Final Programmatic Report Narrative

Instructions: Save this document on your computer and complete the narrative in the format provided. The final narrative should not exceed ten (10) pages; do not delete the text provided below. Once complete, upload this document into the on-line final programmatic report task as instructed.

1. Summary of Accomplishments

In four to five sentences, provide a brief summary of the project's key accomplishments and outcomes that were observed or measured.

The Humbug Valley Yellow Creek Meadow Restoration Project was constructed in 2013 to restore the hydrologic function of 0.65 miles of Yellow Creek by reconnecting it with 71 acres of its meadow floodplain utilizing the pond and plug meadow restoration technique. California has been in a drought for the last five years. Low precipitation levels throughout the Feather River Watershed have affected hydrologic conditions. Despite this fact, pre- and post-project monitoring of avian species richness and abundance and storm event turbidity has shown improvements over the last three years post-restoration. Water temperature response to restoration did not indicate a positive response (i.e. decreased temperatures), but stayed within the pre-project range for coldwater fisheries.

2. Project Activities & Outcomes

Activities

- Describe and quantify (using the approved metrics referenced in your grant agreement) the primary activities conducted during this grant.
- Briefly explain discrepancies between the activities conducted during the grant and the activities agreed upon in your grant agreement.

Proposed Activity	**Activity Conducted**	**Discrepancy Explanation**
Treat 4,460 feet of main stem Yellow Creek	3,432 (0.65 mi) of main stem treated (See Figure 1)	Prior to construction, the site was visited by project managers for re-flagging. At that time, it was decided that the on-going up-valley migration of the headcut rendered the upper reaches of the project design unfeasible for construction. Treating the unnamed tributary from the north would have potentially caused head-cutting up the restored channel, and the upper two plugs on the mainstem would have been subject to potentially destabilizing volumes of bedload. For these reasons it was decided to scale back the construction to meet the evolving conditions on the ground.
Treat 1,936 feet of unnamed tributary from the north	Tributary not treated	
34 ponds (14.4 ac) disconnected from restored channel (ponds are borrow sites for plug material)	11 excavated ponds (4.4 ac) disconnected from restored channel	As expected, the soil material was coarser at a deeper level at the upstream excavated ponds (ponds 1, 2 and 5). This allowed for deeper ponds with smaller surface areas. As the work progressed

		downstream, the material became very fine with wet clay present as shallow as five feet, resulting in fewer ponds excavated with larger surface areas to generate sufficient material for the target plugs. To address whirling disease concerns as well as maintain flexibility with cultural resources, the pond locations and configurations were adjusted during actual excavation. See Figure 1 as-built map below for pond numbers and types. Excavated ponds 1, 3, 5, 7 and X were shifted/configured to occupy higher elevation features to reduce the frequency of flood flow access to the ponds. This left a subset of un-excavated ponds: 2, 4, 6a&b, 12 & 14, as portions of the gully that were not filled between design plugs. Ponds 8, 9, 10, 11, 13 & 15 were constructed similar to the original design, as there were no viable options to shift to a higher elevation feature.
31 plugs (9.1 ac)	13 plugs (3.2 ac)	Immediately prior to construction, the decision was made to forego two upstream plugs that were intended to stabilize the main headcut. During the high water event on December 2, 2012, the main headcut moved upstream to the confluence of the north tributary at the base of the fan, so the north tributary was not treated.
Grade control structure with fish passable riffle/pool channel through structure	Grade control constructed with rock/earthen fill with fish passable channel, vegetated with native sedge seed	No discrepancy
Block five discontinuous irrigation/drainage ditches at 100 foot intervals with existing ditch spoil berm material and plant with meadow sod.	Eleven adjacent irrigation and/or drainage ditches were treated with 104 ditch blocks to prevent capture of overland flows.	The number of ditches is only semantic, with many branches, etc. During construction, four additional plug locations were identified.
Remove and replant impacted vegetation	All removed vegetation was replanted; in addition, hand planting of over 5,000 willow stakes and approximately 500 sedge plugs was accomplished by local Chester High School students and the California Conservation Corps	Additional hand planting of gathered local vegetation (willow stakes and sedge plugs) was done to bolster plug stability and enhance avian habitat.
Seed plugs with locally collected native seed	Plugs seeded with purchased native seed	Drought severely reduced local seed production resulting in the need to purchase seed.

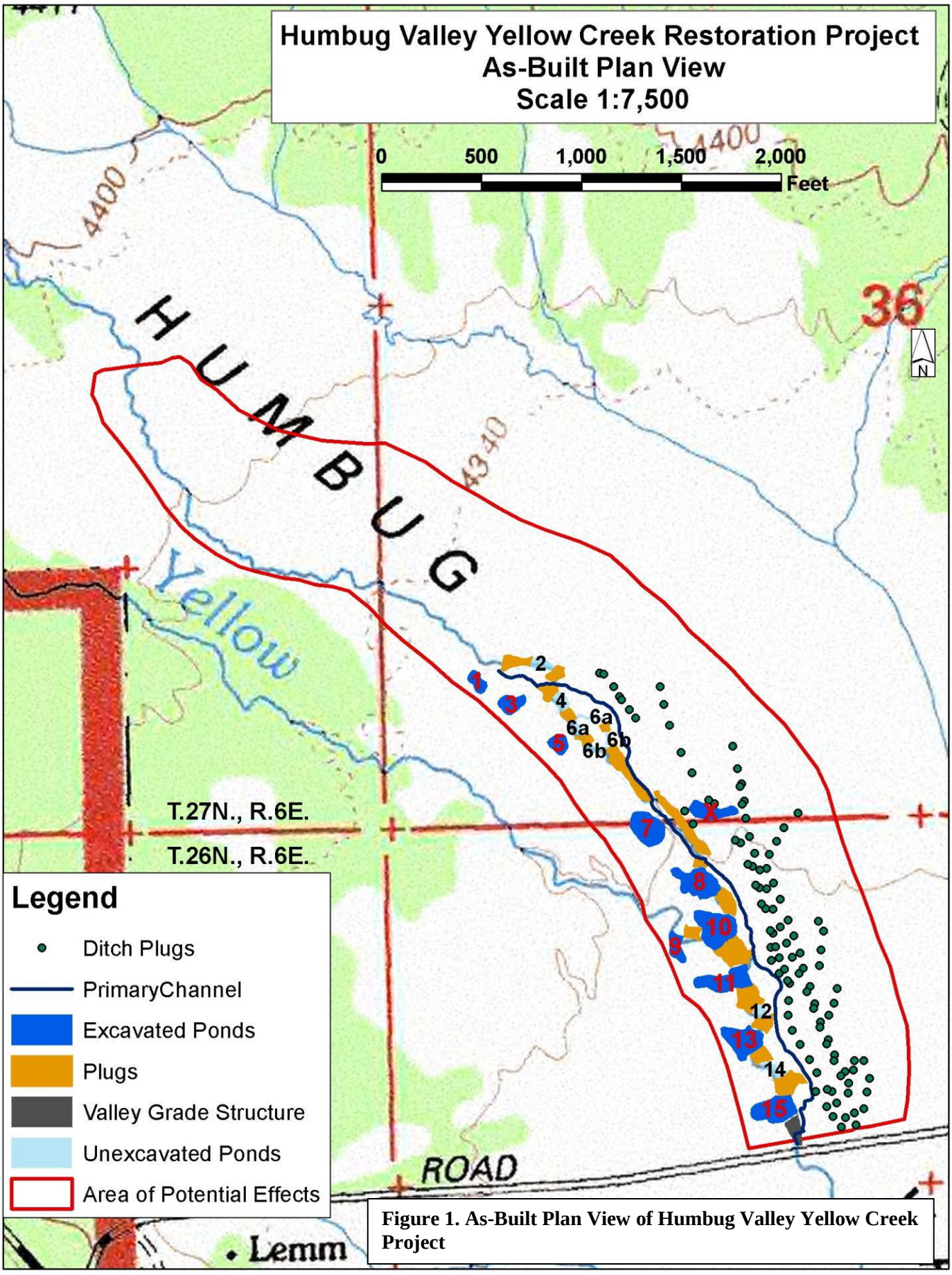


Figure 1. As-Built Plan View of Humbug Valley Yellow Creek Project

Additional Activities –

Cultural Resource Monitoring
Humbug Valley is a culturally significant place for the Mountain Maidu. A significant number of cultural sites were located in close proximity to the project area prior to project construction (McCombs, 2008, 2009). A consulting archaeologist and local Maidu tribal monitors were contracted to monitor all construction activities to ensure protection of existing sites, report and evaluate any new materials uncovered during construction, and ensure appropriate disposition of any recovered cultural materials. All cultural resource monitoring was coordinated between Pacific Gas and Electric (PG&E) and Plumas Corporation. Monitoring was funded by PG&E (landowner).

Fishery Monitoring
Prior to construction in 2012 a bank walk visual fish survey was conducted on May 2nd to see if there was any spawning activity observed in the proposed treatment reach of Yellow Creek. Three (3) rainbow trout were observed. No redds were observed. One rainbow trout (7") was observed downstream of the headcuts and two rainbow trout (5" & 4") were observed upstream of the principal headcuts. See attached synopsis report of this survey.

A pre-project fish population electroshock survey was conducted on September 3, 2013 within a 300-foot sample reach of the project area, downstream of the active construction. Natural Resources Conservation Service staff assisted with the fish population survey. Three brown trout (5-6") were captured in this survey. Channel habitat within the survey reach was approximately a 1.3:1 ratio of pool to riffle habitat, although habitat quality was poor with shallow pools, no undercut banks, and little vegetative cover.

Additionally, all ponds were completely dewatered during construction using portable pumps, and all fish removed to adjacent stream habitat. Eighty-nine (89) brown trout and 127 brook trout were recovered. Only one rainbow trout was recovered. The vast majority of fish were 3 to 6 inches in length, and only salmonids were encountered. The purpose of this was to eliminate trout from all ponded water habitat upon project completion to break the whirling disease life-cycle in the ponds.

Outcomes

- Describe and quantify progress towards achieving the project outcomes described in your grant agreement. (Quantify using the approved metrics referenced in your grant agreement or by using more relevant metrics not included in the application.)
- Briefly explain discrepancies between what actually happened compared to what was anticipated to happen.
- Provide any further information (such as unexpected outcomes) important for understanding project activities and outcome results.

Project Outcome Anticipated to Happen (Indicators & Performance Standards from the Monitoring Plan)	**What Actually Happened**
Maximum daily water temperature would decrease by 4°F at the bottom of the project	Water temperature changes observed at the bottom of the project did not meet the 4°F decrease as anticipated. Pre and post water temperatures both averaged 71°F. However, without the project, water temperatures at the bottom of the project area would have likely increased over the same time period. See discussion below.
Reduction of average outflow turbidity at the bottom of the project by 50% (measured in nephelometer turbidity units (NTUs)). All data collected are anecdotal grab samples during accessible site visits.	Average outflow turbidity of three events in 2008 was measured at 29 NTUs. In 2014-2016 average outflow of seven events was measured at 10 NTUs, a 65% reduction from pre-project conditions. See discussion below.
Increase in avian species richness by 3% and total abundance by 15%	Avian species richness increased 80% and total abundance increased over 100% in the first year post-project. Richness and total abundance continued to increase for both metrics within the project area in 2015 and 2016. See discussion below.

Water Temperature
The influence of functional floodplain groundwater contribution on stream water temperatures can be difficult to discern using traditional analyses of average daily or weekly maxima. Typically, early season flows are comprised of a high

percentage of surface water from throughout the basin, subject to daily insolation and air temperature influences, which has a warming influence on water temperature as it moves down the watershed. Later in the season, as surface water volumes decline and groundwater comprises a greater percentage of total stream flow, the influence of groundwater temperatures can have a cooling effect on surface water temperatures. This effect was observed in the project. Chart 1 compares 2012 pre-project conditions to 2014 post-project conditions. Each line represents how much the water temperature increased as it moved from the top of the project area to the bottom. Post-project, water temperature only increased an average of one degree through the summer, compared to an average increase of over three degrees in pre-project conditions. And in mid-August, post- project, water temperatures were actually cooler at the bottom of the project than they were coming into the top of the project area. This hyporheic exchange is an important process that protects water temperatures in functional channel floodplain systems; it does not occur in degraded systems. Chart 2 displays the same phenomenon for more years, and by month. Interestingly, 2014 had the highest average air temperature (68°F), and warmest water entering the project area (72°F). 2012 had the lowest (65°F air and 67°F water entering). Air and water temperatures entering the project area were the same in 2008 and 2016 (66°F air and 68F water).

Chart 1. Seasonal Change in Temperature Relationships

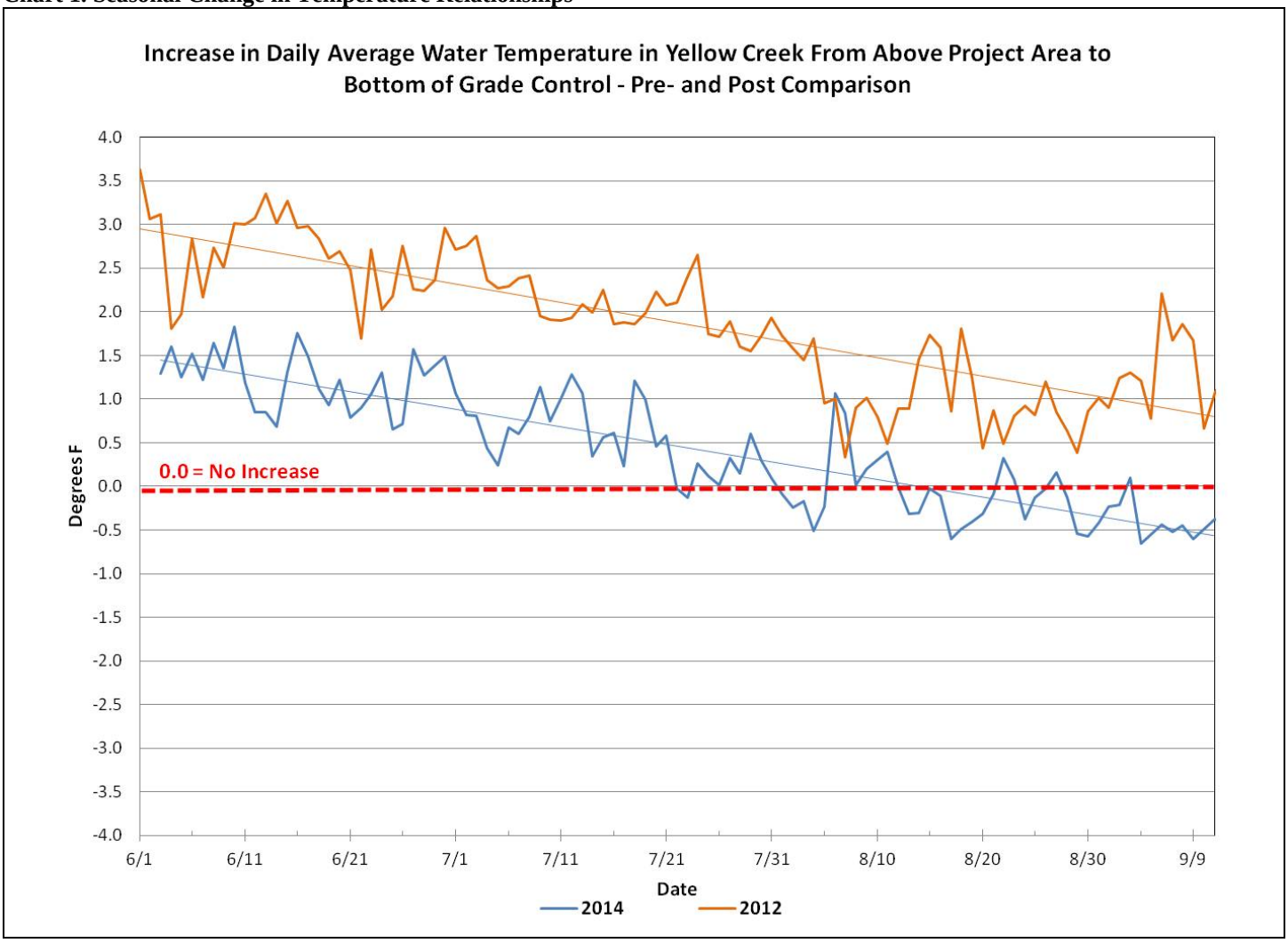
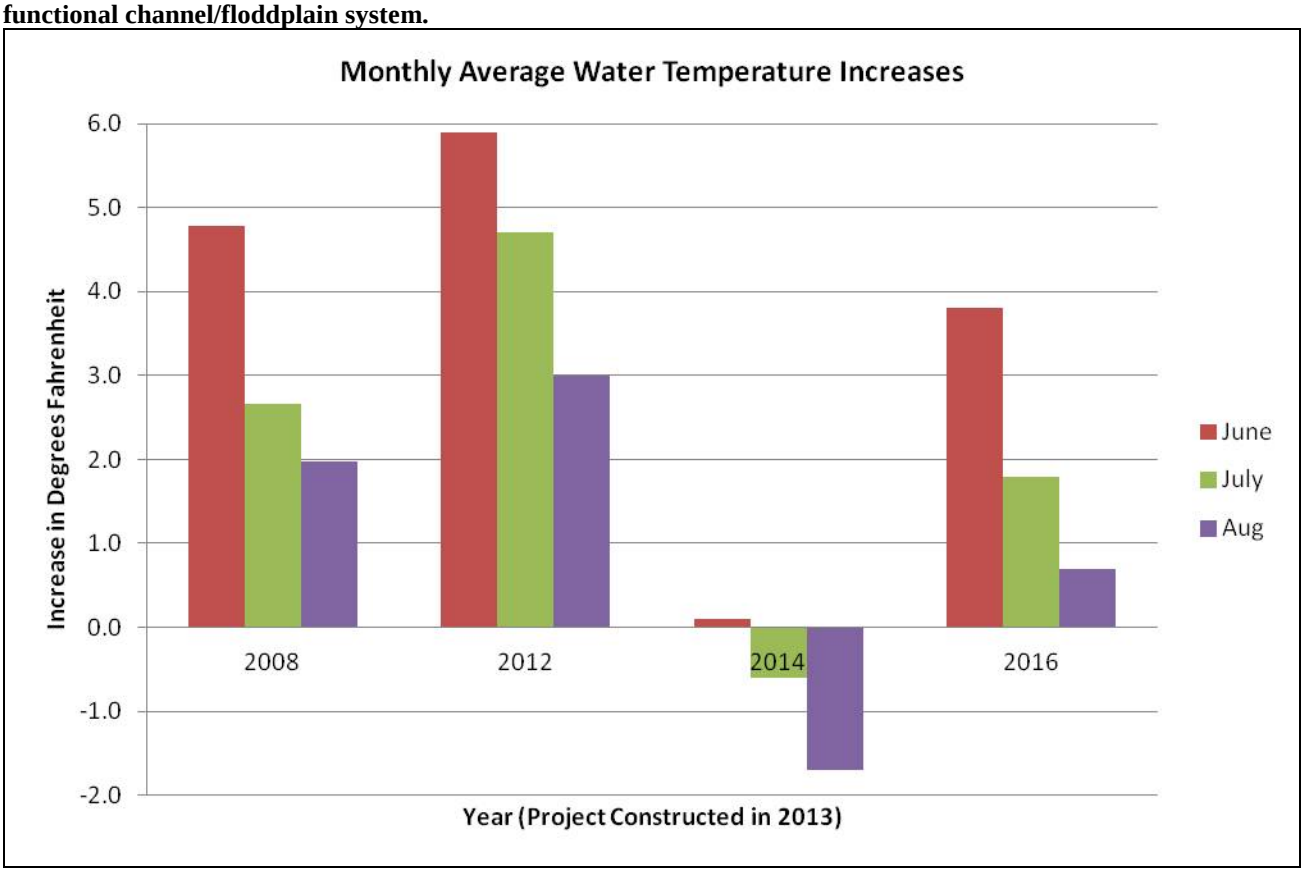


Chart 2. How much does water temperature increase as it moves through the project area? It increases less in a functional channel/floddplain system.

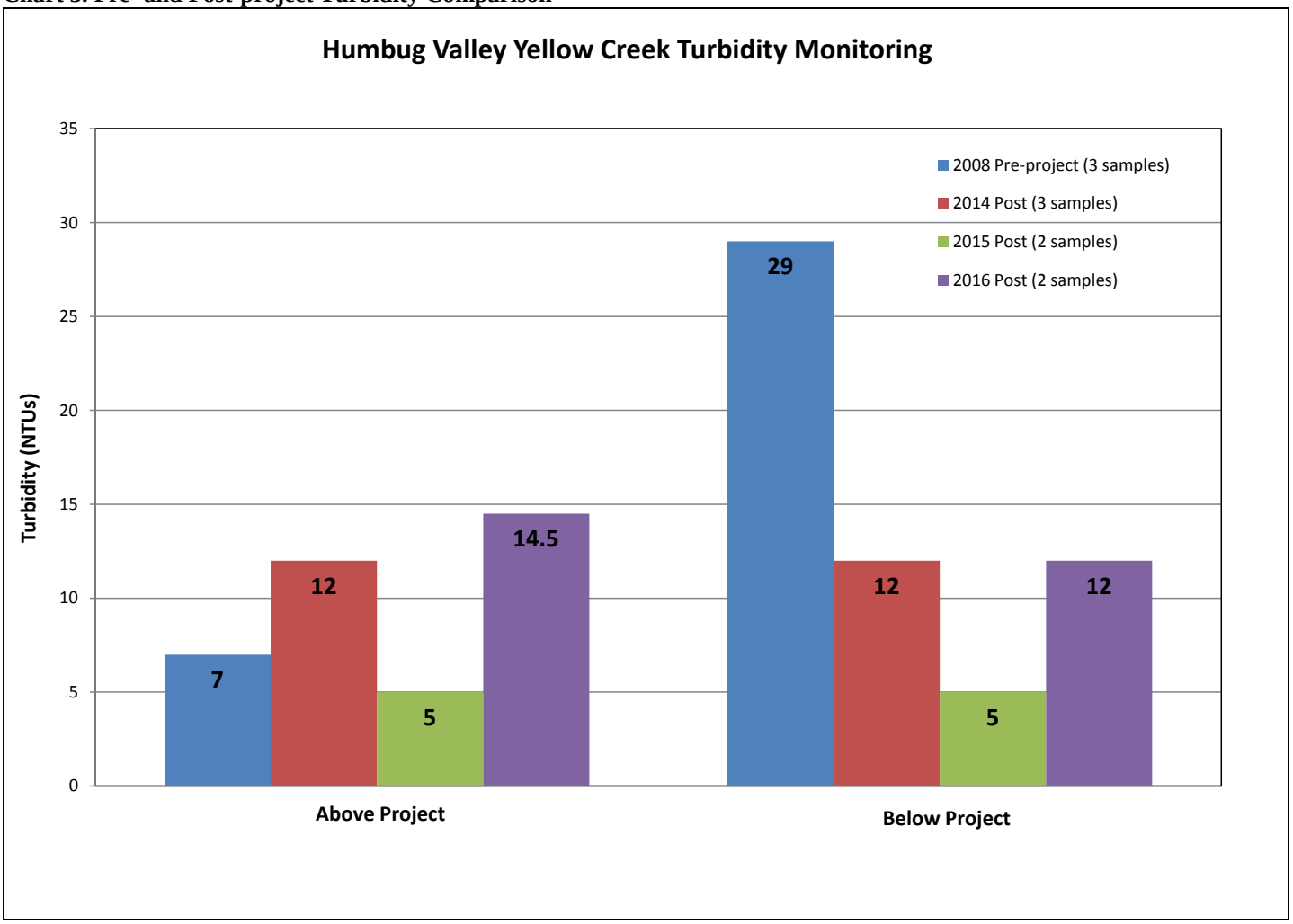


Turbidity

Sample replicates were small, due to the difficulty in accessing the project area in high flow events. Three events were measured pre-project and seven events post-project. Post-project (2014-2016), there was a 65% reduction in the average outflow turbidity. Interestingly, the average inflow turbidity at the top of the project was greater post-project than in 2008. As expected, eliminating the eroding incised channel and returning flows to remnant channels on the meadow surface significantly decreased sediment mobilization through the project area. Due to the low precipitation in 2014-2015 the active remnant channel did not overbank onto the floodplain as much as expected in a normal year. Precipitation amounts in 2016 resulted in normal high flow overbanking events.

A notable observation over the last three years post-project has been the advancing headcuts upstream of the treated project reach. The consequential in-filling of the backwater pool immediately above the project could potentially explain the no net difference between inflow and outflow turbidity levels in 2014 and 2015. Mobilized sediment from the active bank erosion upstream of the project has visibly been depositing in the backwater pool since construction of the project. In the first year post-construction the backwater pool (untreated degraded channel immediately above the top plug) was approximately 5 feet deep by six feet in width. This pool has filled with sediment and is now estimated to be only 1-3 feet deep. It is expected that outflow turbidity will continue to decrease from inflow levels due to capture of sediment on the floodplain in normal high flow overbanking events. It will be interesting to continue monitoring the active headcutting upstream, and its effects on the restored channel evolution downstream and the resultant affect on outflow turbidity amounts.

Chart 3. Pre- and Post-project Turbidity Comparison



Birds

Project partner, Point Blue Conservation Science, collected six years of avian data prior to project construction between 2008 and 2013, and to date have completed three years of post-project monitoring through 2016. Point Blue has been conducting long-term monitoring of several meadows in the northern Sierra Nevada to evaluate habitat quality for meadow birds at restored and un-restored sites. Their report released in February 2015 clearly demonstrated the benefits of pond and plug-type restoration to meadow birds. Their comparison of restored sites to reference sites indicated that restored meadows support more species and higher abundance. The results given for the first year post-project (2014) are for all bird species, not just the identified meadow focal species in the Point Blue 2015 report (see attached). Prior to restoration (2008-2013) the Yellow Creek project area had very low bird indices, averaging 2 for species richness, and 19 for species abundance. Surveys in the first post-project growing season showed an increase in both species richness (4) and species abundance (45), with an 80% increase from average pre-project conditions for species richness, and over a 100% increase in species abundance. The immediate avian response in 2014 was somewhat surprising given the normally observed lag time between restoration activities and the creation of habitat structure. Restoring floodplain function and increasing meadow moisture benefits meadow birds, but habitat structure is just as important (Campos et al. 2014). Burnett and Campos (2015) have documented a delayed response of meadow bird densities for restored study sites to date. Typically, meadow focal richness is a better indication of meadow function and health and such dramatic positive changes to meadow species richness and abundance are not observed until 3-5 years after restoration (barring negative impacts on vegetation development from drought conditions). The upstream reference site for the Yellow Creek project area has historically had greater species richness and abundance. The proximity of quality habitat upstream of the project area may have influenced the more rapid response of all bird species' use of the project area in the first year, as well as its relative proximity to two PG&E reservoirs (Lake Almanor and Butt Valley, approximately 6 and 4 air miles to the north-northeast, respectively).

As expected there was a continued increase in focal meadow species in the Yellow Creek project area in 2015 and 2016 (Chart 4a). The reference stations realized a substantial drop from a high in 2014 to a low in 2016 (Chart4b), while the restored stations realized a large increase from zero focal species prior to restoration to 1 per point in 2016. However, the reference site still supported more than twice as many focal species per point than the restored area. The full benefits of restoration to birds will take longer than three years to manifest, but this is a very positive trend in the right direction.

Chart 4a. Avian focal meadow species richness pre- and post-project within the Yellow Creek project area.

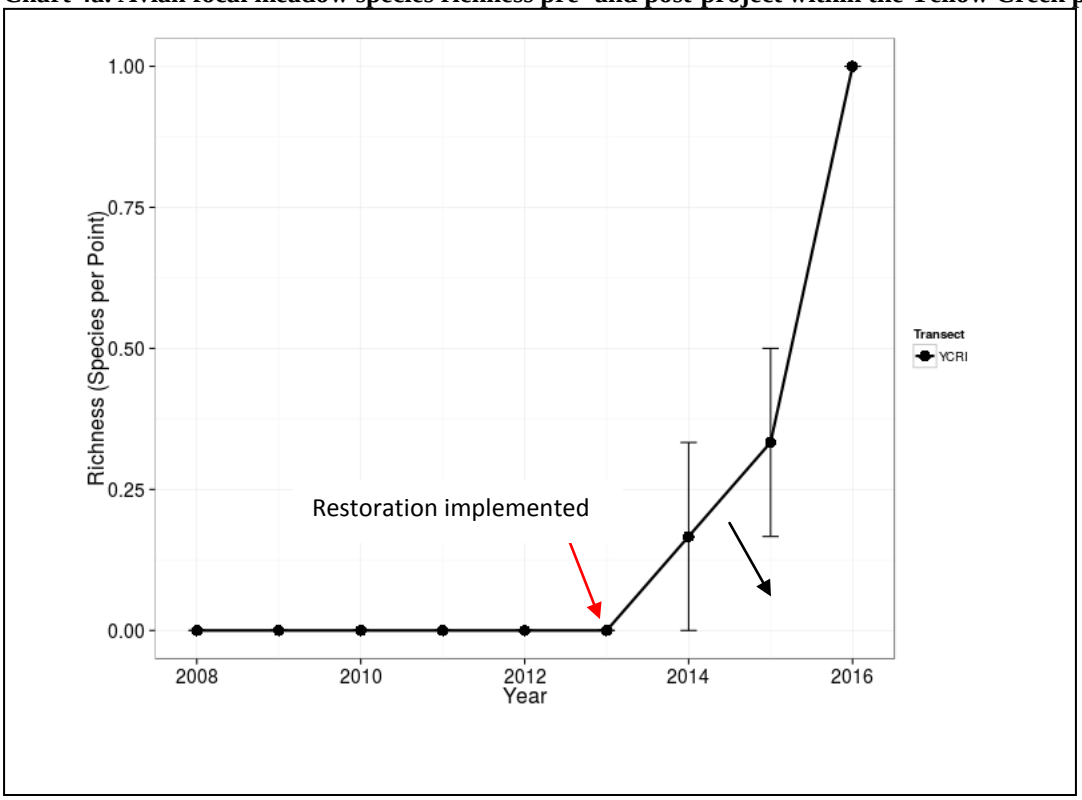
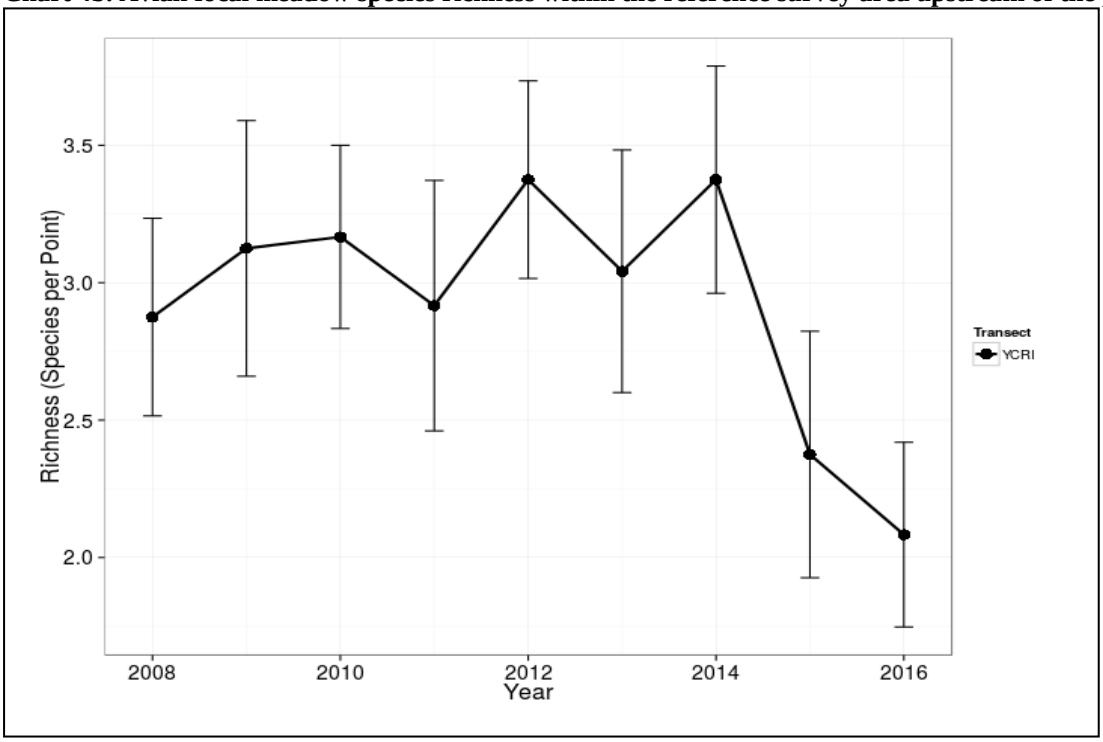


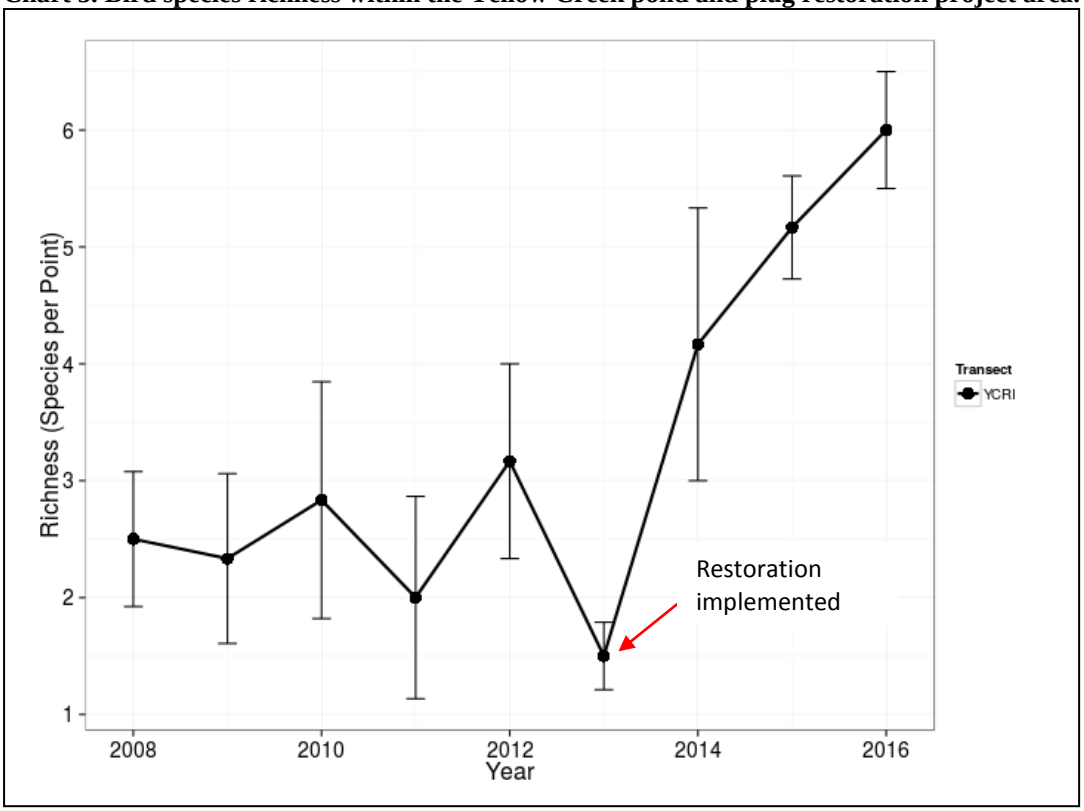
Chart 4b. Avian focal meadow species richness within the reference survey area upstream of the project.



Charts 4a and 4b illustrate the number of meadow focal bird species (Campos et al. 2014) within 50 meters of observers at 3 point count stations in the Yellow Creek pond and plug restoration project (Chart 4a) and 12 reference stations upstream of the project area (Chart 4b). Restoration was implemented following data collection in 2013.

While Point Blue suggests that their carefully selected meadow focal species are the best indicators of restoration success and meadow form and function, they acknowledge there may also be interest in the overall changes in the avian community following meadow restoration. Similar to focal species they observed a dramatic increase in overall bird species richness following implementation of the Yellow Creek project (Chart 5). Comparing all species detected they found a similar pattern with little increasing trend at reference stations and a substantial increase at restored stations (Chart 6). Pre-project surveys indicated little to no use of the project area by identified focal meadow species, such as song sparrows, yellow warblers, and willow flycatchers. Post-restoration species that have increased in Yellow Creek include Red-winged Blackbird, Tree Swallow, Wilson's Snipe, and Song Sparrow. In 2016 the first Yellow Warbler was detected in the project area.

Chart 5. Bird species richness within the Yellow Creek pond and plug restoration project area.



The Yellow Creek project area is only 2 km from a known breeding population of willow flycatcher (a California state listed endangered species). The close proximity of the project area to a source population of willow flycatchers makes it a high potential site for this endangered species. Thousands of willow stakes were planted along the remnant channel and wetted meadow areas to enhance the development of habitat structure for willow flycatcher and other species such as the yellow warbler. Despite drought conditions the first growing season, survival of willow staking efforts was estimated at 90%. As willow cover and height increases in the coming years we expect a large increase in the abundance of Yellow Warbler and Song Sparrow in the project area. Of note, Point Blue found a Sandhill Crane nest in the project area on a small island in the new channel. The nest appeared to have been abandoned with 1 egg present. Spring high flows may have flooded the nest.

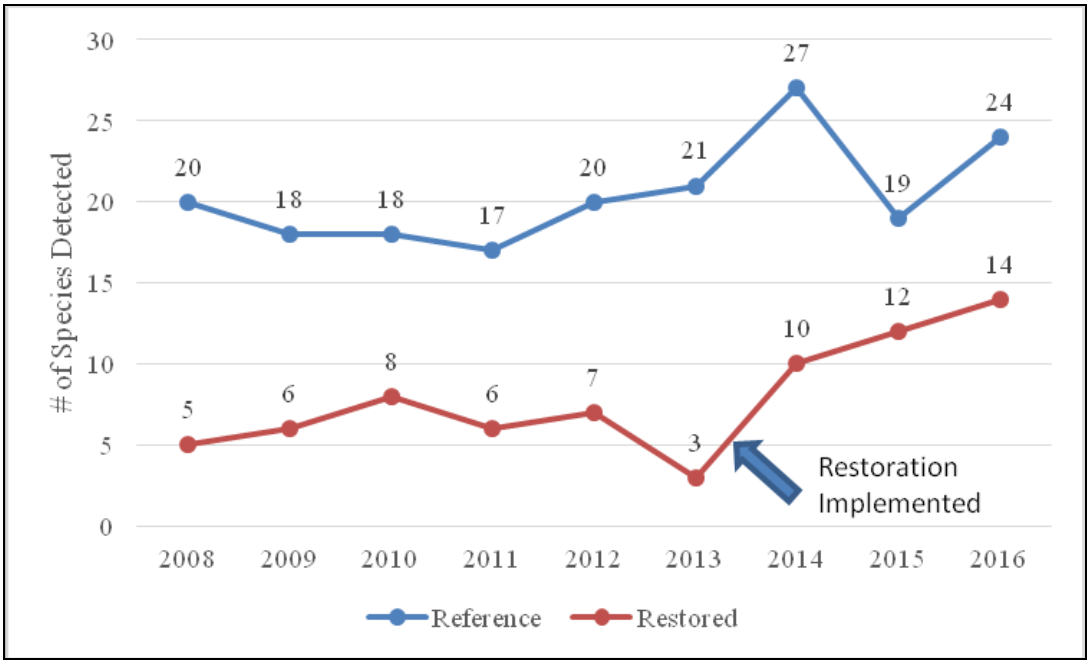


Chart 6. Total number of species detected in the Yellow Creek pond and plug restoration project within 100 meters of observers at 3 point count stations (2 visits each year) and 3 upstream reference stations.

Additional Outcomes –

Cultural Resource Monitoring

Cultural resource monitoring during construction identified 46 artifacts or possible artifacts found in diverse locations of the project Area of Potential Effects. The artifacts were primarily found in the area of previously recorded sites and reflect many of the tool types present in these sites. The artifacts were found either on the surface of the de-watered stream channel or in subsurface soil excavated by heavy equipment for the construction of ponds and plugs. The 46 artifacts were removed from potential harm and placed in safe locations identified by the Tribal Monitors.

Fishery Monitoring

An informal post-project fish angling survey was done on June 21, 2015. All pools were fished through the entire treated project reach using a small single hook and fake worm. Fish were visibly observed in 40-50% of the pools; species were not determined but those seen were approximately 4-7" in length. One (1) brown trout approximately 10" in length was caught at the top of the project in the backwater pool. Pond #3 and #8 were checked with a couple of casts using a lure, no nibbles, hits, or signs of fish were observed.

A post-project electroshock fish population survey was conducted on September 27, 2016 within a 300-foot sample reach of the "new" remnant channel. Selection of the post-project sample reach was based on trying to replicate the pre-project reach habitat attributes (i.e. a pool: riffle ratio of 1.3:1). A total of 20 fish were captured and measured, with 17 identified as brook trout and 3 brown trout. The average length of brook trout captured was 6 inches and the average length of brown trout was 9 inches. In addition, in the pool immediately upstream of the survey reach over a dozen brook trout were visually observed; one fish was estimated to be 12 inches in length! Fish population numbers post-project were three times those observed in the pre-project survey; with the average fish length 1 to 3 inches longer, despite fewer pools to riffles (0.85:1 ratio) in the post-project survey reach. However, the quality of habitat was notably better than pre-project conditions with deeper pools, undercut banks, and dense vegetative cover (sedges and a few willows) along the banks.

Post-Project Channel Evolution Monitoring

In an attempt to understand how re-activated channels evolve over time in meadow floodplain restoration projects, two profile surveys were conducted on the restored base flow channel. The first survey was conducted in November 2014. Nineteen (19) riffles were identified, with an average thalweg depth of 1.7 feet. In October 2016, another survey was completed, and 27 riffles were identified, with an average depth of one foot. The average depth of the riffle crests decreased by 40%, which would indicate an aggrading channel. This project differs from most pond and plug projects, in that the channel does not pass through any ponds. Having the restored channel pass through ponds

has been a concern due to the loss of bedload that deposits in the ponds, instead of the channel. The increase in the number of riffles, and decrease in riffle depth, indicates that bedload is being transported through the restored channel.

3. Lessons Learned

Describe the key lessons learned from this project, such as the least and most effective conservation practices or notable aspects of the project's methods, monitoring, or results. How could other conservation organizations adapt their projects to build upon some of these key lessons about what worked best and what did not?

The Humbug Valley Yellow Creek Restoration Project began in earnest in 2006, when many of the partners in Humbug Valley requested that Plumas Corporation staff collect data and develop restoration alternatives. By early 2008, using data and analysis, a suite of restoration alternatives were being considered under the auspices of the Pacific Gas & Electric Ecological Resources Committee (ERC) and its Humbug Valley Subcommittee. Ultimately, after several years of discussion, additional data collection, and mapping, it was decided to pursue restoration that would reconnect the channel to its historic floodplain. To accomplish that objective, the pond and plug methodology was chosen. However, late in the planning process the California Department of Fish & Wildlife raised concerns about extant whirling disease within the channel and the potential for pond habitat connected to the active channel becoming reservoirs for increasing and spreading the disease. In response to these concerns, the design was significantly modified to disconnect all ponds from the restored active stream channel. In addition, project partners (U.S. Forest Service, PG&E, and University of California, Davis, and California Department of Fish and Wildlife) conducted a whirling disease study throughout Humbug Valley in 2011-2012. The results of the study were published in 2013 and can be found on the Plumas Corporation website at http://www.plumascorporation.org/uploads/4/0/5/5/40554561/yc_final_report.pdf. Due to the fishery concern and local political discontent with meadow restoration, seeing this project through to fruition was challenging. Additional delays of construction occurred in 2012 due to the Chips wildfire in the watershed. Subsequently, a high water event on December 2, 2012, moved the main headcut upstream to the confluence of the north tributary at the base of the fan, resulting in a decision immediately prior to construction to forego two upstream plugs that were intended to stabilize the main headcut, and to forego treatment of the tributary. Lessons already learned but reinforced were: 1) Maintain continual open communication to succeed at true collaboration; and 2) Stream and meadow systems are dynamic and require continual monitoring to determine the best approach to restore floodplain function.

4. Dissemination

Briefly identify any dissemination of lessons learned or other project results to external audiences, such as the public or other conservation organizations.

Regular communication was kept with Pacific Gas & Electric (PG&E) staff, the Ecological Resources Committee (ERC) and its Humbug Valley Subcommittee on progress of the restoration efforts. A construction report was submitted to PG&E in January 2014 (copy was sent to NFWF on 1/31/14). Three project tours were held in 2014, one in June with students from the University of California Santa Barbara, one in July for the CA Forest Soils Council and Professional Soil Scientists Association of California, and a third in October for PG&E staff, the ERC and Humbug Valley Subcommittee members. A formal presentation was made on January 29, 2015 to the Forest Forum, an informal group of natural resource professionals from Plumas and Lassen counties who meet monthly to share information and knowledge. In May 2016 Plumas Corporation held a week long workshop training on meadow restoration sponsored by American Rivers and their funders, including National Fish & Wildlife Foundation. The first field day of the workshop the participants visited the Yellow Creek Meadow Restoration Project, where they observed and discussed the pre-project conditions, restoration design considerations, and post-restoration project responses to date. This final project report, after approval from NFWF, will be uploaded to the Plumas Corp website on the interactive project map.

On-going monitoring of project performance, including progress of re-vegetation efforts, bird surveys, and water quality (turbidity) will continue. The decision to forego upstream treatments was made due to movement of the headcut. This area should now be considered as a potential Phase II, depending on continued monitoring, current project performance and future stakeholder interest. Ditch closure in the rest of the valley could also be considered to restore hydrologic function. In 2013, the Pacific Forests and Watershed Lands Stewardship Council Board of Directors recommended the Maidu Summit Consortium to receive fee title to approximately 2,325 acres available for donation within the Humbug Valley planning unit, which includes the restored project area. At the same time, they also recommended the California Department of Fish and Wildlife and the Feather River Land Trust co-hold a conservation easement on the 2,325 acres. The Maidu Summit Consortium is in the process of completing a land management plan for the property. Once approved, the Stewardship Council is expected to complete the recommended land ownership transactions. Land management objectives of all involved parties may or may not include additional hydrologic restoration in the valley; however, all three groups are aware of the resources available to them should they choose to expand restoration of the valley.

5. Project Documents
Include in your final programmatic report, via the Uploads section of this task, the following:

- 2-10 representative photos from the project. Photos need to have a minimum resolution of 300 dpi and must be accompanied with a legend or caption describing the file name and content of the photos;
- report publications, GIS data, brochures, videos, outreach tools, press releases, media coverage;
- any project deliverables per the terms of your grant agreement.

Attached documents:

- Pre- and post-project photos
- Other project photos (construction/re-vegetation, flow events, fish monitoring, birds, field visits/tours)
- As-built map of pond and plug meadow restoration
- 2013 Pre-project Bank Walk Fish Survey Synopsis
- Avian Monitoring of Northern Sierra Meadows, February 2015

Literature Cited

Campos, B.R., R.D. Burnett, H.L. Loffland, and R.B. Siegel. 2014. Evaluating meadow restoration in the Sierra Nevada using birds and their habitat associations. Report to the National Fish and Wildlife Foundation. Point Blue Conservation Science, Petaluma, CA. This is Point Blue Contribution No. 2005.

Burnett, R.D. and B.R. Campos. 2015. Avian Monitoring of Northern Sierra Meadows. Point Blue Conservation Science, Petaluma, CA. This is Point Blue Contribution No. 2031.

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as "PROTECTED" and provide an explanation and complete citation to the statutory or regulatory source for such protection.*

Humbug Valley Yellow Creek Meadow
Pre- & Post-Restoration Photos


Yellow Creek mainstem channel- pre-project 2013


Yellow Creek mainstem channel- 5/8/2015

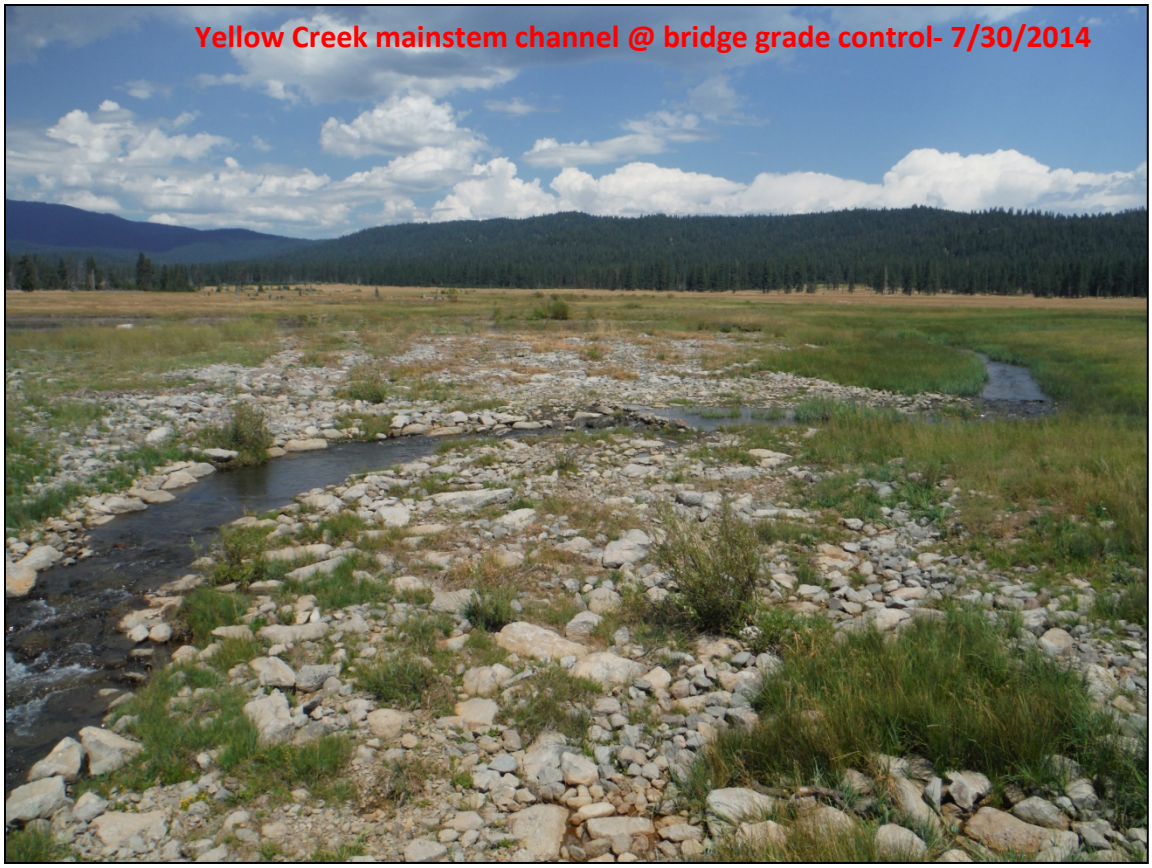
Yellow Creek remnant channel- July 2014

Yellow Creek remnant channel- 3/4/2016


Yellow Creek mainstem channel @ bridge- 3/27/2009

Yellow Creek mainstem channel @ bridge grade control- 3/4/2014

Yellow Creek mainstem channel @ bridge grade control- 3/4/2016


Yellow Creek mainstem channel @ bridge grade control- 7/30/2014


Yellow Creek mainstem channel @ bridge grade control- 5/24/2016

Humbug Valley Yellow Creek Meadow Restoration Photos

Pond and plug meadow restoration construction on Yellow Creek in Humbug Valley, Plumas County, CA. September 2013.

Staging of willows and sod for transplanting during construction on Yellow Creek.

Maidu tribal members conducting archaeology monitoring during construction.

Pre-project fish sampling on Yellow Creek in September 2013.

Chester High School students planting willow stakes on edge of plug and remnant channel. October 2013.

Construction of grade control structure on the Humbug Valley-Yellow Creek Restoration Project.

The project construction crew. From left, Aaron Neer, Gary Stokes, Rusty Stokes, and Plumas Corporation Project Managers Leslie Mink and Jim Wilcox.

California Conservation Crew planting willow stakes in April 2014.

Normal high flow event documenting overbanking from road at grade control structure looking upstream on March 6, 2016.

Plumas Corp staff collecting a turbidity sample on March 4, 2016 at bottom of project area.

Flock of Bufflehead on pond and Sandhill Cranes in meadow observed on March 4th and 6th 2016.

Post-project fish sampling on Yellow Creek in September 2016; captured brook trout.

Project tour with Pacific Gas & Electric (landowner) employees and Ecological Resources Committee/Humbug Valley Subcommittee members on October 14, 2014.

Meadow restoration training class at Yellow Creek on May 24, 2016.