Tracking & Accounting: Klamath Case Study

The Klamath Tracking and Accounting Program (KTAP) seeks to better understand, highlight, and enhance the benefits to water quality created by changes in land management and restoration projects (hereafter "projects") in the Klamath basin. KTAP defines a consistent system to track voluntary conservation and restoration actions in a way that 1) enables local practitioners and funders to make informed decisions regarding where and how to invest in water quality and habitat improvement; 2) provides the basis for scientific research that furthers our understanding of the system and the instream response of collective action. The following program profile is intended to provide context and a transferable example for other such efforts. It is written with a companion document "Building a Tracking and Accounting Program," available at www.ktap.willamettepartnership.org

Figure 1. The Klamath Basin is a hub of avian biodiversity, restoration, and active agricultural and rangeland operations

How did it start?

KTAP was initiated in 2010, funded as part of the Klamath Hydropower Settlement Agreement (Interim Measure 11) and a memorandum of understanding between EPA Regions 9 and 10 around implementation of the coordinated Klamath River TMDLs. In both cases, stakeholders saw value in a trusted system for tracking restoration and conservation projects in a way that linked actions to water quality outcomes and provided resources to get it up and going. A group of stakeholders formed the KTAP Working Group and met regularly to determine what the tracking system should do and how it should work.

Why did it start?

In most watersheds, projects are funded from a range of sources and typically, each funder requires that project implementers (e.g., landowners, watershed councils) submit information on what happened, where it

happened, and what impact it had. Project implementers may also keep a ledger of the project activities they have been involved with for use in reporting to their board or tracking toward internal goals. This information then lives in those funder or practitioners' ledgers, and may or may not be made publicly available. KTAP is designed to collect information on all conservation and restoration projects in the basin (Fig 2).

By pulling together information from across funders and across the basin, KTAP allows project implementers, funders, water quality agencies, researchers, and other stakeholders to ask new questions about the work that being done and the outcomes it is producing. It enables adaptive management to occur on the project-, watershed-, and basin-wide scales.

Who's involved?

KTAP has a coordinator, stakeholders, and participants. The roles and relationships between them are described below:

- Program Coordinator – Willamette Partnership[1] is acting as the KTAP coordinator, managing the program infrastructure, soliciting, collecting, and summarizing project data via the online report.
- Working Group – A working group of watershed stakeholders, shown in Table 1, provide feedback and direction for the coordinator.
- Participants – This can include anyone in the Klamath basin involved in the funding, siting, design, implementation, or evaluation of conservation and restoration projects or changes in land management intended to support watershed health.
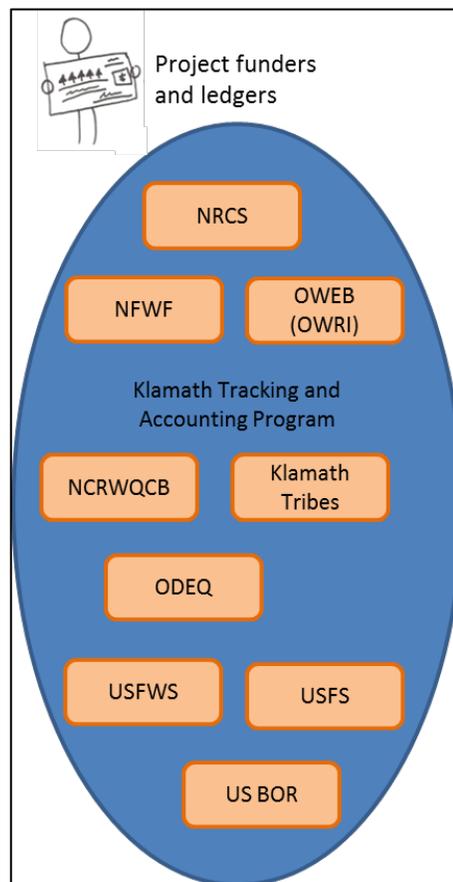

Figure 1. KTAP brings together the numerous existing ledgers and mechanisms of tracking restoration and conservation projects

Table 1. Organizations participating in the KTAP Working Group

KTAP Working Group Participating Organizations	
CA North Coast Regional Water Quality Control Board	OR Watershed Enhancement Board
Environmental Incentives	PacifiCorp
Karuk Tribe	US Bureau of Reclamation
Klamath Watershed Partnership	US Environmental Protection Agency Rg 9
Klamath Basin Monitoring Program	US Environmental Protection Agency Rg 10
Klamath Basin Rangeland Trust	US National Resource Conservation Service
Klamath Tribes	Watercourse Engineering
National Fish and Wildlife Foundation	Willamette Partnership
OR Department of Environmental Quality	

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[1] www.willamettepartnership.org

Geographic Scope

KTAP includes the entire Klamath River Basin, which spans 253 miles from Southern Oregon to the California coast, draining a basin of more than 15,000 square miles. The watershed is divided geographically into two basins, upper and lower, by Iron Gate Dam, the lower most dam on the river. The climate in the Upper Basin is dry, with annual precipitation of about 13 inches in the vicinity of Upper Klamath Lake, the river's origin. Downstream, the climate grows wetter. At Klamath, California, near the river's mouth, rainfall is nearly 80 inches a year.

Funding

KTAP has had multiple funders over the years. EPA and PacifiCorp funded the first few years of development. California's 319(h) program provided key support for the pilot projects. Oregon NRCS and PacifiCorp's Interim Measure 11 provided support for refining the program to meet evolving basin needs (e.g., tracking actions taken for the Upper Klamath Lake Comprehensive Agreement[2]). There is no long-term sustainable funding source for program operations.

Figure 2. The scope for KTAP is the entire Klamath River basin, spanning the CA and OR border and a range of climatic and ecological conditions.

Part of a watershed stewardship approach

KTAP is part of a larger watershed stewardship approach - an adaptive management framework aimed at improving water quality and protecting sensitive beneficial uses that rely on good water quality, including habitat for the endangered and other unique species of the Klamath Basin. The Klamath Basin Monitoring Program (KBMP), a voluntary monitoring coordination framework, is another portion of the watershed stewardship approach. The project information tracked through KTAP could be paired with the water quality status and trends information from KBMP to evaluate progress towards water quality goals by stream reach. More information on how KTAP metrics feed scientific analyses is provided in the "Design Considerations" section below.

Program "Infrastructure"

This section describe the specific products and systems that KTAP uses to operate.

- **KTAP Project Stewardship Protocol Handbook**
  The Protocol Handbook describes the program purpose, origin, and the thoughtfulness embedded in its design. It also provides a step-by-step guide to submitting project-level information to the KTAP database.
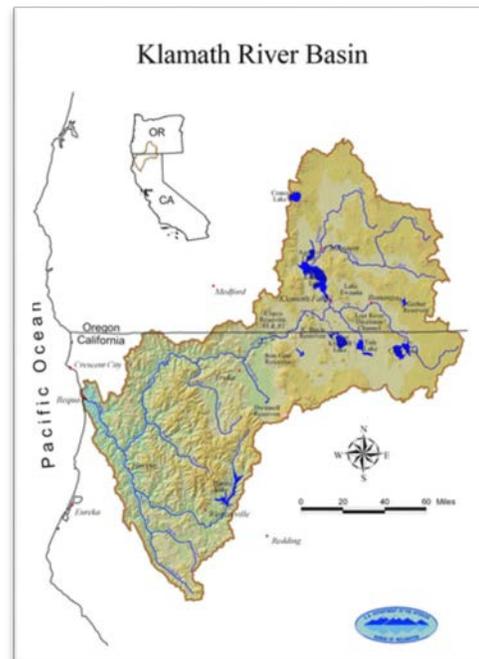
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[2] http://www.klamathcouncil.org/index.php/upper-klamath-basin-comprehensive-agreement/

- **Reporting Form**

  An online form through which participants can submit information to the KTAP coordinator. The form has just a couple required fields, leaving the rest optional so that implementers can participate even if project information is limited. This also gives users the flexibility to filter sensitive information (e.g., specific project location). The program coordinator accepts data in other forms, transferring to the KTAP project spreadsheet manually. This has been key where funders can provide a dataset covering project activities from some or all of their grantees.

- **KTAP Watershed Report**

  KTAP uses an interactive website to summarize and communicate all the actions tracked by the program and summarize the extent and impact of those actions (see figure 4). The website is a communication tool, and is not intended to cover all of the available project information. Those who want to see the full dataset can download a copy of the master spreadsheet. To develop the website, the program coordinator reviews, manipulates, and queries the data to determine the pieces that will best tell the story. The draft report gets reviewed by the stakeholder working group before going live online.
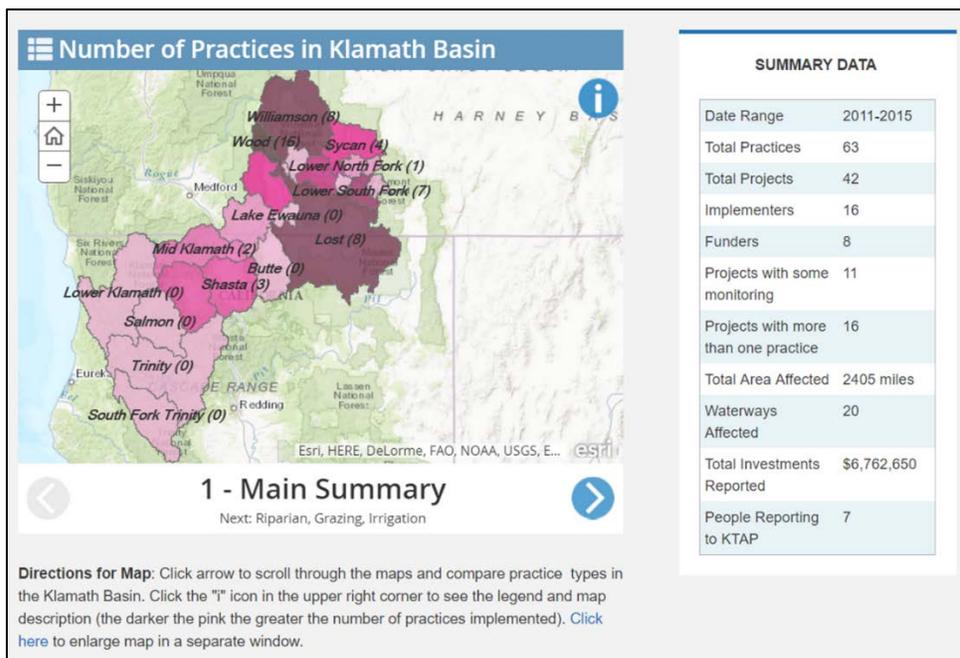

Figure 4. Screen shot from the KTAP watershed report, available at ktap.willamettepartnership.org

- **Master Project Spreadsheet**

  All project data is kept on a master spreadsheet, housed on the local network of the KTAP coordinator. The spreadsheet is publicly available, open to any and all users.

  In the future, a relational database will likely be needed to organize and access information efficiently, but for now, a spreadsheet made the most sense because the program is still evolving and the spreadsheet is easy to adapt if metrics change. It's also broadly accessible since no specialized capacity or software knowledge is required. More complex database (e.g., SQL servers) or automated systems (e.g., custom servers), often built by software development firms, can be expensive to build and to change.

Design Considerations

In developing the program infrastructure describe above, we have learned to focus on a few key considerations throughout – make it useful, easy, deliberate, flexible, easy to update, and cheap to operate. More information on how KTAP incorporates each of those considerations is provided below:
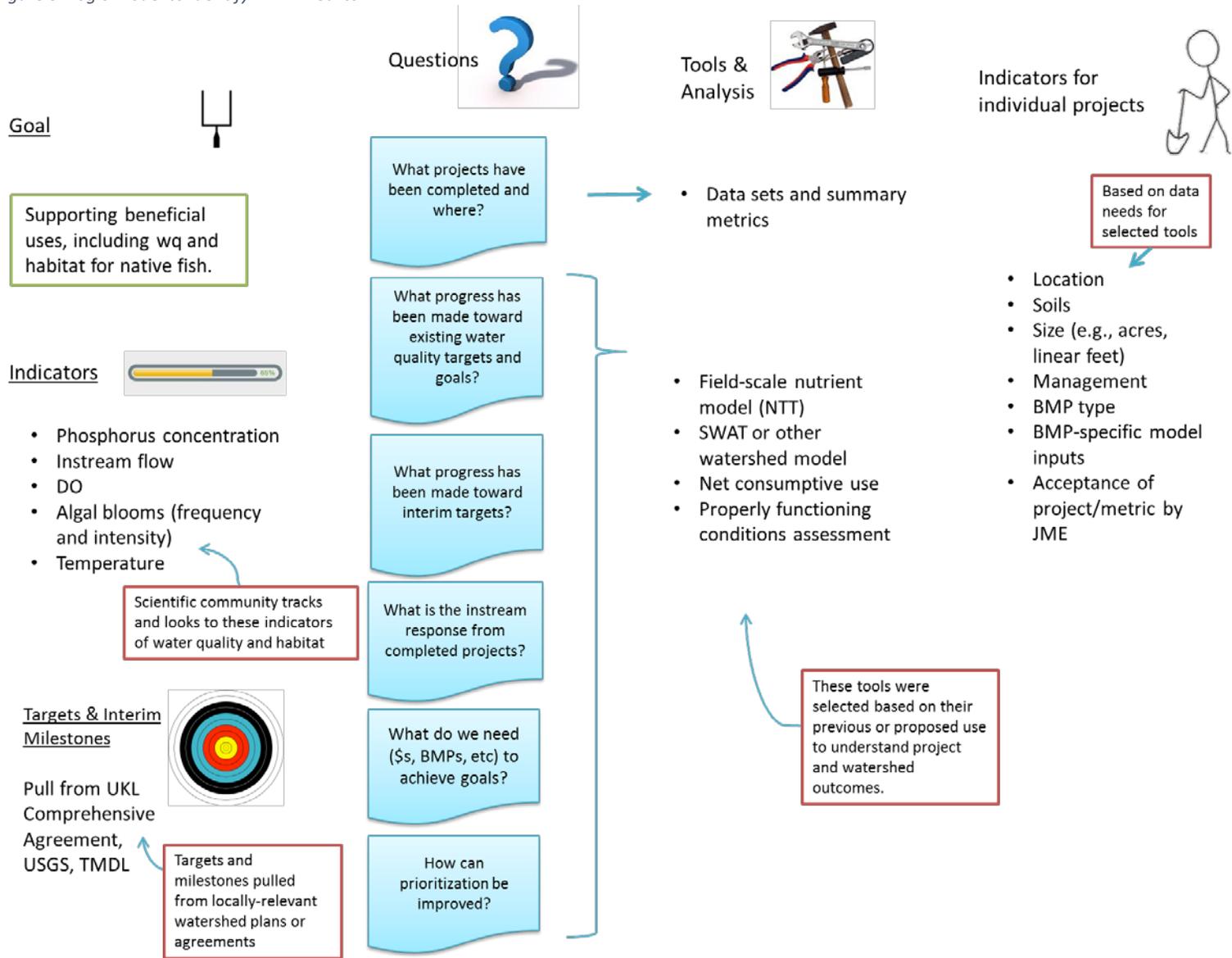
- **Useful** –As the KTAP coordinator, Willamette Partnership is always seeking insight around what information to provide and how best to present it. We believe that participation will increase when a system is more useful to practitioners on their week-to-week or month-to-month decision making, and improved outcomes will follow (See the section "Building Momentum" below). For instance, if KTAP can present project information in a way that non-profits can use for reporting to the boards, there is a direct benefit to participants.

- **Easy** – Easy is good. The KTAP form is designed to be easy to understand and navigate, with descriptions and examples for each field or metric. Wherever possible, we utilize bulk data transfers from funding entities or other databases to minimize the burden on practitioners.

- **Deliberate** – Each piece of information requested for KTAP reporting has a purpose. The logic model in Figure 5 below shows how program goals, indicators, and targets are used to inform the priority adaptive management questions, which allows us to identify the assessment methods that could help answer those questions, and look at their data needs to identify specific metrics.

- **Flexible** – Despite the careful planning and selection of metrics (described above), we are very flexible in what information we will take and in what format. A perfect system is pointless if no one participates. It is important to meet people where they are at, consolidating the burden of data management with the coordinator.

> **Confidentiality in KTAP**
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> We take seriously our commitment to protect confidentiality of landowners' personal or business information from unwanted release. In KTAP, we address this in a couple ways:
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> 1. Participation is voluntary, users can share as much or as little as they are able.
> 2. Users are not required to provide the specific project location, just the nearest waterbody.
> 3. Data presented on the web report is organized by "reporting zones," which are coarse enough to avoid revealing landowner identities, but granular enough to be used in watershed assessments.

- **Adaptable** – Over the past few years, KTAP has been evolving quickly. That's why the design of data collection and management systems favored adaptability over efficiency and automated features. For example, the project data is stored in an Excel spreadsheet. Excel is not ideal for the relational nature of some data, but it is easy to use and easy to change. The data collection form is a modified Google Form, which can also be easily updated.

- **Low overhead** - Long term coordination and data management is difficult to fund. This is why KTAP has been specifically designed to keep overhead costs low. We do that by using low tech systems (e.g., Excel, Google Forms) which are also low cost, and working with funders to gather data in bulk, which reduces time spent on outreach to encourage reporting by practitioners. During outreach, we prioritize using existing networks (e.g., Klamath Basin Monitoring Program).

Figure 3. Logic Model to Identify KTAP Metrics

Questions

Tools & Analysis

Indicators for individual projects

Goal

Supporting beneficial uses, including wq and habitat for native fish.

What projects have been completed and where?

- Data sets and summary metrics

Based on data needs for selected tools

- Location
- Soils
- Size (e.g., acres, linear feet)
- Management
- BMP type
- BMP-specific model inputs
- Acceptance of project/metric by JME

Indicators

- Phosphorus concentration
- Instream flow
- DO
- Algal blooms (frequency and intensity)
- Temperature

What progress has been made toward existing water quality targets and goals?

What progress has been made toward interim targets?

- Field-scale nutrient model (NTT)
- SWAT or other watershed model
- Net consumptive use
- Properly functioning conditions assessment

Scientific community tracks and looks to these indicators of water quality and habitat

What is the instream response from completed projects?

Targets & Interim Milestones

Pull from UKL Comprehensive Agreement, USGS, TMDL

What do we need ($s, BMPs, etc) to achieve goals?

These tools were selected based on their previous or proposed use to understand project and watershed outcomes.

Targets and milestones pulled from locally-relevant watershed plans or agreements

How can prioritization be improved?

Building Momentum – A Strategy to Increase Participation

Building momentum in a voluntary tracking and accounting program is challenging. It is easy to assume that because stakeholders have expressed enthusiasm for the concept, they will participate by providing data on their own project activities. In KTAP, that has not proven to be true because, well, people are busy. In response, we have developed a strategy for building momentum and participation in the program. We operate under the theory that participation will be correlated with the usefulness of its products, which will be driven by having strong participation. The strategy for overcoming this chicken-and-egg dilemma is to build momentum incrementally by focusing on the 3 things below, listed in order from the easiest to implement to the most difficult.

1. Make it easy – Remove as many barriers to entry as possible. Make the system simple, practical, flexible. In KTAP, we do this through the accessible web form and being flexible on the amount and format of information we accept. We also do this by working with funders to access bulk data transfers vs reaching out to individual project sponsors. Participants spend less time compiling and reporting data, and it builds trust when they know that you've done what you can to reduce redundancy. This often means that the program coordinator takes on more work in order to simplify or otherwise minimize the time commitment by participants. This is the most straightforward strategy because it is within largely within the KTAP coordinator's control.

2. Create incentives – We believe that when the program provides value to individuals, they are more likely to contribute. In KTAP, we do this by providing information that stakeholders say they can use to make decisions. We develop products (e.g., web report) that participants can use for their own purposes (e.g., compiling data for the board or images for outreach presentations). This strategy is also largely in control of the KTAP coordinator.

3. Require it – Even when the system is easy and flexible, and even when its products are valuable, it is still difficult to get busy people to take the time to report on their work. We see the only sustainable way to consistently get high quality data is to make it required, usually by the funder. Arm twisting and pestering participants year after year gets tiring and time consuming, so start working with funders early. Funders can either require that their grantees report to the system directly, or provide data from their own reporting systems in bulk. This strategy has been the most difficult because it is not in the KTAP coordinator's control, and it has proven necessary to demonstrate the other two strategies first. Funders want need to know that they can still meet internal reporting needs and know that it does not create an undue burden on their grantees (see #3).

Evolution

The program was originally designed for cases in which restoration projects were being used to meet permitted compliance obligations (e.g., nutrient reductions for a waste water treatment facility). In order to serve this purpose, KTAP needed methods to estimate the specific pollutant load reductions associated with individual actions, a high level of transparency (e.g., project location and documentation made public), and a high level of accountability (e.g., independent third party verification of project completion and quantification).

The first KTAP Protocol Handbook was published in June 2012, tested through 4 pilot projects. The pilot projects were completed in 2013 and posted online in the first KTAP Annual report in 2014. The pilot projects were hugely beneficial in demonstrating that the program worked as conceived, and made sense for a compliance-

grade tracking system. However, it also revealed that a voluntary project tracking program would be much more useful than a compliance-grade one in the Klamath River Basin as voluntary investments (from NRCS, OWEB, USFWS, and others as driven by the Comprehensive Agreement) were (and are) funding the bulk of the active water quality improvement projects.

The systems for accountability, quantification, and transparency created significant barriers to entry for many potential users given the voluntary nature of most projects. For example, quantifying pollutant load reductions from individual projects provided interesting results, but was time consuming, requiring fairly high technical capacity and additional resources that are otherwise not a require part of voluntary restoration projects. Similarly, the program required detailed documentation of the project activities, review by a third party verifier, and public disclosure of project information online, all of which was a) way beyond the expectations of funders; b) time consuming; and c) difficult for landowners to understand and agree to.

Figure 6. Timeline depicting the evolution of KTAP

To fulfill KTAP's objectives, the system needed to move away from an emphasis on high-resolution data and confirmation of individual project performance necessary for compliance-grade tracking to shift toward collecting project-level data that helps communicate the collective contribution of projects relative to watershed status, trends, and goals. In 2013, the program began focusing on voluntary actions (e.g., not associated with any kind of regulatory compliance) and voluntary reporting. In 2015, the KTAP Stewardship Protocol was released, and in 2016 the first watershed report was published highlighting 63 practices from 16 different implementers and 7 funding sources.
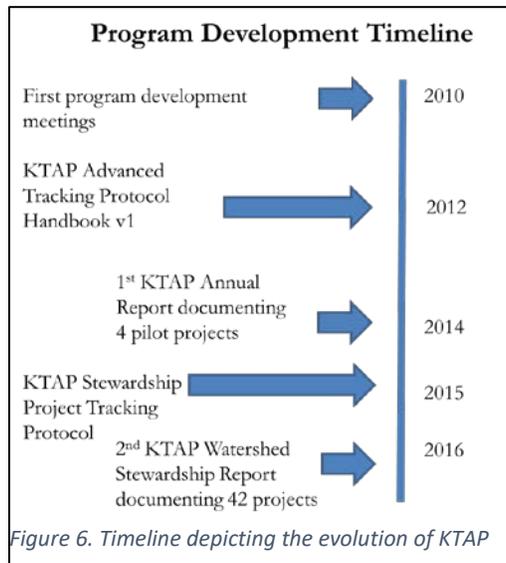
Lessons Learned

The Klamath Tracking and Accounting Program is important work and the products can be very valuable, but managing and maintaining a system is not always easy. Based on our experience, those seeking to build a watershed tracking and accounting system should:

- Listen first: be sure to listen to stakeholder information needs and what it takes to be credible in their eyes.
- Build metrics from watershed goals: Identifying watershed goals is the first step to a logical and deliberate set of metrics.
- Build the value proposition: Gaining participation on a completely voluntary basis is a challenge that aspiring program coordinators should take seriously, thinking through strategies for demonstrating value early and integrating with sources of bulk project data, like funders.
- Build a "right-sized" system: Bigger and fancier is not always better. Consider the long term maintenance and capacity needs before using program resources for custom systems that are difficult to change or manage.

Moving Forward

Going forward into 2017, Willamette will continue to act as the KTAP program coordinator, completing the following tasks:

- Continue annual reporting and outreach

Willamette Partnership continues to actively solicit project submissions from practitioners doing restoration, land management, and conservation work throughout the Klamath Basin. Once project submissions are received, Willamette Partnership will process and analyze data to produce summary reports, then post and publicize the watershed report. We see annual publication of the watershed report as part of an important iterative cycle wherein outreach generates participation, allowing for us to demonstrate the program's value, which further strengthens our case during outreach.

- Develop a strategy for quality assurance and quality control

KTAP relies on "crowd sourced" information – each project submitted potentially by a different individual, utilizing different (or unknown) protocols for monitoring and assessment. This presents a challenge to maintaining a research-quality database of information on restoration projects. Over the next year, Willamette Partnership will work with Klamath Basin Monitoring Program to identify and survey members of the research community about what they see as potential applications of KTAP data, and the associated quality control needed to generate sufficiently trusted data.

- Integration with existing networks and resources

- KTAP Stewardship Project Reporting is part of a larger Watershed Stewardship Approach - an adaptive management framework aimed at improving water quality and protecting sensitive beneficial uses that rely on good water quality, including habitat for the endangered and other unique species of the Klamath Basin. The Klamath Basin Monitoring Program (KBMP), a voluntary monitoring coordination framework, is another portion of the Watershed Stewardship Approach. Those involved in both programs have expressed a desire to see stewardship project information tracked through KTAP paired with the water quality status and trends information from KBMP to evaluate progress towards water quality goals by stream reach. Moving forward, we hope to strengthen connections with KBMP and leverage resources. For example, housing or promoting the KTAP watershed report on KBMP's website, or using the KBMP stakeholders to assist in developing an appropriate approach to QAQC.

Learn More

Information and current publications from KTAP can be found at ktap.willamettepartnership.org. Or contact Carrie Sanneman at sanneman@willamettepartnership.org