMC occurs. Discussions ongoing about annual review of Program materials, but not sure to what end.

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Adjust

This component represents the final step of AM. Clear management decisions are made, with AM results used to help guide those decisions.

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AM Component	w)	Sub-Components	Key Indicators – Initial Insight
Adjust		Clear management decisions are made AM results used in decision-making Communication to decision-makers Documentation of decision-making results	 This component is in limbo unless and until an AM Plan is developed and process is determined for synthesizing Program data, communicating it to the TMC, and having the TMC make decisions with this information as an input.



444 **Next Steps**

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Our team will now move to Task 3 of the TRRP Refinements work and conduct interviews with
the TMC and many other Program participants and partners to expand our knowledge about the Program,
its foundations, and components of governance and AM in the TRRP. Knowledge gained thus far will allow
us to refine the set of questions to be used in the interviews so we are sure to touch on aspects of the TRRP
that most need to be evaluated.

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Items identified as red flags or areas of concern in this report will be discussed as part of the interview process and will remain as priorities to investigate and address during completion of the remaining tasks. Our expectation is that these items will remain on our list of possible recommended refinements and will not be directly addressed by the TRRP until the end of the first year of our TRRP Refinement work.


457 458	TRRP Documents Reviewed (presented in order of review)
459 460 461	U.S. Fish and Wildlife Service and Hoopa Valley Tribe. 1999. Trinity River Flow Evaluation – Final Report. U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, CA.
462 463 464	U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 2000. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report.
465 466 467	U.S. Department of the Interior. 2000. Record of Decision, Trinity River Mainstem Fishery Restoration, Final Environmental Impact Statement/Environmental Impact Report.
468 469 470	U.S. Fish and Wildlife Service. 1994. The Native American Policy of the U.S. Fish and Wildlife Service.
471 472	U.S. Fish and Wildlife Service. 2016. Native American Policy.
473 474 475	President William J. Clinton. 2000. Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments. The White House.
475 476 477	U.S. Department of the Interior. 2014. Department of the Interior Order 3335: Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries.
478 479 480 481 482 482	Trinity River Restoration Science Advisory Board, Anchor QEA, LLC, Stillwater Sciences, BioAnalysts, Inc., and Hinrichsen Environmental Services. 2014. Review of the Trinity River Restoration Program Following Phase 1, with Emphasis on the Program's Channel Rehabilitation Strategy. Prepared for the Trinity River Restoration Program, Weaverville, CA.
483 484 485	CDR Associates. 2008. Trinity River Restoration Program Situation Assessment. Prepared for the Trinity River Restoration Program, Weaverville, CA.
486 487 488	Trinity Management Council Subcommittee. 2004. Final Report. Trinity River Restoration Program Evaluation Final Report. Prepared for the Trinity River Restoration Program, Weaverville, CA.
489 490 491	U.S. Fish and Wildlife Service and U.S. Bureau of Reclamation. 2009. Description of Organizational and Functional Refinements – Trinity River Restoration Program.
492 493 404	Trinity Management Council. 2010. Draft Letter to the Trinity Adaptive Management Working Group.
494 495 496	Trinity Adaptive Management Working Group. 2017. Letter to the Trinity Management Council.
497 498	Trinity Adaptive Management Working Group. 2017. Action Tracker.
499 500	Trinity Management Council. 52 Issues Grouped.
501 502	Trinity River Restoration Program. 2015 and 2013. Annual Reports.
503 504	Trinity River Restoration Program. 2009. Conceptual Models and Hypotheses for the Trinity River Restoration Program. Prepared for the Trinity River Restoration Program, Weaverville, CA.
505 506 507	Trinity River Restoration Program and ESSA Technologies Ltd. 2009. Integrated Assessment Plan. Prepared for the Trinity River Restoration Program, Weaverville, CA.



Appendix A – Adaptive Management Program Evaluation Framework 1

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Appendix A describes in detail the Adaptive Management Program Evaluation Framework (AMPEF) that 3 will be utilized by Headwaters Corporation in completing the TRRP Refinements tasks. This robust 4 framework was developed by Chad Smith as part of his in-progress PhD dissertation at the University of 5 Nebraska-Lincoln. The five-step framework was created to serve as a repeatable tool for programs like the 6 TRRP, PRRIP, and other large-scale restoration programs utilizing adaptive management to assess 7 components/sub-components of governance and adaptive management and point to recommendations for 8 refinement to help those programs move forward in achieving their goals and objectives. In regard to the 9 PWS described in this Solicitation and as noted in Section 5.0 (Factor C – Proposed Technical Approach) 10 of this Proposal, specific survey questions and implementation/evaluation methods associated with the 11 framework will be tailored to meet the needs of the TRRP and best address key areas for refinement. 12

13

Background 14

The evaluation framework arose out of experience with the PRRIP, TRRP, and other large-scale restoration 15 programs around the country working through challenges related to successful implementation of adaptive 16 management and achievement of goals and objectives. In addition, while adaptive mangement is ubiquitous 17 in most large restoration programs as the management framework of choice, few, if any, examples of 18 successful adaptive management at a large scale exist. Given the amount of federal money spent annually 19 on large restoration programs and the promise of adaptive management, it is curious that examples of 20 success are in short supply. There has been a good deal of recent scholarship on governance and its 21 components and separately on adaptive management but no examples of assessment frameworks that 22 capture the linkages between governance structure/function and adaptive management. The evaluation 23 24 framework is presented as a practical tool to assess the governance structure and operation of a large-scale program, as well as the structure and operation of adaptive management within the program. 25

26

27 The underpinnings of the evaluation framework draw heavily from both recent scholarship on governance analysis and more formal risk analysis. Strong links between governance structure and adaptive 28 management point to the overlap between organizational processes and risk management (Loftin, 2014). 29 For any risk management project, risk analysis is a first step in evaluating threats and helping decision-30 makers prioritize and make more informed choices (Dale et al., 2013). In an adaptive management program, 31 this approach is important in helping determine what it means to sufficiently resolve an uncertainty (Loftin, 32 2014). This raises the concepts of the probability of failure and the consequences of that failure for the 33 program (Loftin, 2014). As Dale et al. (2013) describe, these are critical concepts in conducting a risk 34 analysis and need specific definition: 35

- 36
- Likelihood The idea that something is likely to happen or have happened. A failure of governance or 37 adaptive management with a low likelihood of occurring would present a low risk to a manager or 38 decision-maker. 39
- Consequence The importance of a result of something that occurred earlier. A governance or adaptive 40 • management component with a high likelihood of failure could have substantial negative consequences 41 on the overall success of a program. 42
- 43

Using likelihood and consequence provides an analytical tool for assessing the health of important 44 governance and adaptive management components and suggest a means for at least initial insight into the 45 potential for program success and recommendations to avoid program failure. Dale et al. (2013) developed 46

- a matrix for assigning likelihood and consequence ratings to governance domains in the Great Barrier Reef. 47
- That matrix and the related process have been adapted for use in this evaluation tool to provide a specific 48
- risk analysis of important components/subcomponents of governance and adaptive management and begin 49



to shed light on the relationship between "good governance," implementation of adaptive management, and
 ultimately success of large-scale programs.

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Conducting this kind of analysis and responding with changes is not common in large-scale adaptive 53 management programs (Loftin, 2014). However, given that adaptive management is largely an exercise in 54 embracing uncertainty it seems logical that risk management and associated risk analysis hold promise as 55 investigative tools for the prospects of ensuring adaptive management success. Loftin (2014) notes that 56 adaptive management can only be successful "if applied under and supported by a governance structure 57 that understands AM". This evaluation framework is an attempt to provide decision-makers and managers 58 in existing or proposed large-scale programs with a tool to explore that governance-AM relationship in their 59 own programs. 60

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62 Framework Process

63 The AMPEF is structured around five steps:

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65 <u>Step 1 – Key components and sub-components of governance and adaptive management</u>

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This is a scoping step focused on key governance components and sub-components that appear to be critical. 67 The initial set of components/sub-components expected to be of particular relevance for the TRRP are based 68 on a literature review of governance analyses, legislative and implementation reviews of several large 69 adaptive management plans across the U.S., discussions with governance and adaptive management experts 70 71 from many of these programs, and from personal experience implementing adaptive management for the PRRIP and working on adaptive management and governance issues in the Trinity River, Middle Rio 72 Grande, Everglades, and other systems. Table 1 describes three governance components and their sub-73 components that regularly stand out as imperative in matching "good governance" with adaptive 74 management. Key indicators are also identified that would be expected in the TRRP or any adaptive 75 management program to be successful in establishing and maintaining a functioning governance structure. 76 Refinements will occur during implementation of the AMPEF in the TRRP through document review and 77 subsequent interviews. 78



79 **Table 1.** Governance components and relevant indicators.

80

Governance Component	Definition	Sub-Components	Key Indicators
Legitimacy	Accountable and enabled with decision responsibility; responsive to constituencies above and below	 Accountability Responsiveness to constituencies 	 Negotiated or legislated context for decision-making; foundational (program) document or some other kind of legislative authority Authority for program and management actions extends for a minimum of 5-7 years with options for extension Stable source of funding tied to program goals and objectives
Structure/Capacity	Polycentric structure with centralized decision-making body but with explicit support from committees and levels of authority; clear coordination among governance levels; scale of program represents manageable geography on the ground but also tied to relevance of key decision- makers; stakeholders directly involved in decision-making; clear and regular communication; technical capacity within program to deliver information useful to decision-makers	 Polycentric Coordination Scale (geography) Scale (time) Stakeholders involved in decision-making Communication Technical capacity 	 Decision-making body described in foundational document that includes stakeholders making decisions All program information is public and available electronically via a central database and web site Geographic scale clearly defined Program scale can result in measured benefits for species or resources in question Program scale includes all relevant parties to decision- making Constant and consistent communication within the program, with authorities, and with the public Interdisciplinary committees/teams
Decision-making Process	Shared decision-making; fair and transparent process for making decisions by consensus; decisions tied to process described in foundational document and linked to program goals and objectives; means for resolving disputes and decisions that do not reach consensus; ability to respond to change and surprise (uncertainty) and to incorporate learning into decision-making	 Shared decision-making Fair and transparent Consensus Decisions linked to goals/objectives Dispute resolution Adapt to surprises Ability to incorporate learning into decision- making 	 Program goals and objectives clearly spelled out in foundational document and agreed upon by all parties; understanding of methods for measuring these and reporting progress Decision-makers agree on and understand questions to be addressed Group votes recorded, record of consensus and/or successfully dealing with issues that do not result in consensus Means for adjusting management based on program

81

The second category of evaluation in this step is built around the structure of AM itself. This scoping step 82 83 centers on a hybrid approach of evaluating AM against implementation of each of the six key steps and then later categorizing a program's AM progress against a proposed ideal typology. Table 2 describes the 84 six steps or components of AM that, if present, are considered to constitute successful AM. Key indicators 85 are also identified that would be expected in the TRRP or any adaptive management program to be 86 successful in implementing a full cycle of AM through the 'Adjust' component with a clear indication of 87 the learning from AM being utilized in the decision-making process. These indicators are adapted from 88 Murray et al. (2011). As with the governance components, refinements will occur during implementation 89 of the AMPEF in the TRRP through document review and interviews. 90



learning

makers

Clear communication of useful technical information to decision-

91 **Table 2.** Adaptive management components and relevant indicators.

92

nition and decisions will be nformation so a goals, and ypotheses is accordingly; process for t and agreement; e building blocks of		Problem definition and agreement Roadmap of goals, objectives, hypotheses Decisions affected by information Collaborative process to develop this information	 Agreed-upon goals and c Definition of AM written c Identify critical uncertaint don't we know but want t Conceptual Ecological M (CEM) and/or conceptual management models Alternative management Identify indicators/triggers and temporal bounds State assumptions Clear indication of how w learned will be used for d Collaborative process to this information, not man- top-down or only science 	bbjectives down ties – what o learn? odels I actions s, spatial /hat is lecisions develop dated from teams
agement objectives, t actions, and esearch protocols deliver information iority hypotheses as from decision-		Management objectives Management actions Monitoring/research protocols tailored to hypotheses and key questions from decision-makers	 Decide on active or pass Statement of measurable objectives/management a Contrasting treatments if (with replication and cont Modeling to predict outco Data management plan Monitoring plan Design is linked to time a authority for program 	ive AM actions possible rol) omes and budget
ery of AM on the ementation of t actions and vith project		Plan for implementation of management actions and monitoring Project oversight	 Management actions and monitoring implemented Explicit project oversight dedicated to AM program 	ม with staff า
nitoring and cessary to provide ata to answer AM otheses and ker questions		Effectiveness monitoring Validation monitoring Plan for analysis of monitoring data	 Monitoring protocols development of the provide data to answer key questions and link to dec Baseline monitoring, or a on the starting condition of system in question Effectiveness (achieve probjectives?) monitoring a validation (species resport progress toward objective monitoring 	eloped that ey isions greement of the roject ind inse and es)
ent – the path from agement decision- ements of what was what it means for ives, hypotheses, -making		Data analysis Data synthesis Telling the "story" of AM Independent science review Reporting	 Compare monitoring results objectives, hypotheses, uncertainties, and decisic questions Compare results against predictions Use of peer review or oth independent science review Annual data synthesis re 	ults against on-maker model ner iew porting
	search protocols leliver information prity hypotheses s from decision- ry of AM on the ementation of actions and ith project itoring and essary to provide ata to answer AM otheses and er questions ent – the path from gement decision- ements of what was what it means for ves, hypotheses, making	search protocols leliver information prity hypotheses s from decision- ry of AM on the immediation of actions and ith project itoring and essary to provide ata to answer AM prevent of the path from gement decision- ent – the path from gement decision- what it means for ves, hypotheses, making itoring and itoring and	search protocols leliver information prity hypotheses s from decision- Monitoring/research protocols tailored to hypotheses and key questions from decision-makers ry of AM on the mentation of actions and ith project Plan for implementation of management actions and monitoring itoring and essary to provide ata to answer AM otheses and er questions Effectiveness monitoring Validation monitoring Validation monitoring Plan for analysis of monitoring Data analysis Ent – the path from gement decision- ments of what was what it means for ves, hypotheses, making Data analysis Telling the "story" of AM	 Monitoring/research protocols leliver information ority hypotheses is from decision-makers Monitoring protocols tailored to hypotheses and key questions from decision-makers Monitoring plan Design is linked to time a authority for program Design is linked to time a authority for program Management actions and monitoring Project oversight Monitoring protocols deverations and monitoring Project oversight Monitoring protocols deverations and link to decersion and uset at to answer AM patheses and er questions Plan for monitoring Project oversight Effectiveness monitoring Validation monitoring Plan for analysis of monitoring data Monitoring results against predictions Compare monitoring results against predictions Compare results against predictions Use of peer review or oth independent science review Annual data synthesis review



synthesis to decision-makers

Record of decision-makers using

Documentation of decisions and

how AM information was used in

management actions at least in part

Information updated regularly and

the decision-making process

Documentation of changes to

because of program learning

made public

information to help make decisions

results

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Clear management decisions

to help guide those decisions

are made, with AM results used

Adjust

Clear management

decisions are made

AM results used in

decision-making

decision-makers

Documentation of

decision-making

Communication to

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<u>Step 2 – Health assessment – governance and adaptive management components/sub-components</u>

This step focuses on assessing the structure and function of each governance and adaptive management

component and related sub-components identified in Step 1. In the TRRP, this information will be obtained
 through structured face-to-face interviews with program staff, partners, and stakeholders from the TMC

through structured face-to-face interviews with program staff, partners, and stakeholders from the TMC and other affiliated groups. **Tables 3 and 4** detail potential survey questions to be administered in the

- 99 TRRP.
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101 **Table 3.** Survey questions for governance components.

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Governance Component	Survey Questions
Legitimacy	 Was the program formed by negotiation, legislation, or another mandate? Were stakeholders involved in development of the program? How? Is there a foundational program document that describes goals, objectives, and hypotheses? Is there an Adaptive Management Plan? How long is the program currently authorized to operate? Is there a process in place for extending the program if more time is needed? How is the program funded? What are annual appropriations? Who makes decisions about developing and spending the annual budget? Is the overall program budget? To whom are decision-makers accountable above them (governors, agency heads, federal administration, etc.)? To whom are decision-makers accountable below them (constituencies)? If the program involve endangered/threatened species? If the program is engaged in species recovery, is there a clear statement of what recovery means and how it will be measured?
Structure & Capacity	 16) Is the decision-making body described in the foundational document? 17) Is there a process for filling spots on the decision-making body specified in the foundational document? 18) Are stakeholders explicitly part of the decision-making body or do they just serve an advisory role? 19) Is there a committee structure specified in the foundational document to assist the decision-making body with policy matters, technical matters, and program operation? 20) How are the different levels of the program coordinated and by whom? 21) What is the geographic scale of the program? 22) What is the approved time scale of the program? 23) Are all the relevant entities to the program encompassed by these scales of time and space? 24) Can measurable gains for the aquatic system and the species involved be achieved in the time and space defined? 25) Does the program include the technical capacity to deliver useful information to decision-makers? 26) Are technical teams/committees interdisciplinary, and do those disciplines cover the important technical topical areas for the program? 27) How is communication handled within the program? 28) How is communication handled with a twhorities?
Decision- making Process	 29) How is communication handled with the public? 30) What is the level of trust among the decision-makers? 31) Who makes the decisions? 32) Is decision-making shared with stakeholders or are decision ultimately made unilaterally by a single agency? 33) Are program goals and objectives clearly detailed in the foundational document? 34) Do all decision-makers agree on the goals and objectives? 35) Is there agreement to utilize adaptive management? 36) What do the key questions decision-makers have that relate to program scientific information and adaptive management? 37) Do all decision-makers agree on these key questions? 38) Is there a clear understanding of the data collection methods relevant to these questions and reporting progress? 39) Does the decision-making body operate by consensus? 40) Does the program have a history of successfully reaching consensus? 41) If consensus is not reached, what is process for resolution? 42) Does the program have a history of using this resolution method? 43) Are group votes recorded? 44) Is there a process spelled out for adjusting management based in part on program learning? 45) Is the re regular clear communication of scientific and technical information to decision-makers? 46) Is the program prepared to respond to changing conditions or surprises? 47) Have any surprises occurred, and if so how did the program deal with them? 48) Does the program have a a record of incorporating learning into decision-making?

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Evaluate

Adjust

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Cable 4. Survey questions for adaptive management components.				
AM Component	Survey Questions			
Assess	 What are the key questions important to decision-makers? Do all decision-makers know what those questions are and agree those are the right questions? What information do decision-makers need? What are the program's goals and objectives? What is the program's definition of AM? Is the AM definition written down and does everyone know it? Are objectives measurable? Are hypotheses testable? Does the program have CEMs and/or conceptual management models? Are alternative management actions/treatments defined? Are decision triggers/indicators defined for the appropriate geographic scale and time? Is there a clear statement of assumptions for program hypotheses and management actions? Is a process specified for communicating learning to decision-makers and how that learning will be used to help make decisions? Were stakeholders involved in development of the Adaptive Management Plan, including specifying objective, hypotheses, and management actions? Was the Adaptive Management Plan developed through a collaborative process? 			
Design	 15) Does the program utilize passive or active AM, and do the decision-makers understand the difference? 16) What are the proposed management actions? 17) Is there contrast in the management actions, how they are implemented, and expected results? 18) Does the program conduct modeling to predict the possible outcomes of management actions? 19) If used, how are models developed and refined? 20) Who conducts modeling for the program? 21) Is there a Data Management Plan? 22) Does the program have specific monitoring protocols for data collection? 23) How were these protocols developed, and who developed them? 24) Is there a process for changing these monitoring protocols? 25) Is the design of AM linked to the program's time and budget authority? 			
Implement	 26) Who leads the implementation effort? 27) Are staff employees of any of the program's decision-making entities? 28) Are there staff assigned to the program that work on the program full time? 29) How are management actions implemented? 30) How are the results of implementation monitored and reported to the decision-makers? 31) Are there sufficient time and budget resources available for full program implementation? 			
Monitor	 32) Is monitoring and research tailored to decision-maker questions and information needs? 33) Do program staff direct monitoring? 34) Is monitoring conducted by staff, by other parties, or a combination? 35) Is there baseline monitoring data? 36) Is there agreement in the program on baseline conditions? 			



Does the program conduct effectiveness monitoring (how did aquatic system respond)?

39) Does the program conduct validation monitoring (species response to management actions)?

46) Does the foundational program document include details of the program's peer review process?

Does the foundational program document detail how science review panel members are appointed?

Are monitoring results compared against objectives, hypotheses, and uncertainties?

38) Please describe the program's effectiveness monitoring.

Please describe the program's validation monitoring.

42) Are monitoring results compared against model predictions? 43) How is this information reported, by whom, and how often? 44) Does the program use independent peer review? 45) If so, what documents or items are peer reviewed?

47) Does the program use an independent science review panel?

Does the program generate an annual data synthesis report?

60) Is program information updated regularly and made public?

Is all program information available electronically?

Who is responsible for developing and reporting program data synthesis?

59) How are changes to management based on program learning documented?

Does the program host an annual adaptive management/data synthesis workshop?

55) Is there regular communication of relevant scientific and technical information to decision-makers? 56) How is AM information communicated to decision-makers and used to adjust management actions?

Has your program successfully adjusted using AM information as part of the decision-making process?

If so, what are the science panel's responsibilities?

50) Does the program conduct data synthesis?

51) How is data synthesis reported?

58) How are decisions documented?

106 <u>Step 3 – Risk assessment – likelihood and consequence rating of governance and adaptive management</u> 107 <u>components/sub-components</u>

108 Adapted from the Dale et al. (2013) risk analysis of governance in the Great Barrier Reef and building off 109 the call from Loftin (2014) to integrate risk management concepts into the development and implementation 110 of adaptive management, the evaluation framework incorporates a likelihood and consequence risk rating 111 matrix to provide a more quantitative factor to accompany the qualitative health assessment. The matrix 112 will be applied to all governance and adaptive management components and their related sub-components. 113 114 As a first step, **Tables 5 and 6** detail standardized criteria utilized to develop the likelihood and consequence ratings. These rating scales were adapted from Dale et al. (2013) to fit the evaluation framework approach 115 developed for large-scale aquatic adaptive management programs. This approach provides an easy and 116 quick assessment of potential governance or adaptive management component/sub-component failures that 117 are likely to occur, program strengths and weaknesses, and potential implications for overall program 118 success or failure. This leads more readily to identification of potential program reform measures in the 119 next step of the evaluation framework. 120

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Table 5. Rating scale for likelihood of governance or adaptive management component/sub-componentfailure.

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Risk Rating	Decision Rule
(1)	The governance or AM component/sub-component is in excellent overall health and will not fail to deliver its intended outcomes.
(2)	The governance or AM component/sub-component is in good overall health and is not likely to fail to deliver its intended outcomes.
(3)	The governance or AM component/sub-component is in marginal health and could fail to deliver its intended outcomes.
(4)	The governance or AM component/sub-component is in poor overall health and is likely to fail to deliver its intended outcomes.
(5)	The governance or AM component/sub-component is dysfunctional or absent and will fail to deliver its intended outcomes.

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127

- 128**Table 6.** Rating scale for consequences of governance or adaptive management component/sub-component
- 129 failure. 130

Risk Rating	Decision Rule
(1)	Failure of the governance or AM component/sub-component will have no consequences for intended outcomes.
(2)	Failure of the governance or AM component/sub-component will have limited consequences for intended outcomes.
(3)	Failure of the governance or AM component/sub-component will have consequences of concern for intended outcomes.
(4)	Failure of the governance or AM component/sub-component will have significant consequences for intended outcomes.
(5)	Failure of the governance or AM component/sub-component will have severe consequences for intended outcomes.

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132 The next step is developing an overall risk rating for the component/sub-component in question. As in Dale

et al. (2016), the more complex set of sub-components evaluated in this chapter are paired with a more complex rating scale for likelihood and consequences. **Figure 1** is reproduced from Dale et al. (2016) and reflects a rating scale based on multiplying the rating for likelihood of failure and the rating for consequences of that failure. This method allows for more accurate ranking and clustering of subcomponents to reveal more significant areas for program reform (Dale et al., 2016). This matrix also

employs a color scale as a quick-reference guide to the degree of severity of risk.



Figure 1. Rating scale (likelihood x consequence) for governance and adaptive management subcomponent risk, reproduced from Dale et al., 2016.

Governance/AM component dysfunctional or absent and will fail to deliver intended outcomes. (5)	5	10	15	20	25
Governance/AM component in poor overall health and likely to fail to deliver intended outcomes. (4)	4	8	12	16	20
Governance/AM component in marginal health and could fail to deliver intended outcomes. (3)	3	6	9	12	15
Governance/AM component in good overall health and will not fail to deliver intended outcomes. (2)	2	4	6	8	10
Governance/AM component in excellent overall health and will not fail to deliver intended outcomes. (1)	1	2	3	4	5
Risk Rating	Failure of governance/AM component will have no consequences for intended outcomes. (1)	Failure of governance/AM component will have limited consequences for intended outcomes. (2)	Failure of governance/AM component will have consequences of concern for intended outcomes. (3)	Failure of governance/AM component will have significant consequences for intended outcomes. (4)	Failure of governance/AM component will have severe consequences for intended outcomes. (5)

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Consequence Rating

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143 Step 4 – Program "fit" in the ideal adaptive management typology

Likelihood Rating

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Figure 2 presents an ideal typology for adaptive management in large-scale aquatic recovery programs that 145 is adapted from the coordination and polycentricity characteristics of a proposed ideal typology of 146 governance regimes developed by Pahl-Wostl and Knieper (2014). The typology serves as an attempt to 147 merge governance and adaptive management components to provide qualitative insight into the hypothesis 148 that good governance through a strong process of shared decision making and communication is likely to 149 promote successful adaptive management at a large scale. High levels of communication and data synthesis, 150 but unilateral decision making is expected to predict adaptive management being "stuck" in the six-step 151 cycle well before the 'Adjust' step. A similar condition is expected for low levels of communication and 152 data synthesis even in shared decision-making contexts. Little communication and data synthesis (resulting 153 in a "science pile" where data is collected but not analyzed, synthesized, or otherwise communicated to 154 decision-makers) and unilateral decision-making is expected to promote conditions that do not enable 155 156 adaptive management and instead revert management back to trial and error.



Figure 2. An ideal typology for large-scale adaptive management. The two-dimensional grid is based on
 the categories of decision-making centralization and the level of communication/data synthesis occurring
 within the adaptive management program. Shaded boxes indicate the level of adaptive management
 performance.

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"Science pile"

163 <u>Step 5 – Recommendations for program reform/refinement</u>

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Based on results of the program health assessment; development of likelihood, consequence, and risk ratings for each governance and adaptive management component and sub-component; and qualitative placement of each program in the proposed ideal adaptive management typology, recommendations for TRRP reform and refinement will be proposed. Suggested program refinements will be a starting point for improvement to provide a benchmark to monitor to see how the TRRP adjusts over time. **Table 7** is an example of an output table for each governance and adaptive management component and sub-component that will be provided to the TRRP in addition to an overall summary of results.



Table 7. Example governance component and sub-component output table from implementation of the

173 AMPEF in the TRRP.

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Component Legitimacy	Sub-component description: Defined by results of TRRP document review and interviews and experience from other restoration programs		
Accountability			
Health assessment	 Structural considerations: Summarized from TRRP document review and interviews 	 Functional considerations: Summarized from TRRP document review and interviews 	
Likelihood of failure:	Qualitative assessment based on considerations fro	om the health assessment	
Likelihood rating	Full Component Rating 4	Sub-Component Rating 4	
Consequences of failure:	Qualitative assessment based on considerations fro	om the health assessment	
Consequence Rating	Full Component Rating 4	Sub-Component Rating 4	
Risk Rating	Full Component Risk Rating 8 (Likelihood + Consequence)	Sub-Component Rating 16 (Likelihood x Consequence)	
Ideal AM Typology Fit	Categories of fit include successful AM, AM being "stuck", or AM being absent (just implementing trial and error)		
Program reform recommendations	Suggestions based on health assessment, risk ratir TRRP evaluation	ng, application of the ideal AM typology, and overall	

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176 **References Cited**

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- Dale, A.P., Vella, K., Pressey, R.L., Brodie, J., Gooch, M., Potts, R., Eberhard, R. 2016. Risk analysis of
 the governance system affecting outcomes in the Great Barrier Reef. Journal of Environmental
 Management 183 (3), 712-721. <u>http://dx.doi.org/10.1016/j.jenvman.2016.09.013</u>
- Dale, A.P., Vella, K., Pressey, R.L., Brodie, J., Yorkston, H., Potts, R. 2013. A method for risk analysis
 across governance systems: a Great Barrier Reef case study. Environmental Research Letters 8,
 015037, 1-16. <u>http://iopscience.iop.org/article/10.1088/1748-9326/8/1/015037/meta</u>
- Loftin, M.K. 2014. Truths and governance for adaptive management. Ecology and Society 19(2):21.
 <u>http://dx.doi.org/10.5751/ES-06353-190221</u>.
- Murray, C., Smith, C., Marmorek, D. 2011. <u>Middle Rio Grande Endangered Species Collaborative</u>
 <u>Program Adaptive Management Plan Version 1.</u> Prepared by ESSA Technologies Ltd. (Vancouver,
 BC) and Headwaters Corporation (Kearney, NE) for the Middle Rio Grande Endangered Species
 Collaborative Program, Albuquerque, NM.
- Pahl-Wostl, C., Knieper, C. 2014. The capacity of water governance to deal with the climate adaptation
 challenge: using fuzzy set qualitative comparative analysis to distinguish between polycentric,
 fragmented, and centralized regimes. Global Environmental Change 29, 139-154.
 http://dx.doi.org/10.1016/j.gloenvcha.2014.09.003



Appendix B: Task 3 Report – Summary of TRRP Interviews (November 30, 2017)

4 Introduction

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6 Headwaters Corporation was contracted by the U.S. Bureau of Reclamation to complete the seven 7 tasks identified in the Trinity River Restoration Program Refinements Solicitation (#R17PS00533). As 8 described in the Solicitation, the scope of this work is to review the goals and mandates of the Trinity River 9 Flow Evaluation Study (TRFE) and Record of Decision (ROD), identify refinements to Trinity River 10 Restoration Program (TRRP or Program) management and functions that will better serve those goals and 11 mandates, and assist the Department of the Interior (DOI) in implementing the refinements. Specific tasks 12 include:

13		
14	Tasks 1-2	Review of Key TRRP Documents
15	Task 3	TRRP Interviews
16	Task 4	Summarize Strengths/Weaknesses of TRRP Organizational Structure
17	Task 5	Present Strengths & Weaknesses Document to Coordination Team and Develop
18		Actionable Recommendations for Program Refinements
19	Task 6	Facilitate Discussion Among the Trinity Management Council (TMC), Trinity
20		Adaptive Management Working Group (TAMWG), and TRRP on Actionable
21		Items/Power Point Presentation/Final Report
22	Task 7	Remain Available to Assist with Oversight & Implementation of
23		Recommendations

23 24

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This report to the TRRP is the deliverable for Task 3 and summarizes responses from our interviews of the Trinity Management Council (TMC) and other TRRP participants and partners. The purpose of Task 3 was to conduct approximately 25 face-to-face or phone interviews of individuals involved with the TRRP to gain an understanding of known obstacles, as well as conduct a health assessment of components and sub-components of both governance and adaptive management in the TRRP in accordance with implementing our Adaptive Management Program Evaluation Framework (AMPEF).

32 Methodology

We administered a set of written interview questions (see Appendix A) to 56 individuals associated 33 with the TRRP utilizing an anonymous online survey with Qualtrics software (Qualtrics, Provo, UT, 2017). 34 Of the 56 individuals that received the anonymous online survey, 40 individuals recorded unique responses 35 equating to a 71% response rate. Following distribution of the online survey, Chad Smith and Bridget 36 37 Barron of Headwaters Corporation conducted 31 face-to-face interviews in the Trinity River basin between September 18-27, 2017 (NOTE: one of those face-to-face interviews was conducted earlier in September). 38 In addition, Chad Smith conducted four phone interviews the week of October 9, 2017. The face-to-face 39 and phone interviews were used to clarify responses to the online survey, ask additional questions, and 40 explore issues raised during the interviews themselves. 41

All written, face-to-face, and phone interview responses were catalogued by Headwaters but will remain anonymous and will not be delivered to the TRRP, the Bureau of Reclamation, or any other TRRP entity. At the request of the Bureau of Reclamation, the list of interviewees will also remain anonymous. All responses were evaluated for common themes and issues, interesting outliers, and other information that provided the Headwaters team with greater breadth and depth of understanding of the TRRP and its structure and function.



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50 51 **Key Messages from the Interviews**

Summary of TRRP Interview Results

This section is presented in a Question/Answer format as a summarization tool. We did not 52 necessarily ask all these questions directly, but the questions concisely summarize key messages and themes 53 that emerged from written, face-to-face, and phone interview responses. This report is not a summary of 54 every question asked during the interviews. Rather, this report is a summary of common threads (and some 55 key outliers) that arose during the interviews and that the Headwaters Team believes are most informative 56 and important for the TRRP Refinements process. This is the second "investigative" phase of the TRRP 57 Refinements work (the first being document review in Tasks 1-2) so all the information collected during 58 the interviews will be used by the Headwaters Team to complete remaining tasks and ultimately develop 59 actionable recommendations for TRRP Refinements. The questions below are presented in no particular 60 order. 61

63 **Q: What is the TRRP goal?**

A: In general, there was a wide range of answers offered for this seemingly basic foundational 64 question. While the word "fish" was used frequently, answers diverged from there. A small number of 65 interviewees brought up the specific escapement numbers in the EIS/EIR as the centerpiece of the TRRP 66 goal, but generally the "fish goal" (as these numbers were frequently referred to) was noted as being 67 outdated and neither realistic nor achievable. There seemed to be consensus that if the Program were to re-68 focus on fish escapement numbers for the Trinity River, numeric goals should be revised. Several 69 interviewees discussed the goal in the context of restoring fish populations to pre-dam levels, but also 70 cautioned that pre-dam fish population estimates were either non-existent or unreliable. Some interviewees 71 said another aspect of the goal is to increase harvest but noted the competition between trying to increase 72 adult escapement while also trying to increase harvest. Several interviewees pointed to the goal statement 73 74 drafted in the Integrated Assessment Plan (IAP) as being the best overall statement of a TRRP goal, but all 75 were quick to state that the IAP and its goal statement have never been formally adopted by the TMC. Interviewees did point to the difficulty of reaching a fish population-based goal when salmon migrate and 76 are influenced by harvest, ocean conditions, climate change, and a host of other factors outside the control 77 78 of the TRRP. In these cases, interviewees focused on in-river conditions as a more achievable goal and several also suggested broadening the TRRP goal to be more inclusive of river form and function and 79 include a wider range of riverine species. 80

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82 Q: What does the history of the TRRP tell us about its function today?

A: The general response from interviewees is that the TRRP was built based on the scientific 83 aspects of the Flow Evaluation Study, which itself was modeled on the Glen Canyon Adaptive Management 84 Program. As pointed out by several interviewees, the focus in both cases was on the scientific aspects and 85 not on the organizational or governance aspects. Several interviewees detailed how the Flow Evaluation 86 Study came to be, how the Hoopa Valley Tribe was added as a key part of the study team, and how the 87 process was driven largely by a small number of key people in Washington, DC at the highest levels of the 88 Interior and Justice Departments (and including the Washington, DC-based attorney for the Hoopa Valley 89 Tribe). Based on interviewee responses, it appears the Record of Decision (ROD) for the TRRP was one of 90 91 the last items signed by Secretary Babbitt before the change of Administration and once that change happened all connections between the TRRP and upper-level decision-makers in DC was lost. Key points 92 raised in the interviews: 93

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After the ROD was signed, the TRRP was "kicked down" into lower levels of the Bureau of
 Reclamation (Reclamation) which had not been highly involved in development of the Flow Evaluation
 Study or the ROD. At that point, the TRRP became more focused on habitat restoration projects and



less focused on flow management. That has manifested itself today in a focus of TRRP action and
 money on increasingly large construction projects, with little attention paid to more process-based
 restoration through the application of flow. This issue has been exacerbated by ambiguities in the ROD
 and the Implementation Plan.

- The organizational structure contained in the Implementation Plan, and which the TRRP operates under now, was quickly cobbled together based on the organizational structure of the Glen Canyon Adaptive Management Program. Interviewees involved in this effort stated this structure was thrown into the Implementation Plan quickly without much thought as to its application in or modification for the TRRP.
- Some interviewees said the science side of the Program was built on the early principles of Adaptive Environmental Assessment and Management (AEAM) which tends to focus more on modeling and heavy technical aspects. AEAM was the foundation of adaptive management (AM) which today tends to have a broader connotation in large-scale programs like the TRRP.
- *Editorial Comment* there was a strong emphasis on the part of several interviewees as to the influence of the Glen Canyon Adaptive Management Program and a desire to return to something more like that program in terms of structure and function. From the perspectives of full implementation of true adaptive management and a working governance structure, that program is not widely considered a success. See the article titled <u>"Collaborative Planning and Adaptive Management in Glen Canyon: A Cautionary Tale"</u> and several other articles with the same theme.
- 117

118 **Q: What is the overall health of the TRRP?**

A: In many cases, interviewees described the TRRP as "a jobs program" for program partners. This description focused on the TRRP being more about money for program partners and associated projects (monitoring, research, and implementation) and less about a focus on restoration of fish populations. Interviewees noted this as a "lost opportunity" given that the TRRP is widely viewed as having "everything it needs" – ample budget, controllable water, and experienced staff – to be a leader among large-scale river restoration programs. However, there is an acknowledgement that the TRRP has not been a model program in the past and is currently a long way from being a model program. Some reasons stated in the interviews:

- 126
- The culture of the overall TRRP was described as "a meeting culture" not a "doing culture".
- TRRP leadership was frequently described as "lacking".
- The lack of a strategic plan and common vision for the TRRP is viewed as a significant impediment to progress on the goals and objectives.
- The TRRP is viewed as lacking transparency. Issues are decided behind closed doors, quid pro quo deals are struck between partners, and any negative or unexpected outcomes regarding construction projects or monitoring are suppressed.
- Staff turnover at the Bureau of Reclamation and the U.S. Fish and Wildlife Service is viewed as a significant issue that contributes to the lack of a consistent vision/mission of the TRRP.
- 136

137 Q: How well does the Trinity Management Council (TMC) function?

A: Most interviewees described the TMC as either being ineffective at decision-making or, at a minimum, uncertain as to its role in the TRRP decision-making process. The lack of clarity about the TMC's ability or authority to make decisions on behalf of the TRRP and what those decisions are were cited by most interviewees as a central problem within the TRRP. Key aspects of this issue stated in interviews include:

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Interviewees noted struggles for power and control on the TMC. The Department of Interior (DOI)
 agencies were described as the co-leads of the TRRP but with Reclamation viewed as having the power
 as a function of controlling the majority of the funding.



- Several interviewees noted confusion over the Hoopa Valley Tribe signing the ROD and whether that
 made the Tribe a TRRP co-lead or simply meant they agreed to the ROD.
- Most interviewees said that when new members join the TMC there is little to no formal orientation.
 Members are expected to educate themselves about the TRRP and the TMC and are frequently not given documents that provide a history of the TRRP.
- Several interviewees noted that the TMC seems to make technical decisions on TRRP implementation and evaluation based on the budget and not on program science.
- Interviewees with knowledge of the early history of the TRRP said the initial design for the TMC was to have Regional Directors and similar higher-level administrative managers sit on the TMC. However, over time responsibility for participating in the TMC has gradually been delegated down to more junior agency/partner staff.
- Many interviewees said the requirement of a supermajority for TMC voting is a major impediment to moving forward on issues such as the budget, bylaws, and addition of new TMC members.
- The culture of the TMC is viewed as one that rewards "bad behavior" of its members.
- Leadership on TMC is viewed as weak, likely stemming from a lack of awareness of and agreement on what the TRRP is doing and where it is going
- The TMC was generally noted by interviewees as being resistant to change and unable/unwilling to
 implement the recommendations of previous TRRP reviews (TMC Subcommittee Report, CDR
 Situation Assessment, etc.).
- Some interviewees believe the TMC should operate as a Board of Directors for the TRRP, but there is a sense that TMC partners are too conflicted to fulfill that role.
- While not shared widely in the interviews, there was an opinion offered that the TMC does not really make decisions for the TRRP but only makes recommendations to the DOI, and ultimately Reclamation makes the decisions for the TRRP.
- Several interviewees stated an observation that the TMC does not listen to the Trinity River Adaptive
 Management Working Group (TAMWG)¹⁰ or consider their input important, and the TMC only gives
 the appearance of taking public comment and input.
- 174

175 Q: What is the overall health of the TRRP organization and funding structures?

A: Interviewees were mixed in their opinions about what is working, what is not working, and what could be done to improve TRRP structure and function. Notable responses include:

- 178
- Interviewees indicated there is limited TRRP identity. People identify themselves as working for their
 specific agency/entity and not for the TRRP. A sense of team or collaborative spirit within the Program
 it not fully shared by all parties.
- Several interviewees pointed to a lack of continuity in leadership as a problem for the TRRP. There is no consistent TRRP vision/plan so each new agency head brings their own interests and focus to the program, some of which frequently are not consistent with the TRRP goal.
- Several interviewees stated that all TRRP partners should have higher level administrators at the table,
 i.e., DOI Regional Directors, Tribal Chairs, Directors of State Agencies. Others would like to see the
 TMC just approve (or recommend) the annual budget and that would be the extent of the involvement.
 Still others would like to see the TMC terminated since decisions are subject to change by the federal
 agencies, during the Tribal Government-to-Government process, or through direct lobbying in
 Washington, DC.
- Several interviewees brought up the idea of independent implementation for the TRRP, though different options were discussed. One set of interviewees mentioned the example of the Platte River Recovery Implementation Program where a private consulting firm provides the Executive Director and program staff. Another set of interviewees referred to the Glen Canyon Adaptive Management Program and its

¹⁰ In November 2017, the Department of Interior ordered the TAMWG to be "administratively inactive".



model of involvement of the U.S. Geological Survey (USGS) as the scientific arm of the program.
Some interviewees felt that some form of independent implementation is a necessity, but others are convinced that it would either never be allowed or, if attempted, would never work.

- Regarding the role of the federal agencies in staffing the TRRP, some interviewees focused on staff in the Weaverville office as being the unit that should be transferred to an independent entity, like the USGS or a private contractor. Another option would be to continue to house TRRP staff from different agencies/entities but that the Executive Director (ED) should have direct supervisory authority over all TRRP staff housed at that office. There was no clear model described that was viewed as a way to overcome seeming internal difficulty in the relationship between Reclamation TRRP staff and Service TRRP staff.
- Several interviewees discussed the current structure of the TRRP with multiple design teams as opposed to a single, unified program staff charged with implementation.
- The concept of "base funding" was mentioned by several interviewees. This was mentioned as a possible tool to help get over budget conflicts related to "legacy" projects versus "adaptive management" projects, and to provide financial security for some of the agencies/entities that is not tied to a specific monitoring or research activity.
- 211

212 Q: How does the TRRP handle the issue of "conflict of interest"?

A: This was a significant concern noted by nearly all interviewees. Interviewees stated that TMC members are voting on budgets that benefit their agencies/entities in staffing, construction projects, and monitoring and see this as a significant conflict of interest. The concept of base funding (mentioned above) was noted as one possible remedy, but there was significant concern raised by multiple interviewees that this conflict of interest in the budget, how money is allocated to projects, and how decisions are made about this allocation is a potential fatal flaw for the TRRP.

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220 **Q: Has the TRRP ever been audited?**

A: A significant number of interviewees believed that an audit of the TRRP should be done to 221 account for how the money has been spent and the results of those expenditures. It was apparent this issue 222 was raised not in the sense of financial malfeasance, but rather as means to increase transparency about 223 TRRP spending and associated results. Several interviewees stated that nobody at the state or federal level 224 is asking the TRRP to show results against goals or milestones, or to account for how federal dollars have 225 been spent over many years. Many interviewees wanted more transparency regarding the amount of funds 226 that go to agency/entity salaries versus how much TRRP funding goes to restoration construction projects, 227 overall implementation, and program science. 228

230 Q: What is the relationship between the TRRP partners?

A: Several interviewees viewed the DOI agencies (Reclamation and Service) as having a great deal 231 of animosity towards each other and not working together effectively. The Memorandum of Understanding 232 (MOU) between Reclamation and the Service expired over a year ago and a revision has not been signed 233 by either agency. Some interviewees felt finalizing this MOU was critical because it outlines how the 234 Executive Director, Science Coordinator, and Implementation Branch Chief will work together as a staff 235 leadership team for the TRRP. Many interviewees described a feeling of distrust of the Tribes by other 236 TRRP partners. Interviewees viewed the two Tribes are as not getting along which translates into difficulties 237 at the TMC level. 238



239 **Q: What is the public perception of the TRRP?**

- A: There was a clear consensus among interviewees that the public perception of the TRRP is poor. Explanations included:
- 242

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- A lack of information about results being provided to the public, damage caused by projects to private lands, and lack of local jobs resulting from TRRP.
- Several interviewees noted the public's unrealistic expectations for river restoration. When the TRRP
 builds a restoration project, the public expects a fish increase the next year. When that does not happen,
 the public is critical of the TRRP.
- Several interviewees commented that the TRRP had done a "poor job" with outreach to private landowners in the past.

251 Q: What is the TRRP's view of adaptive management?

252 A: While interviewees generally agreed that adaptive management is supposed to be part of the TRRP, there was no agreement as to how (or if) the TRRP defines adaptive management and whether the 253 TRRP is implementing adaptive management at all (or whether it wants to, or whether it can). In general, 254 255 there was no clarity among interviewees as to what questions the TRRP is trying to answer, what hypotheses are to be "tested" through program implementation, how to synthesize information to make it useful for 256 decision-makers, and how (or if) decision-makers on the TMC would even use such information. TRRP 257 science is viewed by many as being a lower priority in the budget than construction projects. Many 258 interviewees described science (or adaptive management) as receiving what is left over in the budget after 259 construction projects are funded. The TRRP was described as data rich but information poor. For example, 260 there is a belief that the TRRP is creating more habitat for fish and producing more juvenile fish, but there 261 are no reports showing these results and making these connections. 262

263

Generally, there was agreement among the interviewees that the TRRP is not operating under an 264 agreed-to Adaptive Management Plan. Some interviewees pointed to the IAP as being the best example of 265 an adaptive management guidance document for the TRRP, but there was a general consensus among 266 interviewees that the IAP is not being used in that way. Several interviewees described the IAP as an 267 "everything and the kitchen sink" document that does not prioritize objectives, thus making it too unwieldy 268 to be useful. Other interviewees called it a "wish list" that would be helpful if funding were unlimited to 269 implement the numerous objectives/projects. Some interviewees did say they used the IAP to cite objectives 270 in writing project proposals because it is so broad that most any project can be justified. 271

272

273 Q: What is the role of independent science in the TRRP?

274 A: Most interviewees said that the Science Advisory Board (SAB) is underutilized in the TRRP. There is a belief that the TRRP is not getting its money's worth out of the SAB and that there is not enough 275 interaction between the SAB and the TMC. Several interviewees said this may stem from a lack of clarity 276 about who is in charge of the SAB and how their annual work plan is developed and administered. Some 277 interviewees noted that SAB members are currently being used on an individual basis for certain TRRP 278 agencies or entities instead of providing overarching programmatic reviews for the TMC. Several 279 interviewees noted the SAB is supposed to have five members but that has apparently dwindled down to 280 281 three members as of 2017.



282 Next Steps

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Our team will now move to Task 4 of the TRRP Refinements work and evaluate and summarize the strengths and weaknesses of the TRRP organizational structure. Knowledge gained thus far through document review and interviews will point us toward aspects of the TRRP that most need to be evaluated.

Items identified as red flags or areas of concern during the interviews and discussed in this report will remain as priorities to investigate and address during completion of the remaining tasks. Our expectation is that these items will remain on our list of possible recommended refinements and will not be directly addressed by the TRRP until the end of the first year of our TRRP Refinements work.



292	Appendix A – TRRP Written Interview Questions
293 294	Identification
295	O1 First Name
296	
297	O2 Last Name
298	
299	O3 Organization
300	X ⁰ Olfminin
301	O4 Role in the TRRP
302	
303	End of Block
304	
305	Goals and Objectives
306	Q5 What is your interpretation of the goal of the TRRP? Is progress toward this goal being tracked, and if
307	so, how?
308	
309	Q6 What are the objectives of the TRRP?
310	
311	End of Block
312	
313	Governance Component - Legitimacy
314	Q7 Why is there not a single foundational Program document?
315	
316	End of Block
317	
318	Governance Component - Structure and Capacity
319	Q8 Is the TMC empowered to make all Program decisions? Does it operate by consensus?
320	
321	Q9 Describe the relationship as you understand it between the TMC, TAMWG, Program operations staff,
322	Program science staff, and SAB.
323	
324	Q10 Are any key stakeholders currently not at the "TRRP table"? Why are they not engaged fully now?
325	
326	End of Block
327	
328	Governance Component - Decision-Making Process
329	QII is there agreement among the TMC on the goal and objectives? Why or why not?
330	O12 Harry 1. free second for the TDDD2 Harry's that second second 12
331	Q12 How do you define success for the TRRP? How is that success measured?
332	013 Is there regular clear communication of scientific and technical information to the TMC? Dece it
333	Q13 is there regular, clear communication of scientific and technical information to the TMC? Does it
334 225	pertain to riogram decisions?
330 226	End of Block
JJO	



Adaptive Management Component - Assess 337 Q14 How does the TRRP define adaptive management (AM)? 338 339 **Q15** What critical decisions does the TMC need to make in the next 5-10 years? What key questions 340 (uncertainties) do you have related to these decisions? What information do you need to help you answer 341 those questions and make those decisions? 342 343 Q16 Is there a common understanding of key Program hypotheses – what you don't know but want to 344 345 learn? 346 347 **O17** Has the Integrated Assessment Plan been officially adopted within the TRRP? How does it relate to the Program's foundational documents? 348 349 End of Block 350 351 Adaptive Management Component - Design 352 Q18 How do the fish population numbers identified in the EIS/EIR, and the flow and sediment 353 augmentation volumes in the ROD and Implementation Plan relate to Program decision-making? What 354 flexibility is there in terms of implementing management actions related to these metrics? 355 356 End of Block 357 358 Adaptive Management Component - Monitor 359 **O19** Is Program monitoring structured to provide information on the key decision-maker questions? 360 361 End of Block 362 363 Adaptive Management Component - Evaluate 364 **Q20** Does the TRRP engage in data synthesis – essentially, telling the "story" of AM? 365 366 End of Block 367 368 Adaptive Management Component - Adjust 369 Q21 Is there a specific process for using TRRP science information to help make decisions? 370 371 End of Block 372 373 374 Overall 375 **Q22** What are your biggest concerns about the TRRP, and what do you think can be done about them? 376 **Q23** What else do you think we need to know, or that you want to tell us, that we did not cover? 377



Appendix C: Task 4 Report – TRRP Organizational Strengths & Weaknesses Summary

3 (May 03, 2018)

5 Introduction

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Headwaters Corporation was contracted by the U.S. Bureau of Reclamation to complete the seven
tasks identified in the Trinity River Restoration Program Refinements Solicitation (#R17PS00533). As
described in the Solicitation, the scope of this work is to review the goals and mandates of the Trinity River
Flow Evaluation Study (TRFE) and Record of Decision (ROD), identify refinements to Trinity River
Restoration Program (TRRP or Program) management and functions that will better serve those goals and
mandates, and assist the Department of the Interior (DOI) in implementing the refinements. Specific tasks
include:

14		
15	Tasks 1-2	Review of Key TRRP Documents
16	Task 3	TRRP Interviews
17	Task 4	Summarize Strengths/Weaknesses of TRRP Organizational Structure
18	Task 5	Present Strengths & Weaknesses Document to Coordination Team and Develop
19		Actionable Recommendations for Program Refinements
20	Task 6	Facilitate Discussion Among the Trinity Management Council (TMC), Trinity
21		Adaptive Management Working Group (TAMWG), and TRRP on Actionable
22		Items/Power Point Presentation/Final Report
23	Task 7	Remain Available to Assist with Oversight & Implementation of
24		Recommendations

This report to the TRRP is the deliverable for Task 4 and summarizes our evaluation of the strengths and weaknesses of the TRRP organizational structure. The purpose of Task 4 was to identify and evaluate TRRP strengths and weaknesses that correspond to the TRRP's organizational structure, roles and responsibilities, administrative/technical work flow, planning, and decision-making process and products.

31 Methodology

This task corresponds to Steps 3 and 4 of our Adaptive Management Program Evaluation 32 Framework (AMPEF), including a risk assessment for TRRP governance and AM components and 33 subcomponents and assessing the "fit" of the TRRP in the ideal AM typology. Based on TRRP knowledge 34 assembled over the past year by the Headwaters team through document review in Tasks 1-2, interviews in 35 Task 3, prior experience with the TRRP, and our work with the Platte River Recovery Implementation 36 Program (PRRIP) and other similar programs around the country, we completed a qualitative "health 37 assessment" of the structure and function of each TRRP governance and AM subcomponent. We then 38 developed a Likelihood rating via matrix (a rating scale from 1-5 for the likelihood of governance or AM 39 component/subcomponent failure) and a Consequence rating via matrix (a rating scale from 1-5 for the 40 41 consequences of governance or AM component/subcomponent failure). Those ratings were then combined via multiplication into an overall Risk rating. These three ratings provide an easy and quick assessment of 42 potential governance or AM failures that are likely to occur, TRRP strengths and weaknesses, and potential 43 implications for overall Program success or failure. Appendix A contains the detailed results of this risk 44 assessment for the TRRP. 45

We also assessed the TRRP's fit in a proposed ideal typology for an adaptive management program.
This entailed a qualitative evaluating of the level of science communication and data synthesis in the TRRP,
as well as the level of decision-making centralization or sharing within the TMC on behalf of the TRRP.
The intent of this step is to provide a predictive tool for the TRRP to identify the presence or absence of



- conditions likely to promote the successful implementation of AM in the TRRP. Details related to this AM
- 52 assessment are also contained in **Appendix A**.



Summary of Strengths and Weaknesses of the TRRP Organizational Structure

The Headwaters Team used the results of these assessments to identify strengths and weaknesses

The Headwaters Team used the results of these assessments to identify strengths and weaknesses related to the TRRP organizational structure and begin to point to recommendations for possible TRRP refinements to improve that organizational structure, science and decision-making processes, strategic planning and budgeting processes, information flow processes, performance, and other actions necessary to achieve the goals of the TRFE and the ROD.

9 Tables 1 and 2 at the beginning of this section are quick-reference tables highlighting the overall Risk Rating for each key subcomponent of governance and adaptive management in the TRRP as well as implications of each of those subcomponents on the "fit" of the TRRP in the proposed ideal adaptive management typology. Tables 3 and 4 at the end of this section provide a greater level of summarized details from implementation of the AMPEF and provide more insight on relative strengths and weaknesses of the TRRP. The Output Tables in Appendix A provide full details for each key subcomponent.

Table 1. Quick-reference table of the Risk Rating and AM typology "fit" for each key governance subcomponent in the TRRP (from implementation of the AMPEF).

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Subcomponent	Risk Rating	AM Typology "Fit"
Governance Component	- Legitimacy	
Accountability	12	?
Responsiveness to constituencies	25	×
Governance Component – St	ructure/Capacit	у
Polycentric	16	×
Coordination and communication	16	×
Scale (geography)	9	?
Scale (time)	16	×
Stakeholders involved in decision-making	25	×
Technical capacity	4	\checkmark
Governance Component – Decis	ion-Making Pro	cess
Shared decision-making	25	×
Fair and transparent	12	?
Consensus	16	×
Decisions linked to goals/objectives	25	×
Dispute resolution	9	?
Adapt to surprises	12	?
Ability to incorporate learning into decision-making	12	?

19

Table 2. Quick-reference table of the Risk Rating and AM typology "fit" for each key adaptive management

subcomponent in the TRRP (from implementation of the AMPEF).



22

Subcomponent	Risk Rating	AM Typology "Fit"
AM Component – A	ssess	
Problem definition and agreement	25	×
Roadmap of goals, objectives, hypotheses	12	?
Decisions affected by information	12	?
Collaborative process to develop this information	25	×
AM Component – E	Design	
Management objectives	9	?
Management actions	4	\checkmark
Monitoring/research protocols tailored to hypotheses and key questions from decision-makers	9	?
AM Component – Im	plement	
Plan for implementation of management actions and monitoring	9	?
Project oversight	16	×
AM Component – N	lonitor	
Implementation, effectiveness, and validation monitoring	16	×
AM Component – E	valuate	
Data analysis	4	\checkmark
Data synthesis	16	×
Independent science review	16	×
AM Component – A	Adjust	
AM results communicated to decision-makers and used in decision-making	25	×
Documentation of decision-making results	9	?

23

26

For ease of review and discussion purposes, key strengths and weaknesses identified by the Headwaters Team are summarized below.

27 Key TRRP Organizational Structure Strengths

28 **People** – The core strength of the TRRP as currently constructed is its people. Especially through the Task 3 interview process, it became clear that TMC members, TAMWG members, Program staff, and members 29 of AEAM and Implementation Teams are passionate about the Trinity River, its resources, and the TRRP 30 itself. This translates into keen interest in seeing the Program move forward and be successful, and to tackle 31 32 recommended changes to achieve that success. There is an extraordinary level of institutional knowledge contained within the people of the TRRP. Several individuals that authored the TRFE and had a hand in the 33 other foundational documents still work on TRRP issues. There is strong interest in the TRRP on the part 34 of landowners, river users, and the public generally which can translate into support for the Program locally 35 but also at the state and federal level. 36



Technical capacity – The TRRP is comprised of very talented personnel that serve as staff in the ED Office 37 and that serve the TRRP as members of the TMC, TAMWG, and the AEAM and Implementation Teams. 38 The Program conducts a large amount of rigorous science at a very high level, forming the foundation of 39 information that is critical to the future success of the TRRP. This technical capacity can be mobilized to 40 develop and help implement a true, rigorous AM Plan for the TRRP. 41

42

Raw material for refining the TRRP structure – The TRFE, ROD, Implementation Plan, IAP, and a 43 multitude of other TRRP documents contain much of the guidance and information necessary to build an 44 45 official and negotiated TRRP Program Document (as a central foundational document) and an AM Plan. A good deal of the institutional knowledge used to develop those documents remains available to the TRRP, 46 and the work of the Program over many years has it poised to assess and synthesize learning in a way that 47 will help to chart a course forward for the TRRP. 48

49

50 **Consistent funding** – As compared to other similar programs, the TRPR has enjoyed and appears will continue to enjoy a remarkably consistent pattern of annual funding for Program activities. This is a 51 testament to the Program's ability to do work on the ground and its importance at the federal level, 52 particularly in the Bureau of Reclamation and in Congress. 53

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Key TRRP Organizational Structure Weaknesses 55

Generally, the Trinity River management system is locked in a rigidity trap where current management, 56 conflicts, and a flow of money remain relatively stable while adaptive management, learning, and policy 57 changes remain elusive, keeping the system resilient but susceptible to disturbance.^{11,12} Reviews of attempts 58 at adaptive management in other similar large-scale systems like the Trinity River point to the need to put 59 in place an appropriate collaborative governance structure before beginning adaptive management or any 60 attempt at science learning and exploration of management options.¹³ This means using leadership, trust, 61 and an ability to incorporate change and surprise to build an adaptive governance structure for the TRRP 62 that fits the scale of the problem and that will serve as the necessary condition to actually develop and 63 implement an AM Plan.^{14,15,16} 64

65

To that end, we identify below several weaknesses in the TRRP organizational structure that point to the 66 need to address the governance structure of the Program and how these weaknesses have logically prevented 67 development and implementation of AM on the Trinity River. 68

69

Lack of clear goals/objectives – As identified through document review in Tasks 1-2 and the interviews 70 in Task 3, there is no agreed-upon Program goal statement and there is a lack of clarity among TRRP 71 72 decision-makers as to the overall Program goal and related objectives. This has been identified before as a significant impediment to TRRP forward progress; the 2008 CDR Situation Assessment flagged this issue 73 74 as a "fundamental disagreement". Without clarity on the TRRP goals and objectives, decision-making 75 cannot be tied back to a central vision and set of organizing principles, and adaptive management will not succeed because it must be tied back to goals and objectives. It is imperative that the TRRP resolve this 76

central weakness once and for all to avoid remaining mired in its current state. 77

¹⁶ Chaffin, B.C., Gosnell, H., Cosens, B.A. 2014. A decade of adaptive governance scholarship: synthesis and future directions. Ecology and Society, 19(3):56.



¹¹ Gunderson, L.H., Holling, C.S., and Allen, C.R. 2010. The evolution of an idea – the past, present, and future of ecological resilience, in FOUNDATIONS OF ECOLOGICAL RESILIENCE 423-444 (L.H. Gunderson et al. eds., 2010).

¹² Gunderson, L.H., Garmestani, A., Rizzardi, K.W., Ruhl, J.B., and Light, A. 2014. Escaping a rigidity trap: governance and adaptive capacity to climate change in the Everglades social ecological system. *Idaho Law Review*, 51:127-156. ¹³ Lee, K.N. 1999. Appraising adaptive management. *Conservation Ecology*, 3(2):3.

¹⁴ Dietz, T., Ostrom, E., Stern, P.C. 2003. The struggle to govern the commons. Science, 302:1907-1911.

¹⁵ Folke, C., Hahn, T., Olsson, P., Norberg, J. 2005. Adaptive governance of social-ecological systems. Annu. Rev. Environ. Resour., 30:441-473.

Decision-making not shared – While the TMC is the decision-making body for the TRRP and its 78 membership does include a variety of Tribal, federal, state, and local partners, questions remain about 79 relative balance between TMC members and the influence each entity has on TRRP decisions. The 80 TAMWG serves as a sounding board for stakeholders, but that group does not have a vote at the TMC level, 81 so those stakeholders are not really part of the decision-making process. It is not clear why the stakeholder 82 group is labeled an "Adaptive Management Working Group" since adaptive management needs to be part 83 of the overall structure of the TRRP and stakeholders need to be part of TRRP decision-making. The 84 TAMWG seems to function largely like the Missouri River Recovery Implementation Committee 85 86 (MRRIC), a large and unwieldy stakeholder group that is merely advisory to the ultimate decision-maker on the Missouri River, the U.S. Army Corps of Engineers. Additionally, the TAMWG has now been 87 rendered "administratively inactive" by the Department of Interior thus completely isolating stakeholder 88 input from the functions of the TRRP and propagating further divisions among TRRP interests. 89

90

Decision-making process – There is significant internal concern within the TRRP about issues of "conflict of interest", how TRRP money is distributed to Program projects and to Program entities, and how this all influences TRRP decision-making and progress. TMC decisions are formalized via voting through a supermajority process that requires six out of eight votes to move something forward, often leaving one or two entities (often the same entities time and time again) disaffected with the decisions made by the TMC and forcing them to take actions outside of the regular TRPR process. This perpetuates feelings of mistrust and suspicion about what decisions are made and why.

98

99 **Role of ED and ED Office** – The Executive Director and Program staff are highly capable, committed to the TRRP, and perform excellent work on behalf of the Program. However, Program implementation is 100 staffed by a mix of Reclamation employees, Service employees, and employees of other TRRP entities. 101 There is a very limited TRRP identity and people identify themselves as working for their specific agency 102 and not the Program. A sense of team or collaborative spirit within the Program it not fully shared by all 103 parties. There is internal friction between staff of the two lead federal agencies (Reclamation and Service) 104 with no clear mandate for the ED to maintain a unified staff in the ED Office. Work at the technical level 105 of the TRRP and on-the-ground projects involve different groups of people from multiple agencies and 106 entities making coordinated oversight of the TRRP a nearly impossible task for the ED. It is difficult for 107 the ED and Program staff to play an "honest broker" role implementing the TRRP and delivering 108 information to the TMC for decision-making when those individuals are all employees of agencies and 109 entities that sit at the decision-making table as members of the TMC – this is a problem in nearly all large-110 scale river restoration/adaptive management programs across the U.S., housed both in Reclamation and in 111 the Corps of Engineers. 112

113

Coordination and communication – This weakness is an extension of issues identified above with the ED 114 115 and ED Office, but also of general organizational weaknesses within the TRRP. The TRRP is loosely structured similarly to the Glen Canyon Adaptive Management Program but as some TRRP interviewees 116 admitted, this structure was never well-understood or adapted to function according to the needs of the 117 TRRP. That structure has remained over the years and has led to issues with transparency, purpose, 118 redundancies, and breakdowns in communication within the TRRP and between the TRRP and outside 119 interests. Lack of clarity in coordination and communication within the TRRP is exacerbated by a lack of 120 clarity on Program goals and objectives. 121

122

Time scale – The TRRP seems to be operating on a perpetual time basis; if funds arrive each year, the Program will continue its work. While good from a jobs perspective, to what end is the TRRP conducting this annual work? An agreed-upon time scale for implementation (maybe in increments to allow for possible extensions when/if more time is needed for learning and adjustment), paired with clear goals and objectives and a better-functioning governance approach, will essentially force the TRRP to focus its work and move toward resolving critical uncertainties and assessing progress toward milestones.



Lack of AM Plan – This weakness is self-explanatory – the TRRP is supposed to be an AEAM organization 129 but has no agreed-upon AM Plan to implement. For every person that pointed to the Integrated Assessment 130 Plan (IAP) as that plan, there are two people that point out the IAP has never been formally adopted by the 131 TMC and is not regularly used or referred to as the Program is implemented. If the TRRP does not put an 132 AM Plan on paper that provides a clear roadmap of goals, objectives, management objectives, hypotheses, 133 134 Big Questions, monitoring plans, data analysis plans, data synthesis plans, and tools for feeding useful scientific and technical information to the TMC for use in TRRP decision-making, then the TRRP will 135 continue to fail to implement adaptive management. 136

137

Data synthesis – To its credit, the TRRP is beginning synthesis reporting as of 2017. However, it is not 138 clear how such reports will be used, or if they will be used, in TRRP decision-making. Without a clear set 139 of TRRP goals and objectives and an AM Plan, synthesis reporting likely will not be effective in helping 140 the TRRP with decision-making. 141

142

Independent science review – Given the original intent of the TRRP to function as an AEAM organization, 143 the robust technical capacity within the TRRP, and important science conducted by the Program, it is 144 curious that a stronger relationship has not been built between the TRRP and its Science Advisory Board 145 (SAB). The SAB is underutilized, does not appear to regularly report to or interact with the TMC, and does 146 not seem to operate under a specific TRRP charter or annual work plan that is approved by the TMC. 147

148

TRRP "Fit" in the Adaptive Management Typology 149

150 The TRRP falls into the bottom left quadrant of our proposed ideal typology for adaptive management where AM is not occurring, and the Program finds itself conducting some version of trial and 151 error. This "diagnosis" is evident from the results detailed in this report, and from the interviews in Task 152 3. As the Headwaters Team learned during the interviews, there is no agreement as to how (or if) the TRRP 153 defines adaptive management and whether the TRRP is implementing adaptive management at all (or 154 whether it wants to, or whether it can). In terms of the typology, without an AM Plan and a clear process 155 for utilizing adaptive management within the TRRP, all the good science being conducted by the Program 156 is largely falling into an ever-expanding "science pile". While the TMC is inclusive of several Tribal, 157 federal, state, and local entities, there is no true shared decision-making in the TRRP since stakeholders are 158 kept at arm's length and TMC voting procedures do not foster a climate of consensus decision-making. 159 Given the information contained in the foundational documents and the IAP, the technical capacity within 160 the TRRP, and the passion of those working for the Program on the Trinity River, the TRRP can move itself 161 into the upper right quadrant of the ideal adaptive management typology (where AM is successful) by re-162 organizing its structure (adaptive governance) and re-focusing its efforts to build and implement a TRRP 163

Adaptive Management Plan. 164



- Table 3. Output from governance component/subcomponent risk assessment of the TRRP. L = Likelihood rating, C = Consequence rating, R = Risk165 rating (Likelihood x Consequence). AM "Fit" is a qualitative assessment of each subcomponent's impact on the "fit" of TRRP AM in the ideal AM
- 166
- typology. See Appendix A for full details and output related to implementation of the AMPEF. 167
- 168

Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
	Go	overnance Component – Legitimacy				
Accountability	The TRRP is an official federal river restoration program that is legitimate and accountable as directed by three key foundational documents and several legislative authorities. The TRRP is enabled with decision responsibility through the foundational documents and related legislation.	The ROD was not negotiated by Program partners. Authority for the TRRP is not currently bound by a specified timeline for making decisions or achieving goals or objectives. Funding has been relatively stable over the years but the linkages between funding and milestones are weak. Decisions at the TMC level focus on annual budget line items, not on making management decisions/adjustments tied back to the foundational documents.	3	4	12	?
Responsiveness to constituencies	The TRRP is a public program affecting resources with direct links to local landowners, river users, and communities. The Program is authorized and funded through federal legislation, largely managed by a federal agency (Bureau of Reclamation), overseen by federal regulatory agencies (U.S. Fish and Wildlife Service and National Marine Fisheries Service), and is also connected to two Tribes, the State of California, and other federal and local partners.	The TMC is the decision-making body and is comprised of federal, tribal, state, and local entities. Technical committees are also structured in a similar collaborative manner. Discussions with TRRP partners suggest improvements need to be made in addressing the concerns and priorities of these partners. Though annual funding is consistent, it is not clear how the TRRP is viewed at the highest levels of the Department of Interior or among legislative entities. The TAMWG is the official committee for basin stakeholder interests and is part of the TMC but not a voting member. The TAMWG has been deemed "administratively inactive" by Interior and is currently not functioning. When active, the general feeling among TAMWG members was that their concerns and ideas were ignored by the TRRP. River landowners and river users provide regular feedback to the TRRP on operations and impacts on river land and activities such as fishing, much of it negative.	5	5	25	×
	Gover	nance Component – Structure/Capacity				
Polycentric	TRRP decisions are generally made by the TMC which serves as a "Board of Directors". The TMC receives input from the TAMWG, the Science Advisory Board (SAB), and several technical workgroups and is guided by an Executive Director and staff.	The decision-making body should be the TMC but there is language in the foundational documents suggesting decisions are to be made both by the TMC and the Executive Director. The TMC is ultimately advisory to the Secretary of the Interior, so decisions such as flow management actions are subject to review and approval by the Department of the Interior. The TRRP is generally organized according to Figure 1 in the Implementation Plan which is drawn heavily from a similar structure found in the Glen Canyon Adaptive Management Program. The relationships between the TMC, the TAMWG, and the AWAM Team (TMAG and RIG) are not well-defined or understood. The TRRP is nested within a larger suite of water management-related programs in California and in a broader area, including the CVPIA and issues related to the Klamath River. The TMC is inclusive of key tribal, federal, state, and local agencies but does not engage other stakeholders directly in decision-making. The TMC could serve as a centralized decision-making body but currently does not fully function well in this capacity. There is a lack of clarity about the role of the Executive Director and staff in the TRRP – do the ED and staff serve as "honest brokers" implementing the TRRP on behalf of the TMC, or does the TMC essentially rely on the ED and staff to make program decisions beyond day-to-day implementation?	4	4	16	×



Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
Coordination and communication	The ED and staff are responsible for most coordination and communication within the TRRP. This includes coordinating upward to the TMC from technical workgroups and the SAB, and downward from the TMC to technical workgroups and the public.	Coordination and communication of the TRRP is derived from Figure 1 in the Implementation Plan, which is based on a similar structure utilized in the Glen Canyon Adaptive Management Program. The TMC is the decision-making body and the ED and staff implement the Program on behalf of the TMC. The ED Office is comprised of both Reclamation staff and USFWS staff (Science Coordinator). There seem to be many technical communication between and among technical aspects of the TRRP – technical issues are discussed at TMC meetings and communication also occurs via reports and memos. Public coordination occurs largely through TMC meeting comment periods and via letters and emails to the ED Office. The SAB is largely coordinated by the TRRP Science Coordinator (a USFWS employee). Most information is contained on and communicated through the TRRP website. The clarity of coordination between the TMC, advisory committees, work groups, and the ED/ED Office is mixed. Much of this mixed clarity stems from a lack of internal TRRP agreement on goals, objectives, and vision. An ED Office ED oversight responsibilities for all staff creates internal staff tension and mixed messages to the TMC. The SAB is largely under-utilized and is largely divorced from interaction with the TMC, thus reducing its effectiveness in helping to provide the TMC with independent science review of Program implementation, analysis, and synthesis. There is regular communication within the TRRP and among decision-making entities, but that communication is not always effective. There is poor communication between the TMC and the TAMWG.	4	4	16	×
Scale (geography)	The TRRP is focused on the area of the Trinity River between Lewiston Dam and the North Fork Trinity River in northern California. This is only a segment of the mainstem Trinity, which continues below the North Fork until its confluence with the Klamath River and subsequent extension to the Pacific Ocean.	The TRRP does focus its on-the-ground work on the portion of the Trinity River between Lewiston Dam and the North Fork Trinity. While the TRRP focuses its work on the segment of the Trinity that is included in the ROD, the success/failure of the TRRP in terms of fisheries restoration is highly influenced by the fact that anadromous species move past the TRRP segment and are impacted by activities on the Trinity River outside the TRRP area, by activities on the Klamath River, and by ocean conditions and activities.	3	3	9	?
Scale (time)	The TRRP is not defined by a time increment, end date, or other time component in the Flow Study, Implementation Plan, ROD, or associated legislation.	The Program operates on an annual basis in terms of projects and funding but is not constrained by any identified time increment for achieving goals and objectives. The TRRP appears to operate under the premise that it will continue implementation if annual funding is provided.	4	4	16	×
Stakeholders involved in decision-making	The TMC is the decision-making body for the TRRP. Stakeholders are involved in the TRRP in an advisory capacity through the TAMWG.	The TMC is the decision-making body for the TRRP and is comprised of representatives of federal agencies, Tribes, and the State of California. Stakeholders such as local landowners, river users, etc. are part of the TAMWG which is an advisory body. A TAMWG representative participates in TMC meetings but does not have an official vote. The TAMWG believes that it is routinely ignored by the TMC and that it does not have any influence on TRRP decision-making. As of April 2018, the Department of Interior has rendered the TAMWG "administratively inactive" and it no longer even is serving in an advisory capacity for the TRRP.	5	5	25	×



Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
Technical capacity	Program staff and the technical portions of the AEAM organization (RIG, TMAG, and associated advisory committees and work groups) are strong and provide detailed technical capacity for the TRRP.Formal structure of ED, Program staff, advisory committees, work groups, and AEAM Team (RIG and TMAG) provides sound TRRP technical capacity. SAB is utilized to provide some independent science review. The staff split between 		2	2	4	~
	Governan	ce Component – Decision-Making Process				
Shared decision- making	Decisions are made at the TMC level, which includes a mix of federal, tribal, and state representatives but does not include stakeholders as official voting members.	Questions about relative balance between TMC members and the influence each entity has on TRRP decisions. Confusion about roles of Reclamation and the Service, and what it means that the Hoopa Valley Tribe signed the ROD. Much concern about issues of "conflict of interest", how TRRP money is distributed, and this influences decision-making and Program progress. Stakeholders represented on the TAMWG but do not have a TMC vote.	5	5	25	×
Fair and transparent	TMC decisions are recorded in meeting minutes that are made publicly available and TMC meetings are open to the public. The basis for TRRP decision-making is often not clear.	The TMC makes decisions for the TRRP. Those decisions are voted on in public meetings and recorded in meeting minutes posted on the TRRP web site. Lack of clarity in TRRP goals and objectives, mistrust among TMC entities, and lack of inclusion of stakeholders does not provide a clear basis for Program decisions. "Fairness" is a concern, given issues related to conflicts of interest in TMC decision-making, how Program funds are allocated, and how the Program measures its progress.	3	4	12	?
Consensus	The TMC operates on a super-majority basis.	TMC decisions are formalized via voting through a super-majority process. Six out of eight votes are required to formalize a decision. A super-majority ensures that no one entity can always stop TMC decision-making. However, this also can cause a situation where one or two TMC entities are repeatedly dissatisfied with the outcome of voting and decision-making. That dissatisfaction can then be used to disrupt TRRP functions. There is also the belief among some TRRP entities that while the TMC makes decisions, ultimately the TMC is only advisory to the Secretary of the Interior and that DOI really makes final TRRP decisions. Most decision-making appears to be focused on budget related matters.	4	4	16	×
Decisions linked to goals/objectives	Given the lack of clarity on the overall TRRP goal and related objectives, and the lack of an AM Plan for the TRRP, TMC decisions are only losely-based at best on TRRP goals/objectives.TMC decisions are generally made based on recommendations from the ED and Program staff, as well as the AEAM Team and advisory committees/work groups. Most TMC decisions at the current time revolved around annual budgets and how to allocate funds to TRRP projects, "legacy" projects, and TRRP science.		5	5	25	×
Dispute resolution	The TRRP operates on a super-majority basis and does not have a formal means for dispute resolution.	TMC decisions are made via super-majority vote (6 out of 8 votes) with no formal means for reaching consensus or resolving disputes. Disaffected parties exist from vote to vote (for example, the two Tribes are often on the opposite side of super-majority votes) and are left to express that dissatisfaction via other means.	3	3	9	?



Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
Adapt to surprises	This relates to the ability of the TRRP to adapt to surprises that arise on the landscape or that influence application of AM on the Trinity River.	The ED Office, AEAM Team, and advisory committees/work groups handle technical matters for the Program and make recommendations to the TMC. Any surprises on the landscape or in response to management actions would bubble up to the TMC for decision-making purposes through this technical structure. TRRP science is proceeding but not under an official AM Plan. Surprises in river or fisheries responses are not necessarily being anticipated by the Program.	4	3	12	<u> </u>
Ability to incorporate learning into decision-making The TRRP does not operate under a formal AM Plan so does not have a formal process or set procedures for using Program science learning as an input in decision-making.		The TMC makes decisions on how to spend Program funds on science projects, data analysis, and data synthesis. There is no agreed-upon AM Plan or set of Big Questions and priority hypotheses. Proposals for individual TRRP science projects, data analysis, data synthesis, etc. are developed through the technical aspects of the Program and work their way up to the TMC for final approval (largely through the annual TRRP budget process). Results are presented to the TMC in the form of reports and/or presentations, but the lack of an AM Plan and a lack of clarity about Program goals and objectives do not regularly facilitate using this learning to help make TRRP decisions.	4	3	12	<u>C.</u>

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- **Table 4.** Output from adaptive management (AM) component/subcomponent assessment of the TRRP. L = Likelihood rating, C = Consequence
- rating, R = Risk rating (Likelihood x Consequence). AM "Fit" is a qualitative assessment of each subcomponent's impact on the "fit" of TRRP
- AM in the ideal AM typology. See Appendix A for full details and output related to implementation of the AMPEF.
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Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
		AM Component – Assess				
Problem definition and agreement	There is a lack of clarity within the TRRP on the overall goals and objectives of the Program and there is not an agreed-upon definition of AM or an AM Plan.	There is no agreed-upon Program goal statement. There are numeric fish population goals, but most consider those values outdated or unachievable. The TRRP is not bound by a timeline for making decisions or achieving goals or objectives. There is no single, unifying foundational TRRP document that spells out the Program goal. There is a lack of clarity among TRRP decision-makers as to the overall Program goal and objectives. Decisions at the TMC level focus on annual budget line items, not on making management decisions/adjustments based on Program data analysis and synthesis.	5	5	25	×
Roadmap of goals, objectives, hypotheses	There is a lack of clarity within the TRRP on the overall goals and objectives of the Program and there is not an AM Plan.	TRRP science activities often relate back to the IAP and guidance in the ROD and Implementation Plan, but there is no agreed-upon set of hypotheses.	3	4	12	?
Decisions affected by information	TRRP decisions are based largely on annual funding priorities and are not solidly linked back to a set of Program goals, objectives, and hypotheses.	The TMC makes decision for the TRRP. TMC decision-making receives various levels of input from the ED/EDO, advisory committees and work groups, the TAMWG, and the SAB. Decisions at the TMC level focus on annual budget line items, not on making management decisions/adjustments based on Program data analysis and synthesis and linked to an AM Plan.	3	4	12	<u>•</u>
Collaborative process to develop this information	The TRRP has not initiated a collaborative process to develop a Program AM Plan and focus efforts to reach agreement on critical uncertainties and how to address them.	The foundational documents (TRFE, ROD, Implementation Plan) were not negotiated or built through a collaborative process of all key TRRP parties. The IAP was developed in a more collaborative manner but has never been formally adopted by the TMC.	5	5	25	×
		AM Component – Design				
Management objectives	Several TRRP documents includes language that could form specific management objectives (including the TRFE and the IAP) but this language needs to be unified and tied back to TRRP goals, objectives, and an AM Plan.	The TRFE contains a set of what can be described as management objectives. The IAP includes a set of six "primary objectives" that can be identified as management objectives for the TRRP. TRRP implementation at this point focuses more on three higher-order objectives from the foundational documents – annual flow regime, mechanical channel rehabilitation, and sediment management.	3	3	9	<u>?</u>
Management actions	The ROD and Implementation Plan provide guidance on implementing an annual flow regime, mechanical channel rehabilitation, and sediment management as TRRP management actions, but those actions are not currently implemented against clear goals, objectives, and an AM Plan.	The ROD and Implementation Plan specify annual flow volumes, 47 project sites for channel rehabilitation and side-channel rehabilitation, and sediment introduction volumes. These actions are being implemented but not in the context of an AM Plan or against a clear set of TRRP goals and objectives.	2	2	4	~
Monitoring/research protocols tailored to hypotheses and key questions from decision-makers	The TRRP does implement monitoring and research but not clearly in the context of agreed-upon goals, objectives, hypotheses, and Big Questions that relate to TMC questions important for decision-making.	The TRRP has a strong track record of project-specific and species monitoring and research. Most monitoring is related to implementation of the major TRRP "management actions" – annual flow volumes, rehabilitation projects, and sediment introduction. Monitoring and research are implemented based on annual projects and their intended objectives, rather than being implemented to deliver information useful in decision-making related to TRRP goals, objectives, and hypotheses.	3	3	9	<u></u>



Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
		AM Component – Implement				
Plan for implementation of management actions and monitoring	The TRRP is proceeding with management actions and monitoring on the ground but that implementation is not linked back to an agreed-upon AM Plan.	The Implementation Plan provides the best information on Program structure and operation, including specifying roles for the ED/EDO and the AEAM Team. The guidance provided in the Implementation Plan has thus far not served to help build and operate a truly collaborative program that is functioning in a manner that can support implementation of an AM Plan and related TMC decision-making.	3	3	9	?
Project oversight	In general, the ED and Program staff are responsible for day-to-day implementation of the TRRP, though several TMC entities are also involved in implementation and evaluation.	The ED and EDO provide day-to-day oversight of TRRP implementation. Project- specific oversight of TRRP management actions are often overseen by a mix of EDO staff and TRRP partner staff. There is tension within the EDO given the split of federal agency representation (Reclamation and Service) and the presence of TRRP partner staff. Project oversight seems to be handled on a case-by-case basis with different levels of oversight by and involvement of TRRP partner staff.	4	4	16	×
		AM Component – Monitor				
Implementation, effectiveness, and validation monitoring	The TRRP conducts implementation and effectiveness monitoring but does not conduct clear validation monitoring due to lack of clarity in overall goals and objectives and lack of an AM Plan that links science learning back to goals, objectives, hypotheses, Big Questions, and decision- making.	The TRRP has a strong track record of project-specific and species monitoring and research. Most monitoring is related to implementation of the major TRRP "management actions" – annual flow volumes, rehabilitation projects, and sediment introduction. Monitoring and research are implemented based on annual projects and their intended objectives (implementation and effectiveness), rather than being implemented to deliver information useful in decision-making related to TRRP goals, objectives, and hypotheses (validation).	4	4	16	×
		AM Component – Evaluate				
Data analysis	The TRRP conducts rigorous science and has conducted a good amount of data analysis to date.	Strong collection and analysis of implementation and effectiveness monitoring data. Some analysis of validation monitoring data, but there is a lack of consensus about data collection and analysis methods for key metrics such as fish population numbers.	2	2	4	~
Data synthesis	In 2017, the TRRP began to tackle data synthesis efforts though it remains unclear how, or if, these efforts unifying multiple lines of Program evidence and the results of data synthesis will be reported to the TMC and used in decision-making.	The TRRP began the process of developing several data synthesis reports in 2017. It is not clear how the TRRP synthesis reports now in development fit together to tell a full "story" of AM implementation, and how the conclusions of these efforts will link to TMC decision-making.	4	4	16	×
Independent science review	The SAB provides independent science review for the TRRP, and there is also project-by-project peer review of TRRP work proposals. Linkages to the TMC and the utility of this review as a factor in TMC decision-making are not robust or well- understood.	The TRRP has a standing independent science review panel in the form of the SAB. Independent peer review is utilized at least at the project review level when the Program is attempting to prioritize annual work and budgets. The TRRP has successfully published on topics such as sediment introduction. The SAB is underutilized, and no clear linkages exist between the SAB and the TMC. SAB work is conducted at the request of the Science Coordinator but does not seem to operate under a specific TRRP charter or an annual work plan approved by the TMC. Peer review is utilized at the project review/planning stage but does not seem to be regularly used to evaluate data analysis and/or synthesis reports.	4	4	16	×



Subcomponent	TRRP Description	TRRP Health Assessment	L	С	R	AM "Fit"
		AM Component – Adjust				
AM results communicated to decision-makers and used in decision- making	This subcomponent is in limbo for the TRRP unless and until an AM Plan is developed and a process is determined for synthesizing Program data, communicating it to the TMC, and having the TMC make decisions with this information as an input.	AM is not really being implemented in the TRRP, so science learning communicated to the TMC comes in the form of individual project reports. Without TRRP clarity on overall goals and objectives, and without an AM Plan that specifies priority hypotheses and addresses scientific and technical Big Questions of relevance to the TMC, this subcomponent remains largely non-functional.	5	5	25	×
Documentation of decision-making results	This subcomponent is in limbo for the TRRP unless and until an AM Plan is developed and a process is determined for synthesizing Program data, communicating it to the TMC, and having the TMC make decisions with this information as an input.	Decision-making results are reported largely in the form of TMC minutes. There is TRRP reporting but it is focused on project-by-project results and does not yet come in the form of synthesis reports. The TRRP began the process of some synthesis reporting in 2017. TMC decision-making at this point generally centers around annual budget priorities. Though the TRRP has begun the process of synthesis reporting, it is not clear how those synthesis reports relate to TMC questions or decision-making.	3	3	9	<u></u>

174



1 4.0 Next Steps

Our team will now move to Task 5 of the TRRP Refinements work and recommend program refinements to improve the structure, functions, and outcomes of the TRRP. Knowledge gained thus far through document review, interviews, and program evaluation through the AMPEF will point us toward aspects of the TRRP that most need to be refined and reformed. While the Output Tables in Appendix A refer to recommended TRRP refinements, a short document will be prepared as a deliverable for Task 5 that provides purpose and process details for our refinement recommendations.



Appendix A – Adaptive Management Program Evaluation Framework (AMPEF): Results of Implementation in the TRRP

-3 4

(AMPEF): Results of Implementation in the TRRP A full description of the AMPEF was included as Appendix A in the Final Report for Tasks 1-2: Review of Key TRRP Documents. For the purposes of Task 4, this appendix briefly describes the main steps of the

of Key TRRP Documents. For the purposes of Task 4, this appendix briefly describes the main steps of the
 AMPEF and includes the full output tables for all key components/subcomponents of TRRP governance
 and adaptive management (AM). The AMPEF is adapted from recent risk analysis work on the Great
 Barrier Reef.^{17,18,19}

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First, the Headwaters Team conducted a <u>health assessment</u> of the structure and function of each TRRP governance and AM component/subcomponent. We based our health assessments on information about the TRRP obtained through document review in Tasks 1-2, interviews in Task 3, our previous experience with the TRRP, and our work with and knowledge of other similar programs in the United States like the Platte River Recovery Implementation Program (PRRIP). Health assessment details are included in the following **Output Tables** and reference information regarding the Structure and Function of each governance and

- AM subcomponent. This information is also summarized in **Tables 1 and 2** in the <u>main body of this report</u>.
- 17

Second, the Headwaters Team assigned a Likelihood rating and Consequence rating for each governance 18 and AM subcomponent. The evaluation framework incorporates a likelihood and consequence risk rating 19 matrix to provide a more quantitative factor to accompany the qualitative health assessment. The matrix 20 was applied to all governance and AM subcomponents. Tables 1 and 2 detail standardized criteria utilized 21 to develop the likelihood and consequence ratings. This approach provides an easy and quick assessment 22 of potential governance or AM component/subcomponent failures that are likely to occur, program 23 strengths and weaknesses, and potential implications for overall program success or failure. This leads more 24 25 readily to identification of potential program reform measures in the next step of the evaluation framework.

26

Table 1. Rating scale for likelihood of governance or adaptive management component/subcomponent
 failure.

29

Risk Rating	Decision Rule
(1)	The governance or AM component/subcomponent is in excellent overall
(1)	health and will not fail to deliver its intended outcomes.
(2)	The governance or AM component/subcomponent is in good overall
(2)	health and is not likely to fail to deliver its intended outcomes.
(2)	The governance or AM component/subcomponent is in marginal health
(3)	and could fail to deliver its intended outcomes.
(4)	The governance or AM component/subcomponent is in poor overall
(4)	health and is likely to fail to deliver its intended outcomes.
(5)	The governance or AM component/subcomponent is dysfunctional or
(כ)	absent and will fail to deliver its intended outcomes.

30

¹⁹ Dale, A.P., Vella, K., Pressey, R.L., Brodie, J., Yorkston, H., Potts, R. 2013. A method for risk analysis across governance systems: a Great Barrier Reef case study. *Environmental Research Letters*, **8** 015037.



¹⁷ Dale, A.P., Vella, K., Pressey, R.L., Brodie, J., Gooch, M., Potts, R., Eberhard, R. 2016. Risk analysis of the governance system affecting outcomes in the Great Barrier Reef. *Journal of Environmental Management*, 183:712-721.

¹⁸ Dale, A.P., Potts, R., Vella, K. 2016. An analysis of key governance domains affecting environment outcomes and their social and economic consequences in the Great Barrier Reef: core data tables. Cairns: James Cook University.
Risk Rating	Decision Rule
(1)	Failure of the governance or AM component/subcomponent will have no consequences for intended outcomes.
(2)	Failure of the governance or AM component/subcomponent will have limited consequences for intended outcomes.
(3)	Failure of the governance or AM component/subcomponent will have consequences of concern for intended outcomes.
(4)	Failure of the governance or AM component/subcomponent will have significant consequences for intended outcomes.
(5)	Failure of the governance or AM component/subcomponent will have severe consequences for intended outcomes.

Table 2. Rating scale for consequences of governance or adaptive management subcomponent failure.

33

34 *Third*, the Headwaters Team assigned an overall <u>Risk rating</u> to each governance and AM subcomponent.

Figure 1 reflects a rating scale based on multiplying the rating for likelihood of failure and the rating for

36 consequences of that failure. This method allows for more accurate ranking and clustering of sub-

components to reveal more significant areas for program reform. This matrix also employs a color scale as
 a quick-reference guide to the degree of severity of risk.

39

40 **Figure 1.** Rating scale (likelihood x consequence) for governance and adaptive management subcomponent

41 risk.

42

Governance/AM component dysfunctional or absent and will fail to deliver intended outcomes. (5)	5	10	15	20	25
Governance/AM component in poor overall health and likely to fail to deliver intended outcomes. (4)	4	8	12	16	20
Governance/AM component in marginal health and could fail to deliver intended outcomes. (3)	3	6	9	12	15
Governance/AM component in good overall health and will not fail to deliver intended outcomes. (2)	2	4	6	8	10
Governance/AM component in excellent overall health and will not fail to deliver intended outcomes. (1)	1	2	3	4	5
Risk Rating	Failure of governance/AM component will have no consequences for intended outcomes. (1)	Failure of governance/AM component will have limited consequences for intended outcomes. (2)	Failure of governance/AM component will have consequences of concern for intended outcomes. (3)	Failure of governance/AM component will have significant consequences for intended outcomes. (4)	Failure of governance/AM component will have severe consequences for intended outcomes. (5)

Likelihood Rating

43

Consequence Rating



Fourth, the Headwaters Team assessed the "fit" of the TRRP in the proposed ideal typology for large-scale 44 AM based on the health assessment and risk rating of each governance and AM subcomponent. Figure 2 45 presents an ideal typology for adaptive management in large-scale aquatic recovery programs. The typology 46 serves as an attempt to merge governance and adaptive management components to provide qualitative 47 insight into the hypothesis that good governance through a strong process of shared decision making and 48 49 communication is likely to promote successful adaptive management at a large scale. High levels of communication and data synthesis but unilateral decision making is expected to predict adaptive 50 management being "stuck" in the six-step cycle well before the Adjust step. A similar condition is expected 51 52 for low levels of communication and data synthesis even in shared decision-making contexts. Little communication and data synthesis (resulting in a "science pile" where data is collected but not analyzed, 53 synthesized, or otherwise communicated to decision-makers) and unilateral decision-making is expected to 54 promote conditions that do not enable adaptive management and instead revert management back to trial 55 and error. 56

50 57

> **Figure 2.** An ideal typology for large-scale adaptive management. The two-dimensional grid is based on the categories of decision-making centralization and the level of communication/data synthesis occurring

- within the adaptive management program. Shaded boxes and colored symbols indicate the level of adaptive
- 61 management performance.



Communication & data synthesis

62 63

Based on results of the TRRP subcomponent health assessment; development of likelihood, consequence,

and risk ratings for each governance and AM subcomponent; and qualitative placement of each program in

the proposed ideal adaptive management typology, recommendations for TRRP reform and refinement will

be proposed. Suggested refinements are briefly referenced in the **Output Tables** that follow. These

refinement recommendations will be formalized and explained in the deliverable for Task 5 and serve as a starting point for improvement to provide a benchmark to monitor to see how the TRRP adjusts over time.



70 AMPEF Output Tables for TRRP – Governance

7	1
1	

Governance Component	 Subcomponent Description: Definition – Program is accountable and enables with decision 		
Subcomponent Accountability	 responsibility. The TRRP is an official federal river restoration program that is legitimate and accountable as directed by three key foundational documents (Trinity River Flow Evaluation Study, Implementation Plan, Record of Decision) and several legislative authorities (P.L. 98-541, P.L. 104-143, P.L. 102-575). The TRRP is enabled with decision responsibility through the foundational documents and related legislation. 		
Health Assessment	 Structural: The ROD is the ultimate statement of TRRP authority, but it was not negotiated by Program partners. Authority for the TRRP is not currently bound by a specified timeline for making decisions or achieving goals or objectives. Funding has been relatively stable over the years but the linkages between funding and milestones are weak. 	 Functional: The TRRP is being implemented, has a Program staff, and has a decision-making body in the TMC. Decisions at the TMC level focus on annual budget line items, generally not on making management decisions/adjustments that are clearly tied back to the foundational documents. 	
Likelihood of Failure	 The three foundational documents provide guidance on the structure and function of the TRRP but differences between those three documents has led to Program drift over time. Despite the presence of these documents and prior reviews of the TRRP, there remains a feeling that the Program is stuck and needs refinements to move forward. 		
Likelihood Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 3	
Consequences of Failure	• The TRRP can only move forward with purpose if there is clarity in overall goals and objectives that come from foundational documents.		
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 6	Final Rating (after interviews) 12	
ldeal AM Typology "Fit"	 AM is hard-wired into the TRRP though it is based on the original model of Adaptive Environmental Assessment and Management (AEAM). There is clear direction to implement some version of AM and route information back to decision-makers, but actual implementation of true AM has been slowed in large part due to a lack of clarity in Program goals and objectives, and explicit development of an agreed-upon AM Plan linked back to those goals and objectives. 		



Recommendations for Reform	 Negotiate a single, unified TRRP Program Document that clearly spells out goals and objectives and provides clear guidance on how program implementation will be evaluated against these goals and objectives. 		
References: U.S. Fish and Wildlife Service and Hoopa Valley Tribe. 1999. Trinity River Flow Evaluation – Final Report. U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, CA.			
U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 2000. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report.			
U.S. Department of the Interior. 2000. Record of Decision, Trinity River Mainstem Fishery Restoration, Final Environmental Impact Statement/Environmental Impact Report.			
P.L. 98-541, An Act to provide for the restoration of the fish and wildlife in the Trinity River Basin, California, and for other purposes. <u>https://www.gpo.gov/fdsys/pkg/STATUTE-98/pdf/STATUTE-98-Pg2721.pdf</u>			
P.L.102-575, Title 34, Central Valley Project Improvement Act of 1992. https://www.usbr.gov/mp/cvpia/title_34/public_law_complete.html			
P.L. 104-143, Trinity River Basin Fish and Wildlife Management Reauthorization Act of 1995. https://www.gpo.gov/fdsys/pkg/PLAW-104publ143/content-detail.html			



Governance Component	Subcomponent Description:			
Legitimacy	 Definition – Program is responsive to constituencies both above and below the level of the decision melting body. 			
Subcomponent Responsiveness to constituencies	 The TRRP is a public program affecting resources with direct links to local landowners, river users, and communities. The Program is authorized and funded through federal legislation, largely managed by a federal agency (Bureau of Reclamation), overseen by federal regulatory agencies (U.S. Fish and Wildlife Service and National Marine Fisheries Service), and is also connected to two Tribes, the State of California, and other federal and local partners. 			
Health Assessment	 Structural: The TRRP decision-making body is the Trinity Management Council (TMC) which is comprised of federal, tribal, state, and local entities. Below the TMC, technical committees are also structured in a similar collaborative manner. The Trinity Adaptive Management Working Group (TAMWG) is the official committee for basin stakeholder interests. The TAMWG is part of the TMC but not a voting member. Functional: Discussions with TRRP partners suggest improvements need to be made in addressing the concerns and priorities of federal, tribal, and state partners. Though annual funding is consistent, it is not clear how the TRRP is viewed at the highest levels of the Department of Interior or among legislative entities. The TAMWG has been deemed "administratively inactive" by Interior and is currently not functioning. When active, the general feeling among TAMWG members was that their concerns and ideas were ignored by the TRRP. River landowners and river users provide regular feedback to the TRRP on operations and impacts on river land and activities such as fishing, much of it negative. This communication is conducted via letters to the TRRP and/or presentations at TMC meetings. 			
Likelihood of Failure	 This subcomponent exhibits a structural flaw in that stakeholders are largely relegated to an advisory-only role rather than having a role in actual Program decision-making. This creates a functional flaw in that stakeholders feel their concerns and ideas are being ignored. The designation of the TAMWG as "administratively inactive" by Interior reveals how easily stakeholders can be completely divorced from Program decision-making. All TRRP entities shared frustrations regarding the TRRP and its effectiveness at addressing their concerns and priorities, even when those entities were at the TMC decision-making table. 			
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 3 5			
Consequences of Failure	• The structure and function of this subcomponent is likely a fatal flaw for the TRRP. The current "Board of Directors" approach taken by the TMC and the presence of a separate stakeholder body is common among large-scale programs like the TRRP. In nearly all cases, this is a key factor in program failure.			



Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 5	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 25	
Ideal AM Typology "Fit"	• AM will not function properly at a large scale without a functioning collaborative decision-making/governance structure.		
Recommendations for Reform	 Negotiate a revised decision-making structure that incorporates stakeholders and a voting process that more adequately represents the range of TRRP interests and impacts. 		

References:



Governance	Subcomponent Description:		
Component	 Definition – Polycentric organiz 	ational structure with a centralized	
Structure/Capacity	decision-making body but with explicit support from advisory		
Subcomponent Polycentric	 TRRP decisions are generally made by the TMC which serves as a "Board of Directors". The TMC receives input from the TAMWG, the Science Advisory Board (SAB) and several technical workgroups and 		
	is guided by an Executive Direct	tor and staff	
	Structural:		
Health Assessment	 The decision-making body should be the TMC but there is some language in the foundational documents suggesting decisions are to be made both by the TMC and the Executive Director. The TMC is ultimately advisory to the Secretary of the Interior, so decisions such as flow management actions are subject to review and approval by the Department of the Interior. The TRRP is generally organized according to Figure 1 in the Implementation Plan which is drawn heavily from a similar structure found in the Glen Canyon Adaptive Management Program. The relationships between the TMC, the TAMWG, and the AWAM Team (TMAG and RIG) are not well-defined or understood. The TRRP is nested within a larger suite of water management-related programs in California and in a broader area, including the CVPIA and issues related to the Klamath River 	 Functional: The TMC is inclusive of key tribal, federal, state, and local agencies but does not engage other stakeholders directly in decision-making. The TMC could serve as a centralized decision-making body but currently does not fully function well in this capacity. There is a lack of clarity about the role of the Executive Director and staff in the TRRP – do the ED and staff serve as "honest brokers" implementing the TRRP on behalf of the TMC, or does the TMC essentially rely on the ED and staff to make program decisions beyond day-to-day implementation? 	
	 The raw materials are present in decision-making structure with 	in the TMC to develop a true polycentric	
Likelihood of Failure	the Interior to the TMC and thro	bugh the TRRP, but the program	
	currently does not function well	in this manner.	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 3 4		
Consequences of Failure	Persistence of the current decision-making approach will continue to render the TRRP unable to make decisions and thus will impede progress.		
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4	
Risk Rating	Initial Rating (before interviews) 9	Final Rating (after interviews) 16	



(Likelihood Rating X Consequence Rating)	
Ideal AM Typology "Fit"	 AM will only work in the TRRP if the decision-making structure and process are revised to represent a more polycentric, collaborative approach to implementing the program and making decisions.
Recommendations for Reform	 Negotiate a revised decision-making structure that incorporates stakeholders and a voting process that more adequately represents the range of TRRP interests and impacts.
Deferences	

References:

U.S. Fish and Wildlife Service and Hoopa Valley Tribe. 1999. Trinity River Flow Evaluation – Final Report. U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, CA.

U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 2000. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report.

U.S. Department of the Interior. 2000. Record of Decision, Trinity River Mainstem Fishery Restoration, Final Environmental Impact Statement/Environmental Impact Report.

Camacho, A.E., Susskind, L., Schenck, T. 2010. Collaborative planning and adaptive management in Glen Canyon: a cautionary tale. Columbia Journal of Environmental Law, 35:1, 1-55.



Governance Component Structure/Capacity Subcomponent Coordination and Communication	 Subcomponent Description: Definition – Clear and regular coordination and communication among and between governance levels within the Program. The ED and staff are responsible for most coordination and communication within the TRRP. This includes coordinating upward to the TMC from technical workgroups and the SAB, and downward from 	
Health Assessment	 Structural: The coordination (and communication) of the TRRP is derived from Figure 1 in the TRP is derived from Figure 1 in the Serie Coordination Plan, which is based on a similar structure utilized in the Glen Canyon Adaptive Management Program. The TMC is the decision-making body and the ED and staff implement the Program on behalf of the TMC. The ED Office is comprised of both Reclamation staff and USFWS staff (Science Coordinator). There seem to be many technical committees/work groups, with redundancies in some cases. There is a mix of communication between and among technical aspects of the TRRP – technical issues are discussed at TMC meetings and communication also occurs via reports and memos. Public coordination occurs largely through TMC meeting comment periods and via letters and emails to the ED Office. The SAB is largely coordinated by the TRRP science Coordination contained on and communicated through the TRRP website. Most information contained on and communicated through the TRRP website. Functional: The Cane Structure utilized in the TRRP website. Functional: The Cane Structure utilized is the trans of communication contained on and communicated through the TRRP website. Fuestion was an addition to the trans of the trans and emails to the ED Office. The SAB is largely coordinated by the TRRP science Coordinator (a USFWS employee). Most information contained on and communicated through the TRRP website. Most information contained on and communicated through the TRRP website. Enconsistent communication structure and historical Program information. 	
Likelihood of Failure	 Coordination and communication within the TRRP are confused and tense. It is likely this aspect of governance will contribute to the TRRP stalling if issues are not resolved. 	



Likelihood Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 4	
Consequences of Failure	• Lack of clear roles of TRRP authority (TMC makes decisions, ED responsible for implementation, technical committees evaluate data and provided recommendations to the TMC) will lead to TRRP stagnation and a lack of decisions and forward progress.		
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 6	Final Rating (after interviews) 16	
Ideal AM Typology "Fit"	• AM will remain slow or stuck, or the TRRP will simply be conducting "trial and error", if this aspect of Program governance is not resolved.		
Recommendations for Reform	 Consider reorganization of TRRP away from model in Implementation Plan ("AEAM organization") and consider a more structured approach to information flow and management similar to the Platte River Recovery Implementation Program (TMC makes decisions, ED responsible for implementation, a unified ED Office staff, a small set of structured advisory committees, and better integration of the SAB). 		
References:			

U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 2000. Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report.

Platte River Recovery Implementation Program (PRRIP). 2006. Final Program Document. U.S. Department of the Interior, State of Wyoming, State of Nebraska, State of Colorado.



Governance	Subcomponent Description:		
Component	Definition – Scale of Program represents manageable geography on		
Structure/Capacity	the ground and is tied to relevance of key decision-makers.		
Subcomponent Scale (geography)	 The TRRP is focused on the area of the Trinity River between Lewiston Dam and the North Fork Trinity River in northern California. This is only a segment of the mainstem Trinity, which continues below the North Fork until its confluence with the Klamath River and subsequent extension to the Pacific Ocean 		
		 Functional: While the TRRP focuses its work on the segment of the Trinity that is included in the DOD the 	
Health Assessment	 Structural: The TRRP does focus its on- the-ground work on the portion of the Trinity River between Lewiston Dam and the North Fork Trinity. 	success/failure of the TRRP in terms of fisheries restoration is highly influenced by the fact that anadromous species move past the TRRP segment and are impacted by activities on the Trinity River outside the TRRP area, by activities on the Klamath River, and by ocean conditions and activities.	
Likelihood of Failure	The TRRP can be successful but its current set of goals and objectives are both not clear and likely not responsive to outside influences beyond the centrel of the TRPP.		
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3	
Consequences of Failure	 Without adjusting its goals and objectives accordingly, the TRRP may never be able to reach critical milestones. 		
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 9	
ldeal AM Typology "Fit"	• This subcomponent presents a challenge for AM in the TRRP because of the disconnect between what the TRRP can influence and achieve and the fisheries used as a measuring stick of Program success.		
Recommendations for Reform	 Adjust goals and objectives to adequately capture what the TRRP can control, and better identify what influence the Program can have on an anadromous fishery in the area where the TRRP can implement management actions. 		
References:			



Governance	Subcomponent Description:	
Component	 Definition – The Program is bound by a time scale that will allow togething of means togething and achieve means of 	
Structure/Capacity	tracking of progress toward milestones and achievement of	
Subcomponent Scale (time)	 The TRRP is not defined by a time increment, end date, or other time component in the Flow Study, Implementation Plan, ROD, or associated legislation. 	
Health Assessment	 Structural: The Program operates on an annual basis in terms of projects and funding but is not constrained by any identified time increment for achieving goals and objectives. Functional: The TRRP appears to operate under the premise that it will continue implementation if annual funding is provided. 	
Likelihood of Failure	The TRRP may be able to continue for a long period of time under this arrangement but without an identified time increment tied to the ROD and legislative authority there is little incentive to show sustained progress toward achievable goals and objectives.	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 3 4	
Consequences of Failure	 Failure of this subcomponent will likely mean a continued lack of the TRRP being held accountable for progress toward its goals and objectives. 	
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 16
ldeal AM Typology "Fit"	 While implementation of true AM at a large scale occurs best over a period long enough to see the results of implementation and species responses, the lack of a defined time increment for the TRRP has not provided the kind of direction necessary to ensure AM rigor. 	
Recommendations for Reform	 Negotiate an acceptable time increment for the next stage of TRRP implementation and specify it in a new foundational document/agreement. 	
References:		

Governance Component Structure/Capacity Subcomponent Stakeholders involved in decision-making	 Subcomponent Description: Definition – Stakeholders directly involved in Program decision-making. The TMC is the decision-making body for the TRRP. Stakeholders are involved in the TRRP in an advisory capacity through the TAMWG. 	
Health Assessment	 Structural: The TMC is the decision- making body for the TRRP and is comprised of representatives of federal agencies, Tribes, and the State of California. Stakeholders such as local landowners, river users, etc. are part of the TAMWG which is an advisory body. A TAMWG representative participates in TMC meetings but does not have an official vote. 	 Functional: The TAMWG believes that it is routinely ignored by the TMC and that it does not have any influence on TRRP decision-making. As of April 2018, the Department of Interior has rendered the TAMWG "administratively inactive" and it no longer even is serving in an advisory capacity for the TRRP.
Likelihood of Failure	 Based on experience with the PRRIP and other similar programs, unilateral decision-making by a single entity (agency) or a decision- making body comprised only of agency representatives will not foster the trust and procedures necessary to ensure consensus decision- making within a program and will be a key factor in program failure. 	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews)	
Consequences of Failure	 The consequence of keeping stakeholders out of the TRRP decision- making process will continue to be a lack of trust between the TRRP and stakeholders, complaints about management action, and possibly a lack of support for continuing the TRRP in the long run. 	
Consequence Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 5
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 16	Final Rating (after interviews) 25
Ideal AM Typology "Fit"	 AM can only be successful if science learning is fed back into a functioning decision-making process and Program governance structure. Even if the TRRP can build and implement a true AM Plan, failure to address this subcomponent will likely stop any forward progress for the TRRP in terms as AM serving as an input to decision-making. 	
Recommendations for Reform	 Re-constitute the TMC to include some level of direct stakeholder involvement. Consider development of an organizational charter for the TMC that specifies voting entities, voting processes, and how decisions will reflect the larger TRRP community. 	



Governance	Subcomponent Description:	
Component	Definition – Present and adequate within the Program to deliver	
Structure/Capacity	information useful to decision-makers.	
Subcomponent Technical capacity	 Program staff and the technical portions of the AEAM organization (RIG, TMAG, and associated advisory committees and work groups) are strong and provide detailed technical capacity for the TRRP. 	
Health Assessment	 Structural: Formal structure of ED, Program staff, advisory committees, work groups, and AEAM Team (RIG and TMAG) provide sound TRRP technical capacity. SAB utilized to provide independent science review. Functional: The staff split between Reclamation and the Service in the ED Office confuses lines of communication and work between and among technical aspects of the TRRP. Despite this, there is constant and strong work being done within technical committees and work groups that keep the TRRP well- positioned to act on science learning and data analysis and synthesis. Some concern about leadership turnover in the TRRP, as well as staff and technical representative turnover. 	
Likelihood of Failure	Generally low given the extent of TRRP technical capacity and commitment to the TRRP and to the work of the Program	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 2	
Consequences of	 Lack of technical capacity would prevent the TRRP from moving forward with AM. This is not the case; lack of progress on AM is more a function of overall structure of the TRRP, lack of clear and agreed-upon goals and objectives, and lack of an AM Plan to focus the work of technical committees and work groups. 	
Failure	overall structure of the TRRP, I objectives, and lack of an AM F committees and work groups.	ogress on AM is more a function of lack of clear and agreed-upon goals and Plan to focus the work of technical
Failure Consequence Rating	overall structure of the TRRP, I objectives, and lack of an AM F committees and work groups. Initial Rating (before interviews) 2	ogress on AM is more a function of lack of clear and agreed-upon goals and Plan to focus the work of technical Final Rating (after interviews) 4
Failure Consequence Rating Risk Rating (Likelihood Rating X Consequence Rating)	overall structure of the TRRP, I objectives, and lack of an AM F committees and work groups. Initial Rating (before interviews) 2 Initial Rating (before interviews) 2	ogress on AM is more a function of lack of clear and agreed-upon goals and Plan to focus the work of technical Final Rating (after interviews) 4 Final Rating (after interviews) 4
Failure Consequence Rating Risk Rating (Likelihood Rating X Consequence Rating) Ideal AM Typology "Fit"	 This is not the case, lack of pice overall structure of the TRRP, I objectives, and lack of an AM F committees and work groups. Initial Rating (before interviews) 2 Initial Rating (before interviews) 2 High technical capacity within the implemented. 	ogress on AM is more a function of lack of clear and agreed-upon goals and Plan to focus the work of technical Final Rating (after interviews) 4 Final Rating (after interviews) 4 he TRRP ensures that true AM can be
Failure Consequence Rating (Likelihood Rating X Consequence Rating) Ideal AM Typology "Fit" Recommendations for Reform	 This is not the case, lack of pice overall structure of the TRRP, I objectives, and lack of an AM F committees and work groups. Initial Rating (before interviews) 2 Initial Rating (before interviews) 2 High technical capacity within the implemented. Update the structure of TRRP to of standing advisory committees Create clear lines of communic these committees to avoid reducinformation to the TMC. 	bgress on AM is more a function of lack of clear and agreed-upon goals and Plan to focus the work of technical Final Rating (after interviews) 4 Final Rating (after interviews) 4 Final Rating (after interviews) 4 he TRRP ensures that true AM can be technical capacity to develop a small set es. ation and authority (through charters) for undancies and ensure a smooth flow of



Governance	Subcomponent Description:	
Component	Definition – Decision-making shared among management agencies	
Decision-Making Process	and stakeholders.	
Subcomponent	• Decisions are made at the TMC level, which includes a mix of federal,	
Shared decision-making	tribal, and state representatives but does not include stakeholders as	
Health Assessment	 Structural: The TMC includes federal, tribal, and state agency representatives. This representation is shared downward within the TRRP in the AEAM Team, advisory committees, work groups, etc. Stakeholder groups are represented on the TAMWG. A TAMWG representative 	
	attends TMC meetings but does not have an official vote. Influences decision-making and Program progress. TMC does not really function as a Board of Directors for the TRRP.	
Likelihood of Failure	 High. Decision-making is not shared, there is mis-trust among decision-making entities, and there is a lack of clarity about the bounds of TRRP decisions (goals, objectives, vision for Program outcomes, etc.). 	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 3 5	
Consequences of Failure	 The TMC will not make decisions that are supported even within the TRRP. Continued feelings of mistrust among and between TMC entities. Inability to act on TRRP science learning. Continued public concern and isolation of stakeholders. 	
Consequence Rating	Initial Rating (before interviews) Final Rating (after interviews) 3 5	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9 Final Rating (after interviews) 25	
Ideal AM Typology "Fit"	 Failing to fix this subcomponent will ensure AM remains stuck or that it is never truly implemented and utilized by the TRRP. 	
Recommendations for Reform	 Re-constitute the TMC to include some level of direct stakeholder involvement. Consider development of an organizational charter for the TMC that specifies voting entities, voting processes, and how decisions will reflect the larger TRRP community. 	
References:		



Governance	Subcomponent Description:	
Component	Definition – Decisions made openly and basis for decisions made	
Decision-Making Process	available.	
Subcomponent	• TMC decisions are recorded in meeting minutes that are made publicly	
Fair and transparent	available and TMC meetings are open to the public. The basis for	
	TRRP decision-making is often not clear.	
Health Assessment	 Structural: The TMC makes decisions for the TRRP. Those decisions are voted on in public meetings and recorded in meeting minutes posted on the TRRP web site. 	 Functional: Lack of clarity in TRRP goals and objectives, mistrust among TMC entities, and lack of inclusion of stakeholders does not provide a clear basis for Program decisions. "Fairness" is a concern, given issues related to conflicts of interest in TMC decision-making, how Program funds are allocated, and how the Program measures its progress.
Likelihood of Failure	 Mixed. Decisions are made publicly and recorded via meeting minutes but the basis for those decisions is not always well-understood. 	
Likelihood Rating	Initial Rating (before interviews) 3 Final Rating (after interviews) 3	
Consequences of Failure	 Suspicion of Program decisions, lack of understanding about why decisions were made and how those decisions relate to science learning and progress toward Program milestones. 	
Consequence Rating	Initial Rating (before interviews) 3 Final Rating (after interviews) 4	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9 Final Rating (after interviews) 12	
Ideal AM Typology "Fit"	• Important to ensure decisions are open and well-understood, providing clear linkages to science learning and how management actions are adjusted accordingly.	
Recommendations for Reform	 Re-constitute the TMC to include some level of direct stakeholder involvement. Consider development of an organizational charter for the TMC that specifies voting entities, voting processes, and how decisions will reflect the larger TRRP community and how decisions are to be informed by AM. 	
References:		



Governance Component Decision-Making Process Subcomponent Consensus	 Subcomponent Description: Definition – Program decisions are made by consensus of the decision-making body. The TMC operates on a super-majority basis. 	
Health Assessment	Structural: • TMC decisions are formalized via voting through a super-majority process. Six out of eight votes are required to formalize a decision.	 Functional: A super-majority ensures that no one entity can always stop TMC decision-making. However, this also can cause a situation where one or two TMC entities are repeatedly dissatisfied with the outcome of voting and decision-making. That dissatisfaction can then be used to disrupt TRRP functions. There is also the belief among some TRRP entities that while the TMC makes decisions, ultimately the TMC is only advisory to the Secretary of the Interior and that DOI really makes final TRRP decisions. Most decision-making appears to be focused on budget related matters.
Likelihood of Failure	Consensus is not required for a program to make decisions and move forward but it should at least be the goal of TMC decisions to ensure consistent and supported decision-making. TRRP super-majority rules can get decisions close to consensus but there remains the possibility that one or two entities will always find themselves on the wrong side of TMC decisions.	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Consequences of Failure	 Constantly disaffected parties functions and express their dis 	can find other ways to disrupt TRRP ssatisfaction.
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 16
Ideal AM Typology "Fit"	• The hard work required to reach consensus decisions in large-scale programs like the TRRP is the best way forward to ensure AM information is carefully considered and wisely used in decision-making.	
Recommendations for Reform	 Establish clear consensus-based decision-making procedures for the TMC. 	
References:		



Governance	Subcomponent Description:		
Component	Definition – Decisions tied to the processes described in the		
Decision-Making Process	foundational document and linked to Program goals and objectives.		
Subcomponent	Given the lack of clarity on the overall TRRP goal and related		
Decisions linked to	objectives, and the lack of an	AM Plan for the TRRP, TMC decisions	
goals/objectives	are only loosely-based at best	on TRRP goals/objectives.	
	Structural:	ructural:	
	• TMC decisions are generally	 TMC decisions are generally Functional: 	
	made based on	 Most TMC decisions at the current 	
Health Assessment	recommendations from the	time revolved around annual	
nearth Assessment	ED and Program staff, as	budgets and how to allocate funds	
	well as the AEAM Team and	to TRRP projects, "legacy"	
	advisory committees/work	projects, and TRRP science.	
	groups.		
Likelihood of Failure	 High, given the lack of TRRP-wide agreement on the overall goal and related objectives of the Program. 		
Likelihood Pating	Initial Rating (before interviews) Final Rating (after interviews)		
	3 5		
Consequences of Failure	Failure to meet agreed-upon TRRP goals and objectives.		
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 5	
Risk Rating	Initial Dating (hotars interviews)	Final Dation (after interviews)	
(Likelihood Rating X			
Consequence Rating)	9	25	
	Critical step for successful AM.		
Ideal AM Typology "Eit"	AM must be built around TRR	P goals and objectives. Until this	
Ideal All Typology Fit	subcomponent is resolved, AM will not be successfully imple		
	the TRRP.		
Recommendations for	Develop agreed-upon goals and objectives for the TRRP.		
Reform	Build a TRRP AM Plan based on these goals and objectives.		
References:			



Governance	Subcomponent Description:	Subcomponent Description:	
Component	• Definition – There is a means for resolving disputes and decisions that		
Decision-Making Process	do not reach consensus.		
Subcomponent	 The TRRP operates on a superior 	er-majority basis and does not have a	
Dispute resolution	formal means for dispute reso	lution.	
Health Assessment	 Structural: TMC decisions are made via super-majority vote (6 out of 8 votes) with no formal means for reaching consensus or resolving disputes. 	 Functional: Disaffected parties exist from vote to vote (for example, the two Tribes are often on the opposite side of super-majority votes) and are left to express that dissatisfaction via other means. 	
Likelihood of Failure	 This is an extension of the consensus and shared-decision-making subcomponents. This subcomponent can be resolved in the TRRP by addressing those other subcomponents and establishing a process to reach consensus decisions. 		
Likelihood Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 3	
Consequences of Failure	• As happens currently in the TRRP, parties that do not support super- majority votes remain disgruntled and believe their concerns and ideas are not fully understood and addressed by the TMC.		
Consequence Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 3	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 4	Final Rating (after interviews) 9	
Ideal AM Typology "Fit"	 The hard work required to reach consensus decisions in large-scale programs like the TRRP is the best way forward to ensure AM information is carefully considered and wisely used in decision- making. 		
Recommendations for Reform	 Establish clear consensus-based decision-making procedures for the TMC. This is the best remedy for dispute resolution, short of engaging in formal dispute resolution proceedings. 		
References:			



Governance Component	 Subcomponent Description: Definition – Program can resp (upportaintu) 	ond to change and surprise
Subcomponent Adapt to surprises	 This relates to the ability of the TRRP to adapt to surprises that arise on the landscape or that influence application of AM on the Trinity River. 	
Health Assessment	 Structural: The ED Office, AEAM Team and advisory committees/work groups handle technical matters for the Program and make recommendations to the TMC. Any surprises on the landscape or in response to management actions would bubble up to the TMC for decision-making purposes through this technical structure. 	
Likelihood of Failure	 Not necessarily a failure of the entire TRRP but certainly could prove challenging to interpretation of AM implementation results if no preparations are made to deal with surprises. 	
Likelihood Rating	Initial Rating (before interviews) Final Rating (after interviews) 4	
Consequences of Failure	 Important for the TRRP (and any program) to retain the learning and decision-making flexibility to respond to surprises so that results from Program implementation are responsive to new conditions. 	
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 12
Ideal AM Typology "Fit"	 Important for implementation of true AM. Respond to surprises in how the Trinity River or fisheries respond to management actions, new features on the landscape (like phragmites on the central Platte River), etc. 	
Recommendations for Reform	 Develop and implement an agreed-upon AM Plan within a revised TRRP governance and decision-making structure. 	
References:		



Governance Component Decision-Making Process Subcomponent Ability to incorporate learning into decision- making	 Subcomponent Description: Definition – Program can incorporate learning from implementation into decision-making. The TRRP does not operate under a formal AM Plan so does not have a formal process or set procedures for using Program science learning as an input in decision-making. 	
Health Assessment	 Structural: The TMC makes decisions on how to spend Program funds on science projects, data analysis, and data synthesis. There is no agreed-upon AM Plan or set of Big Questions and priority hypotheses. 	 Functional: Proposals for individual TRRP science projects, data analysis, data synthesis, etc. are developed through the technical aspects of the Program and work their way up to the TMC for final approval (largely through the annual TRRP budget process). Results are presented to the TMC in the form of reports and/or presentations, but the lack of an AM Plan and a lack of clarity about Program goals and objectives do not regularly facilitate using this learning to help make TRRP decisions.
Likelihood of Failure	 The Program can function without this subcomponent being resolved but this is a critical step the TRRP will need to focus on if AM is to be implemented successfully. 	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Consequences of Failure	Inability to successfully implement true AM.	
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 12
Ideal AM Typology "Fit"	This is a fundamental requirement of successful AM. Inability to incorporate science learning into decision-making means TRRP science will continue to add to the "science pile" without becoming a useful input to decision-making.	
Recommendations for Reform	Requires both a re-structuring of TRRP decision-making processes and development of a Program AM Plan	
References:		



AMPEF Output Tables for TRRP – Adaptive Management (AM)

AM Component	Subcomponent Description:	
Assess	• Definition – Program has clear goals and objectives, and there is an	
Subcomponent Problem definition and agreement	 agreed-upon definition of AM. There is a lack of clarity within the TRRP on the overall goals and objectives of the Program and there is not an agreed-upon definition of AM or an AM Plan. 	
Health Assessment	 Structural: There is no agreed-upon Program goal statement. There are numeric fish population goals, but most consider those values outdated or unachievable. The TRRP is not bound by a timeline for making decisions or achieving goals or objectives. There is no single, unifying foundational TRRP document that spells out the Program goal. Functional: There is a lack of clarity among TRRP decision-makers as to the overall Program goal and objectives. Decisions at the TMC level focus on annual budget line items, not on making management decisions/adjustments based on Program data analysis and synthesis. 	
Likelihood of Failure	 High – the TRRP currently does not have a single, agreed-upon goal statement and related objectives, and there does not appear to be a process or intent to fix this issue. 	
Likelihood Rating	Initial Rating (before interviews) Final 4	al Rating (after interviews) 5
Consequences of Failure	The consequences of not having a negotiated goal statement and tiered objectives are likely to prevent the TRRP from moving forward. Decisions will continue to focus on issues related to annual budget instead of decisions related to adjusting management based on Program learning and based on Program goals/objectives.	
Consequence Rating	Initial Rating (before interviews) Final 4	al Rating (after interviews) 5
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) Fina 16	al Rating (after interviews) 25
Relationship to Ideal AM Typology "Fit"	• Without clear goals/objectives, and without a decision-making process tied to clear goals/objectives, the TRRP is not going to be able to implement true AM. Even though the Program claims to be implementing at least some degree of AM, the likelihood of failure of this subcomponent are high and the consequences mean the TRRP is either conducting trial and error or, at best, TRRP AM is stuck.	
Recommendations for Reform	 Negotiate an agreed-upon Program goal and related tiered objectives. Negotiate a single, unifying Program document that includes these goals and objectives, an AM Plan, structural and functional guidance for decision-making, etc. 	
References:		



AM Component	Subcomponent Description:	
Assess	 Definition – Program has an AM Plan that is related back to overall 	
Subcomponent Roadmap of goals, objectives, hypotheses	 goals and objectives and that specifies what the Program doesn't know but wants to learn (priority hypotheses, critical uncertainties). There is a lack of clarity within the TRRP on the overall goals and objectives of the Program and there is not a Program AM Plan 	
Health Assessment	 Structural: There is no agreed-upon Program goal statement. There are numeric fish population goals, but most consider those values outdated or unachievable. The TRRP is not bound by a timeline for making decisions or achieving goals or objectives. No Program AM Plan. The foundational documents and the IAP contain language that could serve as priority hypotheses for a TRRP AM Plan. Functional: There is a lack of clarity among TRRP decision-makers as to the overall Program goal and objectives. Decisions at the TMC level focus on annual budget line items, not on making management decisions/adjustments based on Program data analysis and synthesis. TRRP science activities often relate back to the IAP and guidance in the ROD and Implementation Plan, but there is no agreed-upon set of hypotheses for the Program. 	
Likelihood of Failure	 High – there is currently no roadmap for the TRRP that clearly spells out goals, objectives, and hypotheses, but here is raw language in the IAP and the foundational documents that can be used to build this roadmap. 	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Consequences of Failure	 The roadmap is critical to forward progress with AM in the TRRP; without it, AM will not proceed. 	
Consequence Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 12	Final Rating (after interviews) 12
Relationship to Ideal AM Typology "Fit"	• The TRRP will not be able to implement AM without this roadmap. Science activities will be proceeding more in a trial and error format.	
Recommendations for Reform	 Negotiate an agreed-upon Program goal and related tiered objectives. Negotiate a single, unifying Program document that includes these goals and objectives, an AM Plan, structural and functional guidance for decision-making, etc. 	
References:		



 Assess Definition – Program decisions are affected by science learning th the application of AM. TRRP decisions are based largely on annual funding priorities and not solidly linked back to a set of Program goals, objectives, and hypotheses. Structural: The TMC makes decision for Program decisions are affected by science learning th the application of AM. 	rough d are cus not on	
Subcomponent TRRP decisions are based largely on annual funding priorities and not solidly linked back to a set of Program goals, objectives, and hypotheses. Structural: The TMC makes decision for	d are cus not on	
Structural: • The TMC makes decision for Functional:	cus not on	
 Health Assessment TMC decision-making receives various levels of input from the ED/EDO, advisory committees and work groups, the TAMWG, and the SAB. Decisions at the TMC level to on annual budget line items, making management decisions/adjustments based Program data analysis and synthesis and linked to an AM Plan. 	1	
Likelihood of Failure • Mixed – the TMC does take in information from the implementatio TRRP science activities, but it is not structured around an AM Pla	 Mixed – the TMC does take in information from the implementation of TRRP science activities, but it is not structured around an AM Plan. 	
Likelihood Rating Initial Rating (before interviews) Final Rating (after interviews) 3 3	;)	
 Consequences of Failure The TRRP cannot really function as a true restoration program un its decisions are at least informed by science learning from the Pr itself. 	less ogram	
Consequence Rating Initial Rating (before interviews) Final Rating (after interviews) 4	;)	
Risk Rating (Likelihood Rating X Consequence Rating)Initial Rating (before interviews) 9Final Rating (after interviews) 12	;)	
 Relationship to Ideal AM Typology "Fit" Clear linkages between decision-making and science learning nee be built and implemented in the TRRP to ensure the Program is actually implementing AM. 	Clear linkages between decision-making and science learning need to be built and implemented in the TRRP to ensure the Program is actually implementing AM.	
 Negotiate an agreed-upon Program goal and related tiered object Negotiate a single, unifying Program document that includes these goals and objectives, an AM Plan, structural and functional guidar decision-making, etc. 	ves. e ice for	



AM Component	Subcomponent Description:	
Assess	Definition – Program has a coll	aborative process for developing an AM
Subcomponent Collaborative process to develop fundamental AM information.	 Plan, link it back to goals and o critical uncertainties, hypothese The TRRP has not initiated a construction Program AM Plan and focus efforts uncertainties and how to addree 	bjectives, and reach agreement on es, and related Big Questions. ollaborative process to develop a forts to reach agreement on critical ss them.
Health Assessment	 Structural: The foundational documents and IAP provide much of the raw material necessary to build a TRRP AM Plan. 	 Functional: The foundational documents (TRFE, ROD, Implementation Plan) were not negotiated or built through a collaborative process of all key TRRP parties. The IAP was developed in a more collaborative manner but has never been formally adopted by the TMC.
Likelihood of Failure	High – there currently is not Program-wide buy-in on TRRP goals, objectives, hypotheses, or a path forward for AM.	
Likelihood Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 5
Consequences of Failure	 Top-down development of the f agreement on the IAP will conti to TRRP success. 	foundational documents and lack of inue to serve as a significant roadblock
Consequence Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 5
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 16	Final Rating (after interviews) 25
Relationship to Ideal AM Typology "Fit"	 AM will only work in a large-sca is developed collaboratively. 	ale program like the TRRP if the AM Plan
Recommendations for Reform	 Negotiate an agreed-upon Prog Negotiate a single, unifying Progoals and objectives, an AM Pl decision-making, etc. 	gram goal and related tiered objectives. ogram document that includes these an, structural and functional guidance for
References:		



AM Component	Subcomponent Description:	
Design	Definition – Program has explice	it management objectives that are
Subcomponent Management objectives	 measurable statements of outcoments that should facilitate evaluation Several TRRP documents inclumanagement objectives (includ language needs to be unified an and an AM Plan. 	omes the Program is trying to achieve of AM effectiveness. Ides language that could form specific ing the TRFE and the IAP) but this nd tied back to TRRP goals, objectives,
Health Assessment	 Structural: The TRFE contains a set of what can be described as management objectives. The IAP includes a set of six "primary objectives" that can be identified as management objectives for the TRRP. 	 Functional: TRRP implementation at this point focuses more on three higher-order objectives from the foundational documents – annual flow regime, mechanical channel rehabilitation, and sediment management.
Likelihood of Failure	 Focus on the three higher-order objectives indicates a lack of agreement on an agreed-upon set of management objectives that can focus the work of evaluating the progress of AM in the TRRP. 	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Consequences of Failure	 Implementation of AM or science stick for progress or success, o decision-making. 	ce activities without a clear measuring r for a pathway to serving as an input for
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 9
Relationship to Ideal AM Typology "Fit"	AM can function without manages slow without some measure of	pement objectives, but it will be stuck or progress and next steps.
Recommendations for Reform	Develop a clear set of manager collaborative development of a	ment objectives as part of the TRRP AM Plan.
Reterences:		



AM Component	Subcomponent Description:		
Design	• Definition – Program has a set	of management actions, has authority to	
Subcomponent Management actions	 The ROD and Implementation Plan provide guidance on implementing an annual flow regime, mechanical channel rehabilitation, and sediment management as TRRP management actions, but those actions are not currently implemented against clear goals, objectives, and an AM Plan. 		
Health Assessment	 Structural: The ROD and Implementation Plan specify annual flow volumes, 47 project sites for channel rehabilitation and side- channel rehabilitation, and sediment introduction volumes. 	 Functional: These actions are being implemented but not in the context of an AM Plan or against a clear set of TRRP goals and objectives. 	
Likelihood of Failure	 Specific management actions present for the TRRP, just need to be linked to an AM Plan, hypotheses, and an evaluation plan against TRRP goals and objectives. 		
Likelihood Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 2	
Consequences of Failure	Implementation without a meas	sure of progress/success.	
Consequence Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 2	
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 4	Final Rating (after interviews) 4	
Relationship to Ideal AM Typology "Fit"	• The specified management actions fit well within a general AM context, they just need to be implemented within the context of a TRRP AM Plan.		
Recommendations for Reform	Develop a TRRP AM Plan.	Develop a TRRP AM Plan.	
References:			



AM Component	Subcomponent Description:	
Design Subcomponent Monitoring/research protocols tailored to hypotheses and key questions from decision-	 Definition – Program developed that are designed to deliver info questions from decision-makers The TRRP does implement mo the context of agreed-upon goa Questions that relate to question 	d its own monitoring/research protocols ormation relative to key hypotheses and s. nitoring and research but not clearly in als, objectives, hypotheses, and Big ons from the TMC important for decision-
makers	making.	
Health Assessment	 Structural: The TRRP has a strong track record of project-specific and species monitoring and research. Most monitoring is related to implementation of the major TRRP "management actions" – annual flow volumes, rehabilitation projects, and sediment introduction. 	 Functional: Monitoring and research are implemented based on annual projects and their intended objectives, rather than being implemented to deliver information useful in decision-making related to TRRP goals, objectives, and hypotheses.
Likelihood of Failure	The TRRP has high technical capacity and the funding necessary to implement appropriate monitoring/research; just need to link this data collection back to overall goals, objectives, and hypotheses.	
Likelihood Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 3
Consequences of Failure	 Monitoring data will fall into an not be operationalized for TRRI 	ever-expanding "science pile" and will P decision-making.
Consequence Rating	Initial Rating (before interviews) 2	Final Rating (after interviews) 3
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 4	Final Rating (after interviews) 9
Relationship to Ideal AM Typology "Fit"	This is a common place where AM program get stuck – they conduct good science in the form of monitoring and research but fail to specify the "why" in advance so collected data is often not useful for decision- making	
Recommendations for Reform	 Collaboratively develop a TRRI decision-maker questions, and to deliver this information. 	P AM Plan, specify data needs for develop or revise monitoring protocols
Keterences:		



AM Component	Subcomponent Description:	
Implement	Definition – Program has a clear	ar process for implementing
Subcomponent	management actions and moni	toring.
Plan for implementation	 The TRRP is proceeding with n 	nanagement actions and monitoring on
of management actions	the ground but that implementa	ation is not linked back to an agreed-
and monitoring	upon AM Plan.	l
	Structural:	 Functional: The guidance provided in the
	The Implementation Plan	Implementation Plan has thus far
	provides the best information	not served to help build and
Health Assessment	operation including	operate a truly collaborative
	specifying roles for the	program that is functioning in a
	ED/EDO and the AEAM	manner that can support
	Team.	implementation of an AM Plan and
	The loss less statics Disc surge	related TWC decision-making.
	I he Implementation Plan currently serves as the best statement of	
l ikelihood of Failure	this way for many years. That s	tructure will have to be adjusted to
	accommodate development an	d implementation of a TRRP AM Plan
	and to better facilitate TMC decision-making.	
Likelihood Deting	Initial Rating (before interviews)	Final Rating (after interviews)
	3	3
Consequences of	 Implementation without decisio 	n-making, and without an ability for the
Failure	TRRP to measure its progress	toward achieving goals and objectives.
Consequence Rating	Initial Rating (before interviews)	Final Rating (after interviews)
Pick Pating	3	<u> </u>
(Likelihood Rating X	Initial Rating (before interviews)	Final Rating (after interviews)
Consequence Rating)	9	9
	As with monitoring protocols the second	nis is also a common place where AM
	program get stuck – they condu	uct good science in the form of
Relationship to Ideal	monitoring and research but fai	il to specify the "why" in advance so
AW Typology "Fit"	collected data is not well-linked	back to goals, objectives, and related
1	decision-making.	
	decision-making.	
Recommendations for	decision-making. Collaboratively develop a TRRI	P AM Plan, specify data needs for
Recommendations for Reform	 Collaboratively develop a TRRI decision-maker questions, and 	P AM Plan, specify data needs for develop an implementation plan to

References:



AM Component	Subcomponent Description:	
Implement	Definition – Program has clear	lines of authority for implementation and
Subcomponent Project oversight	 oversight. In general, the ED and Program implementation of the TRRP, th involved in implementation and 	n staff are responsible for day-to-day lough several TMC entities are also evaluation.
Health Assessment	 Structural: The ED and EDO provide day-to-day oversight of TRRP implementation. Project-specific oversight of TRRP management actions are often overseen by a mix of EDO staff and TRRP partner staff. 	 Functional: There is tension within the EDO given the split of federal agency representation (Reclamation and Service) and the presence of TRRP partner staff. Project oversight seems to be handled on a case-by-case basis with different levels of oversight by and involvement of TRRP partner staff.
Likelihood of Failure	• Relatively high because the management model for the TRRP does not seem to revolve around a strong and unified ED and Program staff.	
Likelihood Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 4
Consequences of Failure	Lengthening of time for implementation, difficult relative to Program goals, object	entation, time lags, incomplete or ulty in collecting and analyzing data ctives, and hypotheses.
Consequence Rating	Initial Rating (before interviews)	
	4	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	4 Initial Rating (before interviews) 16	Final Rating (after interviews) 4 Final Rating (after interviews) 16
Risk Rating (Likelihood Rating X Consequence Rating) Relationship to Ideal AM Typology "Fit"	 4 Initial Rating (before interviews) 16 AM is hard work for a long time that the right questions are bein implemented, and the right data 	Final Rating (after interviews) 4 Final Rating (after interviews) 16 . It requires a dedicated staff to ensure 19 addressed, the right work is being a are collected and analyzed.
Risk Rating (Likelihood Rating X Consequence Rating) Relationship to Ideal AM Typology "Fit" Recommendations for Reform	 4 Initial Rating (before interviews) 16 AM is hard work for a long time that the right questions are bein implemented, and the right data Revise the ED and EDO structu implementation and oversight o broker" manner. Revise the involvement of TRR TMC and advisory through stan TRRP implementation and over 	Final Rating (after interviews) 4 Final Rating (after interviews) 16 . It requires a dedicated staff to ensure ing addressed, the right work is being a are collected and analyzed. Jure of the TRRP to ensure unified if all Program activities in an "honest P partners to decision-making on the iding committees, not as participants in rsight.



AM Component	Subcomponent Description:	
Monitor	Definition – Implementation mo	nitoring: designed to evaluate if a
Subcomponent Implementation, effectiveness, and validation monitoring	 <u>monitoring</u>: designed to evaluate how successful a project or management action is at achieving desired or expected outcomes; <u>validation monitoring</u>: designed to evaluate the response of species or river/form function to implementation of management actions. The TRRP conducts implementation and effectiveness monitoring but does not conduct clear validation monitoring due to lack of clarity in overall goals and objectives and lack of an AM Plan that links science learning back to goals, objectives, hypotheses, Big Questions, and decision-making. 	
Health Assessment	 Structural: The TRRP has a strong track record of project-specific and species monitoring and research. Most monitoring is related to implementation of the major TRRP "management actions" – annual flow volumes, rehabilitation projects, and sediment introduction. 	 Functional: Monitoring and research are implemented based on annual projects and their intended objectives (implementation and effectiveness), rather than being implemented to deliver information useful in decision-making related to TRRP goals, objectives, and hypotheses (validation).
Likelihood of Failure	 The TRRP has high technical capacity and the funding necessary to implement appropriate monitoring/research; just need to link this data collection back to overall goals, objectives, and hypotheses 	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Consequences of Failure	 The consequences of not havin tiered objectives are likely to pr Decisions will continue to focus instead of decisions related to a Program learning and based or 	ng a negotiated goal statement and event the TRRP from moving forward. s on issues related to annual budget adjusting management based on n Program goals/objectives.
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 16
Relationship to Ideal AM Typology "Fit"	 Without validation monitoring, t data to help make decisions an upon goals and objectives. 	he TRRP will struggle to use Program devaluate progress against agreed-
Recommendations for Reform	Collaboratively develop an AM between Program science and	Plan that provides clear linkages decision-making.
References:		



AM Component	Subcomponent Description:	
Evaluate Subcomponent	 Definition – Analysis and reporting of Program monitoring data. The TRRP conducts rigorous science and has conducted a good 	
Data analysis	amount of data analysis to date	elence and has conducted a good
Health Assessment	 Structural: Strong collection and analysis of implementation and effectiveness monitoring data. 	 Functional: Some analysis of validation monitoring data, but there is a lack of consensus about data collection and analysis methods for key metrics such as fish population numbers.
Likelihood of Failure	 Low, in general this is a strong some attention on analysis of fire 	suit of the TRRP; just need to focus sh-related metrics.
Likelihood Rating	Initial Rating (before interviews) 1	Final Rating (after interviews) 2
Consequences of Failure	 Disconnect between implement Failure of this subcomponent cr steps. 	ation and decision-making. reates a critical missing link between AM
Consequence Rating	Initial Rating (before interviews) 1	Final Rating (after interviews) 2
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 1	Final Rating (after interviews) 4
Relationship to Ideal	Needs to be strong to ensure P	rogram data is being operationalized for
	Implementation of Alvi.	
Recommendations for Reform	 Collaboratively develop an AM evaluation of hypotheses and u 	Plan that links data analysis to Itimately decision-making.



AM Component	Subcomponent Description:	
Evaluate Subcomponent Data synthesis	 Definition – Telling the "story" o evidence to provide an evaluati of Program implementation. In 2017, the TRRP began to tac remains unclear how, or if, thes Program evidence and the resu the TMC and used in decision-r 	of AM. Stitching together multiple lines of on of the overall effects and outcomes ckle data synthesis efforts though it se efforts unifying multiple lines of ults of data synthesis will be reported to making.
Health Assessment	 Structural: The TRRP began the process of developing several data synthesis reports in 2017. 	 Functional: It is not clear how the TRRP synthesis reports now in development fit together to tell a full "story" of AM implementation, and how the conclusions of these efforts will link to TMC decision- making.
Likelihood of Failure	 The TRRP is aware of the need for data synthesis and has begun the effort, but the purpose and objectives of the ongoing synthesis effort needs attention as it relates to TRRP goals, objectives, and hypotheses. 	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Consequences of Failure	 Inability to effectively use Progr making process – without synth management actions and collect Big Questions, and hypotheses 	am science learning in the decision- nesis, the TRRP cannot link the results of cted monitoring data to goals, objectives,
Consequences of Failure Consequence Rating	 Inability to effectively use Progr making process – without synth management actions and collect Big Questions, and hypotheses Initial Rating (before interviews) 3 	am science learning in the decision- nesis, the TRRP cannot link the results of cted monitoring data to goals, objectives, s. Final Rating (after interviews) 4
Consequences of Failure Consequence Rating Risk Rating (Likelihood Rating X Consequence Rating)	 Inability to effectively use Progr making process – without synth management actions and collec Big Questions, and hypotheses Initial Rating (before interviews) 3 Initial Rating (before interviews) 9 	am science learning in the decision- nesis, the TRRP cannot link the results of cted monitoring data to goals, objectives, Final Rating (after interviews) 4 Final Rating (after interviews) 16
Consequences of Failure Consequence Rating Risk Rating (Likelihood Rating X Consequence Rating) Relationship to Ideal AM Typology "Fit"	 Inability to effectively use Prograking process – without synthmanagement actions and colled Big Questions, and hypotheses Initial Rating (before interviews) 3 Initial Rating (before interviews) 9 A critical step in AM – large proand stitching these multiple line only way to complete all six step which is depending on decision learning. 	am science learning in the decision- nesis, the TRRP cannot link the results of cted monitoring data to goals, objectives, Final Rating (after interviews) 4 Final Rating (after interviews) 16 ograms collect multiple lines of evidence es of evidence into an AM "story" is the ps of AM, particularly the Adjust stage i-making informed by AM science
Consequences of Failure Consequence Rating (Likelihood Rating X Consequence Rating) Relationship to Ideal AM Typology "Fit" Recommendations for Reform	 Inability to effectively use Prograking process – without synthmanagement actions and collect Big Questions, and hypotheses Initial Rating (before interviews) 3 Initial Rating (before interviews) 9 A critical step in AM – large proand stitching these multiple line only way to complete all six step which is depending on decision learning. Collaboratively develop an AM evaluation of hypotheses and u 	am science learning in the decision- nesis, the TRRP cannot link the results of cted monitoring data to goals, objectives, Final Rating (after interviews) 4 Final Rating (after interviews) 16 ograms collect multiple lines of evidence es of evidence into an AM "story" is the ps of AM, particularly the Adjust stage n-making informed by AM science Plan that links data analysis to ultimately decision-making.



AM Component	Subcomponent Description:	
Evaluate	 Definition – Integration of indep 	endent science review (science panel,
Subcomponent Independent science review	 peer review, publication) into the synthesis. The SAB provides independent is also project-by-project peer r Linkages to the TMC and the ur decision-making are not robust 	te process of Program data analysis and t science review for the TRRP, and there eview of TRRP work proposals. tility of this review as a factor in TMC or well-understood.
Health Assessment	 Structural: The TRRP has a standing independent science review panel in the form of the SAB. Independent peer review is utilized at least at the project review level when the Program is attempting to prioritize annual work and budgets. The TRRP has successfully published on topics such as sediment introduction. 	 Functional: The SAB is underutilized, and no clear linkages exist between the SAB and the TMC. SAB work is conducted at the request of the Science Coordinator but does not seem to operate under a specific TRRP charter or an annual work plan approved by the TMC. Peer review is utilized at the project review/planning stage but does not seem to be regularly used to evaluate TRRP data analysis and/or synthesis reports.
Likelihood of Failure	 Independent science review is being made effective as an input 	being utilized by the TRRP, but it is not ut into TMC decision-making.
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Consequences of Failure	 Even when a program like the capacity, the lack of functioning the robustness and certainty of Program data analysis and syn 	TRRP has strong internal technical independent science review reduces conclusions and decisions related to thesis.
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 4
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 16
Relationship to Ideal AM Typology "Fit"	An important step in functioning conclusions and thus related de	g AM – ensures more robust and valid ecisions.
Recommendations for Reform	 As part of a negotiated Program SAB that includes its relationsh Develop TRRP peer review gui Program staff to implement peer 	n document, develop a charter for the ip to the TMC. delines and empower the ED and er review with TMC approval.
References:		



AM Component	Subcomponent Description:	
Adjust	Definition – Information from da	ata synthesis and independent science
Subcomponent AM results communicated to decision-makers and used in decision-making	 review are communicated to de decision-making, with the result include science learning as an include science learn	ecision-makers as an input into Program t being clear management decisions that important input. for the TRRP unless and until an AM ss is determined for synthesizing it to the TMC, and having the TMC make as an input.
	Functional:	
Health Assessment	 Structural: AM is not really being implemented in the TRRP, so science learning communicated to the TMC comes in the form of individual project reports. 	• Without TRRP clarity on overall goals and objectives, and without an AM Plan that specifies priority hypotheses and addresses scientific and technical Big Questions of relevance to the TMC, this subcomponent remains largely non-functional.
Likelihood of Failure	This subcomponent will remain larger structural problems and components	in failure until the TRRP addresses its develops an agreed-upon AM Plan.
Likelihood Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 5
Consequences of Failure	 AM will continue to not be imple implemented the TRRP will not 	emented, or if earlier steps are not be able to reach the "Adjust" step.
Consequence Rating	Initial Rating (before interviews) 4	Final Rating (after interviews) 5
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 16	Final Rating (after interviews) 25
Deletionship to Ideal	True AM can only be successfully implemented if a program can adjust based at least in part on its science learning.	
AM Typology "Fit"	 True AM can only be successful based at least in part on its scie 	Illy implemented if a program can adjust ence learning.
AM Typology "Fit" Recommendations for Reform	 True AM can only be successful based at least in part on its scie Negotiate an agreed-upon Prog Negotiate a single, unifying Progoals and objectives, an AM Pladecision-making, etc. 	Ally implemented if a program can adjust ence learning. gram goal and related tiered objectives. ogram document that includes these an, structural and functional guidance for



AM Component	Subcomponent Description:	
Adjust	Definition – Public reporting of the Program decision-making process,	
Subcomponent Documentation of decision-making results	 with clear and repeated reporting of how, or if, management actions and implementation are adjusted utilizing Program science learning through AM. This subcomponent is in limbo for the TRRP unless and until an AM Plan is developed and a process is determined for synthesizing Program data, communicating it to the TMC, and having the TMC make decisions with this information as an input. 	
Health Assessment	 Structural: Decision-making results are reported largely in the form of TMC minutes. There is TRRP reporting but it is focused on project-by-project results and does not yet come in the form of synthesis reports. The TRRP began the process of some synthesis reporting in 2017. 	 Functional: TMC decision-making at this point generally centers around annual budget priorities. Though the TRRP has begun the process of synthesis reporting, it is not clear how those synthesis reports relate to TMC questions or decision-making.
Likelihood of Failure	• The TRRP has the capacity for multiple levels of reporting. The TMC needs to be empowered to make management decisions under a revised structure that can then be memorialized in final reporting.	
Likelihood Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Consequences of Failure	 Loss of TMC decision-making record, lack of transparency about how and why the TMC made management decisions. 	
Consequence Rating	Initial Rating (before interviews) 3	Final Rating (after interviews) 3
Risk Rating (Likelihood Rating X Consequence Rating)	Initial Rating (before interviews) 9	Final Rating (after interviews) 9
Relationship to Ideal AM Typology "Fit"	 Important to memorialize the results of full implementation of AM through the Adjust step. 	
Recommendations for Reform	• As part of development of a TRRP AM Plan, specify Big Questions of relevance to the TMC and provide guidance on how implementation and data analysis/synthesis will be communicated to and used by the TMC.	
References:		

