

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 1 - Instream Flow						
2007 Activities	<ul style="list-style-type: none"> Selected instream flow modeling sites and transects in collaboration with the Aquatic Technical Working Group (TWG) at 12 sites. Also installed transect-locator pins to prepare sites for data collection in 2008. Selected habitat units to be modeled for amphibians (in addition to fish) at 4 instream flow modeling sites. Selected transects on 2 comparison streams for amphibian habitat stage-discharge modeling (AQ 12 - Special-Status Amphibian and Aquatic Reptile). Selected transects on 5 comparison reaches for riparian studies (AQ 10 - Riparian Resources). Selected special purpose geomorphology gravel mobility cross-sections at all instream flow modeling sites (AQ 9 - Geomorphology). Installed 5 pressure transducers and collected data in the peaking reach for stage-discharge and travel time measurements (removed in the winter). 	<ul style="list-style-type: none"> Aug 6-10 and 13-17, 2007: Conducted site visit with Aquatic TWG to select instream flow modeling sites and transects. Nov 5, 2007: Updated Aquatic TWG on 2007 field studies instream flow releases for instream flow modeling. Jan 15-16, 2008: Met with Aquatic TWG to discuss habitat suitability criteria, lifestage periodicity charts, and habitat modeling methods. 	None	<ul style="list-style-type: none"> Collect data for instream flow modeling (topography, water surface elevations, velocities, substrate, and cover). Conduct a one-time stranding evaluation downstream of Ralston Afterbay. Conduct hydrodynamics and habitat modeling. Develop technical memo describing results and suggestions regarding potential modeling approaches for large, slow-water pools. 	None	None
2008 Activities	<p>Instream Flow</p> <ul style="list-style-type: none"> Developed HSC curves for rainbow trout (juvenile, adult, and spawning), and hardhead and pikeminnow (juvenile and adult). Developed life stage periodicity chart for fish species. Collected data for instream flow modeling (topography, water surface elevations, velocities, substrate, and vegetation cover) in bypass, peaking, and comparison reaches (12 sites). Collected travel time data in the peaking reach. <p>Stranding</p> <ul style="list-style-type: none"> Conducted a one-time stranding evaluation downstream of Ralston Afterbay near Otter Creek and immediately downstream from Ralston Afterbay (June 2008). Installed pressure transducer at Horseshoe Bar to monitor water surface elevations and surveyed Horseshoe Bar channel topography. <p>Algae</p> <ul style="list-style-type: none"> Collected algae samples for <i>Didymosphenia</i> analyses at instream flow sites. 	<ul style="list-style-type: none"> Jan 15-16, 2008. Discussed Instream Flow Habitat Suitability Criteria (HSC) Feb 4, 2008. Discussed HSC for foothill-yellow legged frog and adult rainbow trout. Mar 10, 2008. Provided update on Instream Flow HSC progress. Apr 21, 2008. Discussed HSC and additions to AQ 1 - Instream Flow Technical Study Plan. May 6, 2008. Discussed HSC Jun 2, 2008. Provided update on peaking reach stranding study. Discussed substrate codes for instream flow data collection. 	<p><u>Voluntary Enhancements</u></p> <ul style="list-style-type: none"> PCWA collected flow and stranding data at Gray Eagle Bar in the peaking reach during November 2008 to adequately characterize resource conditions. 	<ul style="list-style-type: none"> Develop a technical memo describing results and suggestions regarding potential modeling approaches for large, slow-water pools. Complete hydrodynamics and habitat modeling. Analyze algae samples to document presence and abundance of <i>Didymosphenia</i>. Prepare and distribute AQ 1 - Instream Flow Technical Study Report (TSR). 	None	None
AQ 2 - Fish Population						
2007 Activities	<ul style="list-style-type: none"> Conducted qualitative surveys for fry emergence at sites on Duncan and North and South Forks of Long Canyon creeks, and the Rubicon and Middle Fork American rivers upstream of Ralston Afterbay. Conducted quantitative river sampling (electrofishing and/or snorkeling) at 19 sites. Compared snorkeling and electrofishing sampling methods at 3 sites. Sampled fish upstream of diversions to determine distribution limits of trout on North and South Forks of Long Canyon and Duncan creeks. Conducted fish sampling (gillnetting) on Project reservoirs (Hell Hole, French Meadows, Ralston Afterbay, and Middle Fork Interbay). Snorkeled Duncan Creek, North Fork Long Canyon Creek, and South Fork Long Canyon Creek diversion pools. Collected rainbow trout, brown trout, and hardhead scales from fish, where present. 	<ul style="list-style-type: none"> Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	None	<ul style="list-style-type: none"> Meet with Aquatic TWG to select appropriate fish standing crop comparison datasets. Conduct Ralston Afterbay fish sampling in 2008. Review river sampling data with the Aquatic TWG to determine which sites will be sampled in year two (2008) and possibly in year three (2009) to identify the temporal abundance of fish species. Conduct 2008 river fish population sampling. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 2 - Fish Population (continued)						
2008 Activities	<p>Fish Population</p> <ul style="list-style-type: none"> Conducted Ralston Afterbay fish sampling in June and September 2008. Reviewed river sampling data with the Aquatic TWG to determine which sites will be sampled in year two (2008) to identify the temporal abundance of fish species. Conducted 2008 river fish population sampling. <p>Reporting</p> <ul style="list-style-type: none"> Distributed Draft AQ 2 - Fish Population TSR - 2007 for review and comment on March 11, 2008. Distributed Final AQ 2 - Fish Population TSR - 2007 on July 15, 2008. 	<ul style="list-style-type: none"> Mar 10, 2008. Presented and discussed AQ 2 - Fish Population Technical Study Report - 2007. May 5, 2008. Identified 2008 fish population sampling sites. Jun 2, 2008. Discussed 2008 fish population sampling sites. 	None	<ul style="list-style-type: none"> Meet with Aquatic TWG to select appropriate fish standing crop comparison datasets. Analyze 2008 data and prepare and distribute 2008 AQ 2 - Fish Population TSR. <p><u>Contingency Study</u></p> <ul style="list-style-type: none"> Review river sampling data with the Aquatic TWG to determine which sites will possibly be sampled in year three (2009) to identify the temporal abundance of fish species. 	None	None
AQ 3 - Macroinvertebrate and Aquatic Mollusk						
2007 Activities	<ul style="list-style-type: none"> Collected drift samples at 9 sites at 3 different times of the year (Jun, Aug, and Oct). Collected Surface Water Ambient Monitoring Program (SWAMP) benthic samples and inventory data at 14 sites. Sampled 7 California Stream Bioassessment Procedure (CSBP) long-term sampling locations at the Ralston Sediment Management Project sampling sites. Submitted the benthic samples to the laboratory for identification. 	<ul style="list-style-type: none"> Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	None	<ul style="list-style-type: none"> Compare SWAMP and CSBP benthic sampling results between reaches and with data reported in the literature. Determine if 2008 macroinvertebrate contingency studies are needed. Conduct special-status aquatic mollusk sampling in 2008. Document the benthic macroinvertebrate community in areas with known water quality issues, if any, as determined in the AQ 11 - Water Quality Study. Complete drift sample analysis for inclusion into the Bioenergetics Study (AQ 5 - Bioenergetics). 	None	None
2008 Activities	<p>Macroinvertebrates</p> <ul style="list-style-type: none"> Compared SWAMP and CSBP benthic sampling results between reaches and with data reported in the literature. Determined that 2008 macroinvertebrate contingency studies were not needed in consultation with the Aquatic TWG. Based on AQ 11 Water Quality Study results, determined in consultation with the Aquatic TWG that there are no water quality issues that require additional macroinvertebrate sampling. <p>Mollusks</p> <ul style="list-style-type: none"> Conducted special-status aquatic mollusk field sampling in 2008. <p>Reporting</p> <ul style="list-style-type: none"> Distributed Draft AQ 3 - Macroinvertebrate and Aquatic Mollusk TSR for review and comment on May 19, 2008. Distributed Final AQ 3 - Macroinvertebrate and Aquatic Mollusk TSR on August 1, 2008. 	<ul style="list-style-type: none"> Apr 21, 2008. Presented and discussed results to be included in AQ 3 - Macroinvertebrate and Aquatic Mollusk TSR - 2007. Provided overview of 2008 TSP implementation. 	<p><u>Approach Refinement</u></p> <ul style="list-style-type: none"> The TSP states that the macroinvertebrate metrics will be reported as outlined in Rehn et al. (2007). The macroinvertebrate metrics were reported as outlined in an updated study by Rehn (2008). 	<ul style="list-style-type: none"> Complete drift sample analysis and incorporate data into the AQ 5 - Bioenergetics TSR. Analyze special-status mollusk data and prepare and distribute AQ 3 - Aquatic Mollusks TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 4 - Water Temperature Modeling						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Collect water temperature and meteorological data (2008). Collect water temperature data at selected tributary inflows and deep pools in the lower Rubicon and Middle Fork American rivers. Establish Water Temperature Modeling Subgroup. Select reservoir and river water temperature models for the specific study reaches. Summarize existing water temperature and meteorological data. Summarize thermal profiles in Project reservoirs. Collect/develop model inputs (i.e. topographic and riparian shading, air temperature, wind speed, relative humidity, solar radiation, and boundary condition flow and water temperature data) for modeled river reaches and reservoirs. Develop reservoir and water temperature models for the specific study reaches. Characterize modeled water temperatures for existing, unimpaired, and alternative flow conditions. Consider predictions of changes in air temperature resulting from global warming in 2 or 3 of the model runs. Model potential effects of Project betterments on reservoir temperature regimes and associated instream release temperatures. 	None	None
2008 Activities	<p>Model Input</p> <ul style="list-style-type: none"> Collected water temperature and meteorological data (2008). Selected tributary inflows and deep pools in the lower Rubicon River near Pilot Creek and Long Canyon and collected water temperature data. Established Water Temperature Modeling Subgroup. Selected reservoir and river water temperature models for the specific study reaches. Summarized existing water temperature and meteorological data. Summarized thermal profiles in Project reservoirs. 	<ul style="list-style-type: none"> May 3, 2008. Technical Subgroup Meeting - Provided overview of AQ 4 - Water Temperature Modeling TSP. Reviewed available data and discussed appropriate models for temperature modeling. Jul 16, 2008. Technical Subgroup Meeting. Discussed status of report and water temperature modeling efforts. Sep 9, 2008. Technical Subgroup Meeting. Provided progress report on water temperature model development. Nov 4, 2008. Technical Subgroup Meeting. Provided progress report on water temperature model development. 	None	<ul style="list-style-type: none"> Summarize 2008 water temperature and meteorological data. Summarize 2008 thermal profiles in Project reservoirs. Develop model inputs (i.e. topographic and riparian shading, air temperature, wind speed, relative humidity, solar radiation, and bound condition flow and water temperature data) for modeled river reaches and reservoirs. Develop reservoir and water temperature models for the specific study reaches. Characterize modeled water temperatures for existing, unimpaired, and alternative flow conditions. Consider predictions of changes in air temperature resulting from global warming in 2 or 3 of the model runs. Model potential effects of Project betterments on reservoir temperature regimes and associated instream release temperatures. Prepare and distribute AQ 4 - Water Temperature Modeling TSR. 	None	None
AQ 5 - Bioenergetics						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Analyze growth and water temperature relationships in the Rubicon River and the peaking reach using a salmonid bioenergetics model. Quantify the amount and quality of habitat for salmonids using a bioenergetics foraging model. Determine availability of bioenergetics data for hardhead to determine feasibility of addressing water temperature and/or food availability through modeling and complete modeling if sufficient information is available and deemed appropriate. 	None	None
2008 Activities	None	N/A	None	<ul style="list-style-type: none"> Analyze growth and water temperature relationships in the Rubicon River and the peaking reach using a salmonid bioenergetics model. Quantify the amount and quality of habitat for salmonids using a bioenergetics foraging model. Determine availability of bioenergetics data for hardhead to determine feasibility of addressing water temperature and/or food availability through modeling and complete modeling if sufficient information is available and deemed appropriate. Prepare and distribute AQ 5 - Bioenergetics TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 6 - Fish Passage						
2007 Activities	<ul style="list-style-type: none"> Identified and classified potential tributary barriers within the reservoir inlet areas (Hell Hole, French Meadows, Ralston Afterbay and Middle Fork Interbay). Identified and classified potential tributary junction barriers along mainstem river reaches. Identified and classified potential Project facilities (e.g. diversion structure, tunnel crossings, gage weirs) and did helicopter surveys of potential hardhead barriers upstream of Ralston Afterbay. 	<ul style="list-style-type: none"> Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	None	<ul style="list-style-type: none"> Quantitatively evaluate fish passage at potential Project-related fish barriers during base flow (low flow) releases. Qualitatively assess whether low flow barriers have the potential to become passable at flows higher than base flow. Evaluate fish passage at Project diversion dams and determine if hydrodynamics modeling is needed to assess fish passage in collaboration with the Aquatic TWG. 	None	None
2008 Activities	<ul style="list-style-type: none"> Quantitatively evaluated fish passage at potential Project-related fish barriers during base flow (low flow) releases. Qualitatively assessed whether low flow barriers have the potential to become passable at flows higher than base flow. 	<ul style="list-style-type: none"> Jul 8, 2008. Presented and discussed AQ 6 - Fish Passage Technical Study Report results 	<p><u>Voluntary Enhancements</u></p> <ul style="list-style-type: none"> PCWA surveyed two inaccessible river reaches for passage barriers using low elevation helicopter fly-overs on the Middle Fork American River and the Rubicon River upstream from Ralston Afterbay. PCWA revisited several potential barriers that were identified during the 2005-2006 mesohabitat mapping to collect detailed measurements to better quantify fish passage. PCWA surveyed several potential barriers that were identified during other field studies (e.g. fish population sampling), but were not located during the 2005-2006 mesohabitat field mapping and collected detailed measurements at the potential barriers to calculate fish passage. <p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> Timing of the distribution of the draft 2008 AQ 6 - Fish Passage TSR was delayed because additional time was needed to conduct field surveys and to analyze study data. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<ul style="list-style-type: none"> Complete and distribute 2008 AQ 6 - Fish Passage TSR. Evaluate fish passage at Project diversion dams and determine if hydrodynamics modeling is needed to assess fish passage in collaboration with the Aquatic TWG. 	None	None
AQ 7 - Entrainment						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Meet with Aquatic TWG to fully develop fish entrainment threshold calculation approach. Summarize literature and fish population data. Characterize Project diversion structures and intakes, diversion operations, and powerhouse turbines. Develop information necessary to assess the feasibility of screening intake structures, including feasibility level estimates of screen and screen installation costs. Indirectly estimate entrainment and mortality potential. Collaborate with Aquatic TWG to determine whether or not direct measurements of entrainment and mortality are warranted. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 7 - Entrainment (continued)						
2008 Activities	<p>Entrainment Indirect Calculations</p> <ul style="list-style-type: none"> Met with Aquatic TWG to develop fish entrainment threshold calculation approach. Summarized literature and fish population data. Characterized Project diversion structures and intakes, diversion operations, and powerhouse turbines. Developed information necessary to assess the feasibility of screening intake structures, including feasibility level estimates of screen and screen installation costs. Indirectly estimated entrainment and mortality potential. Collaborated with Aquatic TWG to determine direct measurements of entrainment and mortality are warranted. Distributed white paper study approach for entrainment for discussion at July 8, 2008 TWG. <p>Entrainment Direct Sampling Contingency Study</p> <ul style="list-style-type: none"> Developed and distributed Entrainment Direct Sampling Approach At Duncan Creek upstream of the diversion, collected fish and implanted PIT tags (998 fish). Installed automatic PIT tag reader at the Duncan Creek diversion intake to record the number of PIT tagged fish passing through the diversion during the diversion season (December 2008 - June 2009). Sampled fish distribution and abundance during the fall throughout water column near the French Meadows-Hell Hole Tunnel Intake in French Meadows Reservoir and near the Hell Hole-Middle Fork Tunnel Intake in Hell Hole Reservoir. 	<ul style="list-style-type: none"> Jun 2, 2008. Reviewed white paper approach for entrainment. Jul 8, 2008. Reviewed white paper approach for entrainment Sept. 2008. Discussed entrainment study approach 	None	<p>Entrainment Direct Sampling</p> <ul style="list-style-type: none"> Sample fish distribution and abundance during three representative time periods throughout water column near the French Meadows-Hell Hole Tunnel Intake in French Meadows Reservoir and near the Hell Hole-Middle Fork Tunnel Intake in Hell Hole Reservoir. Directly sample entrainment using split-beam sonar at the Middle Fork-Ralston Tunnel Intake (Middle Fork Interbay) and the Ralston-Oxbow Tunnel Intake (Ralston Afterbay) from February through November 2009. Monitor young-of-the-year trout timing and abundance on Duncan Creek upstream of the diversion on four occasions in the May and June time period. Analyze data from Duncan Creek PIT tagging entrainment study, YOY abundance and timing, sonar in reservoirs, and direct entrainment sampling at the power intakes Prepare and distribute report AQ 7 - Entrainment TSR. 	None	None
AQ 8 - Reservoir Fish Habitat						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Summarize current fish species assemblage data, stocking records, and fish success for each Project reservoir. Characterize daily water surface elevation patterns and approximate pool volumes at each reservoir over the period of record. Characterize historical hourly water surface elevation patterns and approximate pool volumes at Ralston Afterbay over the period of record. Install a water surface elevation monitor or obtain access to existing water surface elevation data to record within-day fluctuations at Ralston Afterbay. Characterize daily water surface elevation patterns and approximate pool volumes of each reservoir and Ralston Afterbay with potential Project betterments using the Project Operations Model. Summarize water quality information (thermocline location, epilimnion and hypolimnion water temperatures and dissolved oxygen concentrations) for each Project reservoir under existing operations and under potential Project betterment operations. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 8 - Reservoir Fish Habitat (continued)						
2008 Activities	None	N/A	None	<ul style="list-style-type: none"> Summarize current fish species assemblage data, stocking records, and fish success for each Project reservoir. Characterize daily water surface elevation patterns and approximate pool volumes at each reservoir over the period of record. Characterize historical hourly water surface elevation patterns and approximate pool volumes at Ralston Afterbay over the period of record. Install a water surface elevation monitor or obtain access to existing water surface elevation data to record within-day fluctuations at Ralston Afterbay. Characterize daily water surface elevation patterns and approximate pool volumes of each reservoir and Ralston Afterbay with potential Project betterments using the Project Operations Model. Summarize water quality information (thermocline location, epilimnion and hypolimnion water temperatures and dissolved oxygen concentrations) for each Project reservoir under existing operations and under potential Project betterment operations. Prepare and distribute AQ 8 - Reservoir Fish Habitat TSR. 	None	None
AQ 9 - Geomorphology						
2007 Activities	<ul style="list-style-type: none"> Selected geomorphic transects at instream flow modeling study sites. Conducted V* visual estimates at 109 pools located at 14 different study sites along the bypass and peaking reaches, and two comparison streams. Collected 57 bulk samples at 14 study sites at hydraulic modeling transects (AQ 1 - Instream Flow). Completed large woody debris capture field surveys at all Project reservoirs and diversions. Surveyed French Meadows and Hell Hole reservoirs using aerial photogrammetry with ground-control surveys, and aerial observations with photo-documentation. Located pre-dam topography of French Meadows and Hell Hole reservoirs for comparative assessment of pre-dam and post-dam 2007 topography. Completed particle size sampling at Hell Hole Reservoir. Surveyed Duncan Creek diversion pool to provide estimate of total volume of sediment load. 	<ul style="list-style-type: none"> Aug 6-10 and 13-17, 2007: Conducted site visit with Aquatic TWG to select geomorphic transects at instream flow modeling sites. Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	<p>V* Sampling</p> <ul style="list-style-type: none"> The TSP indicates that V* estimates would be performed at a total of 125 sites located along the bypass and peaking reaches, and two comparison reaches. Of these, 17 sites were not surveyed due to inaccessibility, excessive travel time, or active suction dredge mining in pools. These 17 sites will not be surveyed during future sampling efforts. 	<ul style="list-style-type: none"> Analyze V* field data. Complete particle size sampling at French Meadows Reservoir, Duncan Creek Diversion Pool in fall 2008, and at Middle Fork Interbay and Ralston Afterbay if it is determined that there is insufficient data collected from previous studies for sediment management. Calculate particle size composition and estimate sediment loads captured at Project reservoirs and diversion pools. Analyze and summarize particle size composition of bulk spawning gravels collected at hydraulic modeling sites. Compare particle size composition and fine sediment content to standards from the scientific literature. Summarize information on PCWA's sediment management practices. Estimate erosion and potential sediment loading along the shoreline of Hell Hole Reservoir associated with the Hell Hole Reservoir Seasonal Storage Increase Betterment. Identify flows necessary to maintain geomorphic processes in bypass and peaking reaches. Characterize the amount of LWD captured in Project reservoirs and diversion pools, and relative extent to which LWD capture may effect its recruitment in downstream reaches. Collect high flow calibration data during 2008 runoff period. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 9 - Geomorphology (continued)						
2008 Activities	<p>River Sediment Transport</p> <ul style="list-style-type: none"> Analyzed V* field data to characterize amount and distribution of residual pool fine sediment. Analyzed and summarized particle size composition of bulk spawning gravels collected at hydraulic modeling sites. Compared particle size composition and fine sediment content to standards from the scientific literature. <p>Reservoir Sediment</p> <ul style="list-style-type: none"> Quantified and characterized sediment capture, including particle size composition, at Hell Hole Reservoir, Ralston Afterbay, Middle Fork Interbay, North Fork Long Canyon, and South Fork Long Canyon. Summarized information on PCWA's sediment management practices at Project diversion pools, Ralston Afterbay, and Middle Fork Interbay. Estimated erosion and potential sediment loading along the shoreline of Hell Hole Reservoir associated with the Hell Hole Reservoir Seasonal Storage Increase Betterment. Compared impaired and unimpaired hydrologic regimes in bypass and peaking reaches from existing gage records and evaluated applicability of existing USGS Regional Flood Frequency equations for application to the Middle Fork American River watershed. <p>Large Woody Debris</p> <ul style="list-style-type: none"> Described historical and current PCWA LWD management practices and characterized the amount of LWD captured in Project reservoirs and diversion pools, and relative extent to which LWD capture may effect its recruitment to downstream reaches. <p>Reporting</p> <ul style="list-style-type: none"> Distributed Draft 2008 AQ 9 - Geomorphology TSR for review and comment on December 9, 2008. 	N/A	None	<ul style="list-style-type: none"> Quantify and characterize sediment load and particle size composition of sediment captured at French Meadows Reservoir and Duncan Creek Diversion Pool during low-pool in fall 2009. Identify flows necessary to maintain geomorphic processes in bypass and peaking reaches. Collect high flow calibration data during 2009 runoff period, if flows are available. Evaluate sediment transport conditions under different flow regimes at selected instream flow study site locations using the hydraulic models developed for the AQ 1 - Instream Flow Technical Study Plan. Develop a regional flood frequency curve, in consultation with Aquatic TWG, to determine the magnitude and frequency of unimpaired flows for ungaged locations or locations within insufficient gaging records. Compare unimpaired peak flow derived from regional curves with impaired peak flow from gaging records. Apply the procedures as outlined in Grant et al (2003) for predicting the geomorphic response of study rivers and streams to Project dams. Finalize and distribute 2008 AQ 9 - Geomorphology TSR. Prepare and distribute 2009 AQ 9 - Geomorphology TSR. <p><u>Contingency Study</u></p> <ul style="list-style-type: none"> Consult with the Aquatic TWG to determine if additional empirical studies are necessary to characterize sediment transport under different flow regimes. 	None	None
AQ 10 - Riparian Resources						
2007 Activities	<ul style="list-style-type: none"> Selected 6 sites and/or transects on 5 comparison streams, in coordination with AQ 1 - Instream Flow and in consultation with Aquatic TWG. Conducted quantitative studies at each of the comparison stream sites (plots and line-intercept surveys along transects perpendicular to the channel, greenline surveys, and regeneration surveys). Conducted line-intercept surveys upstream and downstream of the diversions on North and South Forks of Long Canyon Creek. Collected tree cores at 2 comparison stream sites. Completed riparian surveys at Project reservoirs, Ralston Afterbay, and Middle Fork Interbay. 	<ul style="list-style-type: none"> Aug 6-10 and 13-17, 2007: Conducted site visit with Aquatic TWG to select riparian transects at instream flow modeling sites. Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	None	<ul style="list-style-type: none"> Summarize riparian resources along the selected comparison stream reaches. Summarize the distribution, characteristics, and condition of the riparian resources in relation to the life history strategies of the dominant species and fluvial geomorphic processes along bypass reaches, the peaking reach, and comparison reaches. Characterize the relationship between historic and existing land uses, recreation activities, and riparian resources. Develop indicators for riparian health in consultation with the Aquatic TWG. Summarize the distribution, characteristics, and condition of the riparian resources at Project reservoirs in relation to WSE fluctuations. Identify and map the distribution of riparian resources at proposed Project betterments, construction and staging, and new inundation areas. Collect detailed riparian information at the mouth of Five Lakes Creek and Upper Hell Hole Reservoir following review of photogrammetry elevation layers. Collect high flow calibration data during 2008-9 runoff period. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 10 - Riparian Resources (continued)						
2008 Activities	<ul style="list-style-type: none"> Identified and mapped the distribution of riparian resources at proposed Project betterments, construction and staging, and new inundation areas. Collected detailed riparian information at the mouth of Five Lakes Creek and Upper Hell Hole Reservoir following review of photogrammetry elevation layers. Collected and dated riparian tree cores from the instream flow study site immediately downstream from Hell Hole Reservoir and Five Lakes Creek. Collected data for instream flow modeling at instream flow and comparison study sites. 	N/A	None	<ul style="list-style-type: none"> Summarize riparian resources along the selected comparison stream reaches. Summarize the distribution, characteristics, and condition of the riparian resources in relation to the life history strategies of the dominant species and fluvial geomorphic processes along bypass reaches, the peaking reach, and comparison reaches. Characterize the relationship between historic and existing land uses, recreation activities, and riparian resources. Develop indicators for riparian health in consultation with the Aquatic TWG. Summarize the distribution, characteristics, and condition of the riparian resources at Project reservoirs in relation to WSE fluctuations. Collect high flow calibration data during 2009 runoff period, if flows are available. Prepare and distribute AQ 10 - Riparian TSR. 	None	None
AQ 11 - Water Quality						
2007 Activities	<ul style="list-style-type: none"> Collected in-situ and general water quality measurements on the bypass reaches, peaking reaches, reservoirs, and diversion pools in spring (39 locations) and fall (36 locations). Collected fecal coliform samples at 17 sites. Collected fish samples at Project reservoirs (Hell Hole, French Meadows, Ralston Afterbay, Middle Fork Interbay) and at one river site (Middle Fork American River downstream of Ralston Afterbay) for mercury fish tissue analyses. Provided water quality samples to State-certified laboratories approved by the State Water Resources Control Board for chemical analyses. Compared water quality results to the CVRWQCB Basin Plan objectives and water quality standards (CVRWQCB, Fourth Edition revised February 2007). Compared fish tissue results to the OEHHA guidelines. 	<ul style="list-style-type: none"> Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. 	<p>Fish Tissue Sampling</p> <ul style="list-style-type: none"> Five of the 10 recommended fish caught at French Meadows Reservoir (two brown trout and three rainbow trout) were analyzed for individual methyl mercury concentrations in the fish muscle tissue. The remaining five fish (brown trout) that were caught should have been analyzed individually. However, these 5 fish were analyzed as a composite sample due to a laboratory error. <p><u>Voluntary Enhancements</u></p> <ul style="list-style-type: none"> In addition to the ten fish caught at Hell Hole Reservoir (brown trout, rainbow trout, and lake trout that were analyzed for individual methyl mercury concentration), five additional fish (brown trout) were caught and analyzed as a composite sample. <p>General Water Quality Sampling</p> <ul style="list-style-type: none"> Water quality samples were not collected during high and low flow events along the peaking reach of the Middle Fork American River during the spring and fall sampling events. Water quality samples were collected once during the spring and fall sampling events at various locations and flows throughout the peaking reach. One metal (manganese) was not analyzed during the spring sampling event due to a transcription error. Manganese was sampled during the fall sampling event. <p><u>Voluntary Enhancements</u></p> <ul style="list-style-type: none"> In-situ measurements were taken and water samples were collected and analyzed for dissolved metals and total mercury at 3 additional locations (leakage channels and main channel) downstream of Hell Hole Reservoir and 5 additional locations (leakage channels and main channel) downstream of French Meadows Reservoir. The TSP states that the water quality analytical results would be compared to the Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition, published in September 1998. The analytical results were compared to the most recent version of the Basin Plan, which was updated with amendments in Feb 2007. <p>Fecal Coliform Sampling</p> <ul style="list-style-type: none"> According to the fecal coliform sampling protocols, fecal samples were to be collected five times within a 30 day period between July 4 and Labor Day. Two of the fecal coliform sampling locations were sampled the week after Labor Day (the fifth sample in 30 days) because of a sampling location change late in the summer. 	<ul style="list-style-type: none"> Consult with Aquatic TWG to discuss contingency water quality related studies. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 11 - Water Quality (continued)						
2008 Activities	<p>Reporting</p> <ul style="list-style-type: none"> Distributed Draft AQ 11 - Water Quality Technical Study Report - 2007 on February 1, 2008. Distributed Final AQ 11 - Water Quality Technical Study Report - 2007 on June 30, 2008. <p>Methylmercury Sampling Contingency Study</p> <ul style="list-style-type: none"> Consulted with Aquatic TWG to discuss contingency water quality related studies (May 5, 2008). Developed and distributed a Water Quality Contingency Sampling Protocol (Contingency Study) to collect additional methylmercury concentrations in sport fish muscle tissue (September 2008). Collected sport fish samples from Hell Hole and French Meadows reservoirs, Ralston Afterbay, Middle Fork Interbay, and the Middle Fork American River near Otter Creek. Collected crayfish samples from Hell Hole and French Meadows reservoirs. Provided fish and crayfish samples to State-certified laboratory approved by the State Water Resources Control Board for methylmercury analyses. 	<ul style="list-style-type: none"> Mar 10, 2008. Presented and discussed results of 2007 water quality studies and AQ 11 - Water Quality Technical Study Report. May 5, 2008. Discussed AQ 11 contingency studies (BMI sampling and mercury) Jun 2, 2008. Discussed fish tissue mercury sampling. Sep 8, 2008. Discussed mercury fish tissue sampling protocol 	None	<p>Methylmercury Sampling Contingency Study</p> <ul style="list-style-type: none"> Analyze and compare fish and crayfish tissue results to the OEHHA guidelines, and prepare and distribute results. Consult with Aquatic TWG to determine how to proceed for locations where the target numbers of fish were not obtained. Prepare and distribute AQ 11 - Methylmercury Sampling TSR. 	None	None
AQ 12 - Special-Status Amphibian and Aquatic Reptile						
2007 Activities	<p>Foothill Yellow-legged Frog (FYLF)</p> <ul style="list-style-type: none"> Identified and mapped potential breeding and rearing habitat in the study area. Document the distribution and abundance of FYLF populations in the study area. Documented the timing and length of FYLF breeding season. Identified existing data and obtain new data necessary to develop HSC for FYLF. Selected FYLF modeling sites in coordination with the Aquatic TWG. <p>California Red-legged Frog (CRLF)</p> <ul style="list-style-type: none"> Conducted USFWS CRLF site3 assessment. Identified and mapped potential CRLF habitat in the study area. Documented the distribution and abundance of CRLF in the study area. <p>Western Pond Turtle (WPT)</p> <ul style="list-style-type: none"> Documented the presence of WPT during CRLF and FYLF surveys. Mapped potential WPT nesting habitat in study area. Documented the presence of potential WPT nesting habitat near Project reservoirs and potential Project betterment inundation zones. Verified WPT habitat around Project reservoirs with ground surveys. 	<ul style="list-style-type: none"> Aug 6-10 and 13-17, 2007. Conducted site visit with Aquatic TWG to selected FYLF modeling sites. Nov 5, 2007: Updated Aquatic TWG on 2007 field studies. Jan 15-16, 2008: Presented FYLF draft HSC data from study streams. 	<p>FYLF <u>Voluntary Enhancements</u></p> <ul style="list-style-type: none"> Several perennial tributary survey sites were added to the study plan as either qualitative sampling or an incidental one-time site visit location (confluence of American Canyon Creek, Pond Creek, and Jesse Creek with the Middle Fork American River and Wallace Canyon Creek, tributary to Long Canyon Creek). 	<p>FYLF</p> <ul style="list-style-type: none"> Meet with Aquatic TWG to discuss FYLF survey results and determine if additional limited scope surveys (i.e., distribution and abundance or timing and length of breeding season) are needed in 2008. This consultation with the Aquatic TWG will be completed in early 2008. Contingency studies, if needed, will be completed in 2008 and reported in the 2008 AQ 12 - TSR, as described in the study plan. Collect FYLF egg validation data at instream flow modeling sites in spring 2008. This information will be reported in the 2009 AQ 1 - Instream Flow TSR. Develop HSC for eggs and tadpoles in consultation with the Aquatic TWG, based on data collected during surveys and existing information sources. This information will be developed in 2008 and reported in the 2009 AQ 1 - Instream Flow TSR. Develop a life stage periodicity chart for FYLF that identifies the season of the year (time period) when each life stage is likely to be present within the Project area. This data will be used to determine when the HSC information is applicable in evaluating effects of flow alterations on potential FYLF habitat. This information will be developed in 2008 and reported in the 2009 AQ 1 - Instream Flow TSR. Characterize the water stage and velocity under different flow regimes as it relates to FYLF habitat in coordination with the instream flow study. Water stage and velocity information under different flow regimes will be analyzed and reported in the 2009 AQ 1 - Instream Flow TSR. <p>FYLF and WPT</p> <ul style="list-style-type: none"> Characterize instream temperatures under different flow regimes as it relates to FYLF and WPT habitat through coordination with the water temperature study. Temperature information under different flow regimes will be analyzed and reported in the 2009 AQ 4 - Water Temp Modeling TSR. <p>CRLF</p> <ul style="list-style-type: none"> If determined necessary by USFWS, conduct protocol-level CRLF surveys in accordance with the Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog, August 2005. This contingency study, if needed, will be completed in 2008 and reported in the 2008 AQ 12 - TSR, as described in the study plan. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
AQ 12 - Special-Status Amphibian and Aquatic Reptile (continued)						
2008 Activities	<p>FYLF</p> <ul style="list-style-type: none"> • Distributed Draft Foothill Yellow Legged Frog Technical Study Report for review and comment on February 5, 2008. • Distributed Final Foothill Yellow Legged Frog Technical Study Report on June 30, 2008. • Collected FYLF egg and tadpole 2D model validation data at instream flow modeling sites in spring 2008. • Developed HSC for eggs and tadpoles in consultation with the Aquatic TWG, based on data collected during surveys and existing information sources. • Developed a life stage periodicity chart for FYLF that identifies the season of the year (time period) when each life stage is likely to be present within the Project area. This data will be used to determine when the HSC information is applicable in evaluating effects of flow alterations on potential FYLF habitat. <p><u>Contingency Study</u></p> <ul style="list-style-type: none"> • Met with Aquatic TWG and determined that the only FYLF contingency data necessary was 2008 breeding timing data at the 2D modeling validation study sites. <p>CRLF</p> <ul style="list-style-type: none"> • Submitted CRLF Site Assessment to USFWS for review on February 19, 2008. Requested determination if protocol-level surveys are necessary. • Distributed Draft CRLF TSR for review and comment on February 20, 2008. • Received letter of determination from USFWS regarding CRLF Site Assessment on Mar 27, 2008 • Distributed Final CRLF TSR on June 30, 2008. 	<ul style="list-style-type: none"> • Jan 15-16, 2008. Discussed Instream Flow Habitat Suitability Criteria (HSC) approach for FYLF • Feb 4, 2008. Discussed HSC for FYLF. • Mar 7, 2008. Consulted with USFWS regarding CRLF Site Assessment. • Mar 10, 2008. Presented and discussed AQ 12 - Special-Status Amphibian and Aquatic Reptile Technical Study Report - 2007, including FYLF survey results and CRLF site assessment. Provided update on Instream Flow HSC progress. • Mar 11, 2008. Consulted with USFWS regarding CRLF Site Assessment. • May 5, 2008. Discussed AQ 12 contingency studies. 	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> • Timing of the distribution of the 2007 AQ 12 Special-Status Amphibian and Aquatic Reptile TSR was delayed slightly to allow for consultation with the USFWS. 	<p>FYLF</p> <ul style="list-style-type: none"> • Characterize the water stage and velocity under different flow regimes as it relates to FYLF habitat in coordination with the instream flow study. Water stage and velocity information under different flow regimes will be analyzed and reported in the 2009 AQ 1 - Instream Flow TSR. • Report FYLF egg and tadpole 2D model validation data at instream flow modeling sites in the 2009 AQ 1 - Instream Flow TSR. <p><u>Contingency Study</u></p> <ul style="list-style-type: none"> • Report breeding timing data in the 2009 AQ 1 - Instream Flow TSR. <p>FYLF and WPT</p> <ul style="list-style-type: none"> • Characterize instream temperatures under different flow regimes as it relates to FYLF and WPT habitat in coordination with the water temperature modeling study. Temperature information under different flow regimes will be reported in the 2009 AQ 4 - Water Temperature Modeling TSR. <p>CRLF</p> <ul style="list-style-type: none"> • Conduct protocol-level CRLF surveys (May 1 through Sep 30, 2009). The survey results will be reported in the 2009 AQ 12 TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
CUL 1 - Cultural Resources						
2007 Activities	<p>Phase 1 - Summary of Existing Cultural Resources Information</p> <ul style="list-style-type: none"> Completed in 2005 and documented in 2005 Cultural Resources Inventory Study Report (PCWA 2006). <p>Phase 2 - Verification of Known Cultural Resources and Identification of Unknown Sites</p> <ul style="list-style-type: none"> Field surveys initiated in 2006 and continued through 2007. Work completed in 2006 is documented in 2006 Cultural Resources Inventory Report (PCWA 2007). Work completed in 2007 is documented in Draft CUL 1 - Cultural Resources Technical Study Report - 2007, which was distributed to stakeholders in December 2007. Majority of study area has been surveyed. 	<ul style="list-style-type: none"> Nov 27, 2007. Updated TWG on 2007 field activities and study results. 	<p>Identification of Unknown Sites</p> <ul style="list-style-type: none"> The cultural resources inventory field work was not completed in 2007 as outlined in the study plan. Outstanding field surveys will be completed in 2008. A supplemental report will be distributed to the stakeholders in 2008, as shown on Attachment C. 	<ul style="list-style-type: none"> Finalize CUL 1 - Cultural Resources Technical Study Report - 2007, incorporating stakeholder comments. Complete field surveys to identify unknown sites in the study area. Prepare and distribute a Supplemental Report documenting the results of field surveys conducted in 2008. Develop recommendations regarding need for eligibility studies. Prepare eligibility evaluation study plan, if needed. Amend AI permit to cover Evaluation studies, if needed. Conduct eligibility assessment(s), if needed. If additional Project facilities, features, recreation facilities or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the study plan. 	None	None
2008 Activities	<p>Cultural Resources Inventory</p> <ul style="list-style-type: none"> Finalized the CUL 1 - Cultural Resources Technical Study Report - 2007, incorporating stakeholder comments. The report was distributed to the stakeholders on April 25, 2008. Completed field surveys to identify unknown sites in the study area, including at Project Snow Courses that were added to the Project Description in 2008. Prepared a CUL 1 - Cultural Resources Technical Study Report - 2008 documenting the results of field surveys conducted in 2008. The Draft report was distributed to the stakeholders for review and comment on December 12, 2008. <p>NRHP Eligibility Contingency Study</p> <ul style="list-style-type: none"> Developed recommendations regarding need for eligibility studies. Prepared a CUL 1 - Cultural Resources Evaluation Plan. The draft plan was distributed to the stakeholders on June 18, 2008 and the final plan was distributed on August 28, 2008. Amended the ARPA permit to cover NRHP Eligibility Evaluation studies. Conducted field surveys and research as outlined in the CUL 1 - Cultural Resources Evaluation Plan. 	<ul style="list-style-type: none"> Feb 26, 2008. Updated TWG on relicensing process activities. Provided an overview of the CUL -1 Cultural Resources Technical Study Report - 2007. Discussed cultural resources NRHP eligibility evaluation study process. Nov. 18, 2008. Provided TWG with overview of 2008 Cultural Resources Inventory Study results. Updated TWG on the implementation of Cultural Resources Eligibility studies. 	<p>Cultural Resources Inventory Reporting Variance</p> <ul style="list-style-type: none"> Timing of the distribution of the draft CUL 1 -Cultural Resources TSR - 2008 was delayed because additional time was needed to conduct field surveys. The updated schedule is shown on the Implementation Schedule included in Attachment C. <p>NRHP Eligibility Reporting Variance</p> <ul style="list-style-type: none"> Timing of the distribution of the CUL 1 - Cultural Resources Evaluation plan was delayed slightly to allow for consultation with the USFS prior to distribution of the plan. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<p>Cultural Resources Inventory</p> <ul style="list-style-type: none"> Finalize CUL 1 - Cultural Resources TSR - 2008 Continue consultation with Tribes to identify any currently unidentified resources and/or characterize known resources. <p>NRHP Eligibility Contingency Study</p> <ul style="list-style-type: none"> Distribute Draft Supplemental Evaluation Plan to stakeholders for review and comment. This plan will cover resources that were identified in 2008, after the original CUL 1 - Cultural Resources Evaluation Plan was distributed. Complete NRHP eligibility evaluation studies. Consult with Tribes and USDA-FS regarding resource eligibility. Prepare and distribute a report documenting the results of NRHP eligibility evaluation studies. Initiate consultation with the State Historic Preservation Officer (SHPO) regarding potential effects to historic properties. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
LAND 1 - Transportation System						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> • Identify and map Project roads and trails used by PCWA to access Project facilities and Project Recreation facilities and by the public to access dispersed concentrated use areas. • Conduct road assessment to characterize the current condition of Project roads and trails, and associated drainage features. • Inventory the location and condition of safety, traffic control and information signs and access control features along Project roads and trails. • Identify potential natural resource issues that occur along Project roads and trails. • Identify and characterize potential traffic safety concerns. • Identify and characterize current maintenance practices, schedules and responsibilities for Project roads and trails and non-Project general access roads. • Identify and map the locations of existing legal easements and right-of-ways associated with Project roads and trails. • Identify the location and condition of helicopter landing sites that are used to operate and maintain the MFP. • Identify and map non-Project General Access roads and trails used by the PCWA and the public to access Project facilities and non-Project recreation areas. • Characterize the general characteristics of non-Project General Access roads. • Identify and map Project related signs located along non-Project general access roads and trails. • Characterize use of non-Project General Access roads and trails. • Identify and map the location of areas that may be at risk to damage from natural events. • Identify and describe the location of any new roads or trails associated with Project betterments. • Determine whether the timing or level of road and trail use will change as a result of potential changes in MFP operation or maintenance activities. 	None	None
2008 Activities	<ul style="list-style-type: none"> • Identified and mapped Project roads and trails used by PCWA to access Project facilities and Project Recreation facilities and by the public to access dispersed concentrated use areas. • Conducted field work associated with road assessment to characterize the current condition of Project roads and trails, and associated drainage features. • Inventoried the location and condition of safety, traffic control, and information signs and access control features along Project roads and trails. • Identified existing legal easements and right-of-ways associated with Project roads and trails. • Identified and mapped non-Project General Access roads and trails used by the PCWA and the public to access Project facilities and Project recreation areas. • Characterized the general characteristics of non-Project General Access roads. • Identified and photographed Project-related signs located along non-Project general access roads and trails. • Characterized use of non-Project General Access roads and trails by PCWA for operations and maintenance. • Identified and described the location of any new roads or trails associated with Project betterments. 	N/A	None	<ul style="list-style-type: none"> • Complete maps and tables using data collected as part of the road assessment to characterize the current condition of Project roads and trails, and associated drainage features. • Identify potential natural resource issues that occur along Project roads and trails. • Identify and characterize potential traffic safety concerns. • Identify and characterize current maintenance practices, schedules and responsibilities for Project roads and trails and non-Project general access roads. • Map the locations of existing legal easements and right of ways associated with Project roads and trails. • Identify the location and condition of helicopter landing sites that are used to operate and maintain the MFP. • Complete maps of locations of Project-related signs located along non-Project General Access roads and trails. • Characterize use of non-Project General Access roads and trails by entities other than PCWA. Produce map of level of use of Non-project roads for PCWA operations and maintenance. • Identify and map the location of areas that may be at risk to damage from natural events. • Determine whether the timing or level of road and trail use will change as a result of potential changes in MFP operation or maintenance activities. • Prepare and distribute a report documenting the results of the transportation system studies. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
LAND 2 - Fire Prevention and Response						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Identify and describe applicable federal, state and local fire prevention and management regulations, fuel treatment plans and agreements relevant to fire prevention on lands within the FERC Project boundary and within the Watershed. Identify and map fuel and facility conditions. Identify defense zones. Identify and describe PCWA's existing and proposed fire prevention measures. Identify and describe PCWA's fire resources and procedures. 	None	None
2008 Activities	<ul style="list-style-type: none"> Identified and described applicable federal, state, and local fire prevention and management regulations, fuel treatment plans and agreements relevant to fire prevention on lands within the FERC Project boundary and within the watershed, where appropriate. Completed field work related to assessment of fuel conditions around Project facilities and roads. Described facility conditions. Identified and described PCWA's existing and proposed fire prevention measures. Identified and described PCWA's fire resources and procedures. 	<ul style="list-style-type: none"> Updated LAND TWG on study progress and requested approval of fuel condition mapping methods by e-mail dated November 14, 2008. 	<u>Reporting Variance</u> <ul style="list-style-type: none"> Timing of the distribution of the draft Land 2 Fire Prevention and Response Report has been delayed because additional time is needed to obtain data from the USDA-FS and to complete the fuels condition mapping effort. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<ul style="list-style-type: none"> Digitize and produce maps of fuel conditions around Project facilities and roads. Obtain defense zone GIS maps from USDA-FS. Prepare and distribute LAND 2 TSR. 	None	None
LAND 3 - Emergency Action and Public Safety						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Describe PCWA's Emergency Action Plan (EAP) and how the EAP is updated. Describe PCWA's planning efforts and response activities related to emergency situations not covered under the EAP. Describe how PCWA communicates and coordinates with state, federal, and local agencies during emergency events in the vicinity of the MFP. Describe PCWA's public and worker safety measures. Describe PCWA's planning efforts and response activities related to incidents or emergencies involving the public, employees, or contractors. Characterize the number, type and location of incidents and associated emergency response efforts that have occurred in the vicinity of the MFP. 	None	None
2008 Activities	<ul style="list-style-type: none"> Described PCWA's Emergency Action Plan (EAP) and how the EAP is updated. Described PCWA's planning efforts and response activities related to emergency situations not covered under the EAP. Described how PCWA communicates and coordinates with state, federal, and local agencies during emergency events in the vicinity of the MFP. Described PCWA's public and worker safety measures and surveyed (recorded locations and obtained descriptions) of signs, alarms, booms, and buoys. Described PCWA's planning efforts and response activities related to incidents or emergencies involving the public, employees, or contractors. Characterized the number, type, and location of incidents and associated emergency response efforts that have occurred in the vicinity of the MFP using 2006/2007 data provided by Placer County Sheriff's Department, State Parks, and Foresthill Fire Department. 	N/A	<u>Reporting Variance</u> <ul style="list-style-type: none"> Timing of the distribution of the draft Land 3 - Emergency Action and Public Safety Report has been delayed because additional time is needed to obtain emergency incident data from responding agencies. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<ul style="list-style-type: none"> Obtain and characterize data for emergency incidents in 2006/2007 from CALFIRE, El Dorado County, and the USDA-FS. Prepare and distribute LAND 3 - TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
LAND 4 - FERC Boundary and Authorization						
2007 Activities		N/A	None	<ul style="list-style-type: none"> • Identify and map the location of all existing Project facilities, roads, trails, etc. in relation to the FERC Project boundary. • Identify Project facilities that lie outside the current FERC Project boundary. • Identify and map legal easements and ROWs associated with the MFP. • Compile and summarized current authorizations and other Project-related agreements. • Identify and map proposed facilities and inundation areas associated with proposed Project betterments in relation to the current FERC Project boundary. • Identify and map the location of construction, staging, and disposal areas in relation to the current FERC Project boundary. 	None	None
2008 Activities	<ul style="list-style-type: none"> • Identified and mapped the location of all existing Project facilities, roads, trails, etc. in relation to the FERC Project boundary. • Identified Project facilities that lie outside the current FERC Project boundary. • Identified legal easements and ROWs associated with the MFP. • Compiled and summarized current authorizations and other Project-related agreements. • Identified and mapped proposed facilities and inundation areas associated with proposed Project betterments in relation to the current FERC Project boundary. • Identified and mapped the location of construction, staging, and disposal areas in relation to the current FERC Project boundary. 	N/A	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> • Timing of the distribution of the draft Land 4 - FERC Boundary and Authorization Report has been delayed because additional time is needed to process data from responding agencies and generate maps. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<ul style="list-style-type: none"> • Prepare and distribute LAND 4 TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
REC 1 - Recreation Use and Facilities Assessment						
2007 Activities	<ul style="list-style-type: none"> Vehicle counts initiated in May 2007. Acquisition of existing use data available from USFS and ASRA in progress. Data compilation, tabulation, and evaluation in progress. 	<ul style="list-style-type: none"> Jan 15, 2008: Distributed vehicle count data and summary to TWG. 	None	<ul style="list-style-type: none"> Continue vehicle counts through May 2008. Continue acquisition of existing use data. Compile and evaluate vehicle count data. Conduct facility assessments. 	None	None
2008 Activities	<p>Recreation Use</p> <ul style="list-style-type: none"> Concluded vehicle counts in May 2008. Acquired existing use data. Compiled and evaluated vehicle count data. <p>Recreation Facility Assessment</p> <ul style="list-style-type: none"> Acquired facility inventory information from USDA-FS. Conducted assessments of developed recreation facilities managed by USDA-FS. Conducted detailed assessment of select roads in ASRA. 	<ul style="list-style-type: none"> Jan 15, 2008: Distributed summer vehicle count preliminary data and summary to TWG. Mar 26, 2008. Provided overview of fall vehicle count preliminary data. Apr 8, 2008. Reviewed fall vehicle count data. Provided update on REC 1 study status. May 29, 2008. Updated TWG on status of vehicle counts, which concluded on Memorial Day. Sep 22, 2008. Provided update on implementation of REC 1 TSP. Distributed winter/spring vehicle count preliminary data. 	None	<p>Recreation Use</p> <ul style="list-style-type: none"> Continue to acquire and compile use data from USDA-FS and ASRA. Estimate future recreation use in the vicinity of the MFP. <p>Recreation Facility Assessment</p> <ul style="list-style-type: none"> Conduct assessment of recreation facilities located in ASRA and characterize use. <p>Reporting</p> <ul style="list-style-type: none"> Prepare and distribute REC 1 - Recreation Use and Facility Assessment TSR. 	None	None
REC 2 - Recreation Visitor Surveys						
2007 Activities	<ul style="list-style-type: none"> Developed draft general visitor survey instrument in consultation with TWG. Assessed vehicle count data to support development of general visitor survey sampling strategy. 	<ul style="list-style-type: none"> Oct 1-2, 2007: Discussed and refined draft general visitor survey instrument. Dec 10, 2007: Discussed and refined draft general visitor survey instrument. 	None	<ul style="list-style-type: none"> Finalize general visitor survey instrument in consultation with TWG. Develop survey protocols and procedures based on vehicle count data. General visitor surveys to be administered during the summer of 2008. 	None	None
2008 Activities	<ul style="list-style-type: none"> Finalized general visitor survey instruments (Form A and Form B) in consultation with TWG. Developed survey protocols and procedures based on vehicle count data. Administered General Visitor Surveys and Reservoir Angler Surveys from Memorial Day through Labor Day, 2008. 	<ul style="list-style-type: none"> Jan 29, 2008. Discussed General Visitor Survey Instruments and sampling strategy. Feb 19, 2008. Finalized General Visitor Survey Instruments and discussed survey protocols. Mar 6, 2008. Discussed General Visitor Survey protocols and pre-test schedule and process. Mar. 26, 2008. Discussed revisions to general visitor survey instrument based on pre-test results. Finalized survey protocols. Apr 8, 2008. Reviewed general visitor survey form and log and discussed sampling schedule. Provided update on REC 2 study status. May 29, 2008. Updated TWG on General Visitor Surveys, which were initiated on Memorial Day weekend. Jul 21, 2008. Provided overview of number of surveys completed and participant feedback. Sep 22, 2008. Provided update on implementation of REC 2 TSP. 	None	<ul style="list-style-type: none"> Prepare and distribute REC 2 - Recreation Visitor Surveys TSR. 	None	None
REC 3 - Reservoir Recreation Opportunities						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Characterize existing recreation opportunities. Characterize the relationship between reservoir water surface elevation (WSE) and current and future reservoir-based recreation opportunities. Characterize existing and future WSE-related operational constraints. Identify assess access and safety concerns. Develop information about potential user conflicts. 	None	None
2008 Activities	<ul style="list-style-type: none"> Collected information as part of REC 1, REC 2, and LAND 3 studies to: <ul style="list-style-type: none"> Characterize existing recreation opportunities Characterize the relationship between reservoir water surface elevation (WSE) and current and future reservoir-based recreation opportunities Identify and assess access and safety concerns Identify potential user conflicts. 	<ul style="list-style-type: none"> Apr 8, 2008. Provided update on REC 3 study status. Sep 22, 2008. Provided update on implementation of REC 3 TSP. 	None	<ul style="list-style-type: none"> Prepare and distribute REC 3 - Reservoir Recreation Opportunities TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
REC 4 - Stream-based Recreation Opportunities						
2007 Activities	<ul style="list-style-type: none"> Acquisition of existing recreation information and hydrologic data in progress. 	N/A	None	<ul style="list-style-type: none"> Establish focus groups. Develop questions for focus group discussions. Conduct focus group interviews during spring of 2008. Establish flow study groups. Develop flow study survey instruments. Conduct angling, stream crossing, and boating flow studies during spring and summer of 2008, in coordination with implementation of AQ 1 - Instream Flow TSP. 	None	None
2008 Activities	<ul style="list-style-type: none"> Established three focus groups (angler, trail user/stream crossing, whitewater boating). Developed questions for focus group discussions. Conducted focus group interviews. Established flow study groups. Developed flow study survey instruments. Identified primary stream crossing locations in peaking reach. Collected information to develop stage/discharge relationships at each stream crossing location. Conducted whitewater boating flow studies in the peaking reach. 	<ul style="list-style-type: none"> Jan. 29, 2008. Provided overview of focus group and flow study processes. Feb 19, 2008. Discussed focus group and flow study implementation and timeline. Mar 6, 2008. Discussed invitation letter to potential focus group participants and discussed proposed questions for structured focused groups. Discussed flow study timing, target flows, and whitewater survey form. Mar. 26, 2008. Reviewed focus group materials and logistics. Reviewed flow study survey forms. Apr 8, 2008. Reviewed flow study survey forms, profiles and logs. Provided update on REC 4 study status. May 29, 2008. Updated TWG on focus group sessions. Discussed flow studies with respect to focus group feedback. Jul 21, 2008. Discussed and refined flow study approaches. Sep 22, 2008. Provided update on implementation of REC 4 TSP. 	<p>Angling Flow Studies <u>Approach Refinement</u></p> <ul style="list-style-type: none"> The REC 4 TSP indicated that PCWA would assemble a group of anglers to assess fishing conditions over a range of flows at specific locations in the peaking reach and on the Rubicon River below Ellicott Bridge. Based on the information developed during the focus group session, PCWA proposed to address flow-related fishing issues in the peaking reach by analyzing ramping conditions in the peaking reach in lieu of assembling a group of anglers to assess fishing conditions. PCWA will characterize the frequency, timing and duration of ramping at various locations in the peaking reach under current Project operations. This information will then be used to determine how current ramping scenarios affect fishing opportunities in the peaking reach. PCWA does not propose to conduct angler flow studies on the Rubicon River below Ellicott Bridge because sufficient Information to characterize flow-related impacts to anglers was developed during the angler focus group session. These refinements were discussed with and supported by the TWG. <p>Stream Crossing Flow Studies <u>Approach Refinement</u></p> <ul style="list-style-type: none"> The REC 4 TSP indicated that PCWA would assemble a group of stream crossing users to assess stream crossing conditions over a range of flows at specific locations in the peaking reach. Based on the information developed during the focus group session, PCWA proposed to develop stage/discharge relationships at each of the stream crossing locations in lieu of assembling a group of stream crossing users to assess crossing conditions. PCWA believes this approach will yield information that more directly addresses the issues associated with stream crossing. These refinements were discussed with and supported by the TWG. 	<ul style="list-style-type: none"> Summarize hydrologic information to describe flows under impaired and unimpaired conditions. Determine flow travel times as part of AQ 1 - Instream Flow study. Consult with stream-based users to identify target reaches or locations where flow information may enhance stream-based opportunities. Prepare and distribute REC 4 - Stream-based opportunities TSR. <p>Whitewater Boating Studies <u>Contingency Study</u></p> <ul style="list-style-type: none"> Consult with TWG to determine whether whitewater boating flow studies on the runs in the bypass reaches are necessary. 	None	None
REC 5 - Visual Quality Assessment						
2007 Activities	<ul style="list-style-type: none"> Identified Key Observation Points (KOPs) with USFS in October 2007. Photo-documented low water visual conditions at Hell Hole and French Meadows reservoirs in October 2007. 	N/A	None	<ul style="list-style-type: none"> Photo-document high water conditions at Hell Hole and French Meadows reservoirs in July 2008. Conduct Visual Management System inventory. Document existing visual condition of all existing Project facilities. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
REC 5 - Visual Quality Assessment (continued)						
2008 Activities	<ul style="list-style-type: none"> • Photo-documented high water conditions at Hell Hole and French Meadows reservoirs in June 2008. • Revisited French Meadows Reservoirs in October 2008 to photo-document low water conditions, because water levels receded to levels lower than those observed in 2007. • Conducted Visual Management System inventory. • Documented existing visual condition of all existing Project facilities. • Developed simulations of facilities associated with betterments from Key Observation Points. <p>Water Levels at Ralston Afterbay Contingency Study</p> <ul style="list-style-type: none"> • Compiled hydrologic information for Ralston Afterbay. • Photo-documented high, intermediate and low water conditions at Ralston Afterbay in June, October and November, respectively. 	<ul style="list-style-type: none"> • Apr 8, 2008. Reviewed flow study survey forms, profiles and logs. Provided update on REC 5 study status. • Sep 22, 2008. Provided update on implementation of REC 5 TSP. 	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> • Timing of the distribution of the draft REC 5 -Visual Quality Assessment TSR - 2008 was delayed because additional time was needed to complete field surveys. The updated schedule is shown on the Implementation Schedule included in Attachment C. 	<ul style="list-style-type: none"> • Complete and distribute REC 5 - Visual Quality Assessment TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
TERR 1 - Vegetation Communities and Wildlife Habitat						
2007 Activities	<p>Vegetation Communities</p> <ul style="list-style-type: none"> Developed preliminary vegetation community maps from available Calveg data. Verified Calveg data against aerial photos and Project video. Conducted ground-truth surveys. Developed final vegetation community maps. <p>Wildlife Habitats</p> <ul style="list-style-type: none"> Developed Calveg-CWHR Crosswalk table for the MFP. Developed preliminary vegetation density maps from aerial photos and Project video. Conducted vegetation density ground-truth surveys and collected data on tree size classes. Developed final vegetation density and tree size class maps. 	<ul style="list-style-type: none"> Nov 6, 2007: Provided overview of study results 	<p>Reporting</p> <ul style="list-style-type: none"> Timing of the distribution of the 2007 draft Technical Study Report was delayed because additional time was needed to complete data analysis and to prepare final vegetation community maps. <p>Vegetation Mapping</p> <ul style="list-style-type: none"> A detailed description of the riparian community at the mouth of Five Lakes Creek and at upper Hell Hole Reservoir could not be completed in 2007 because the existing topographic information was insufficient to accurately identify the new inundation area associated with the Hell Hole Reservoir Seasonal Storage Increase betterment. This study element will be completed in 2008 using detailed photogrammetry-based topographic mapping of the inundation zone. A supplemental report documenting the results of this effort will be distributed in late 2008. 	<ul style="list-style-type: none"> Develop detailed descriptions of riparian vegetation communities at the mouth of Five Lakes Creek, and at upper Hell Hole Reservoir (To be completed as part of AQ 10 - Riparian Resources TSP). If additional Project facilities, features, recreation facilities or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the study plan. 	None	None
2008 Activities	<ul style="list-style-type: none"> Distributed Draft TERR 1 - Vegetation Communities and Wildlife Habitat Technical Study Report to the TWG for review and comment on January 31, 2008. Distributed Final TERR 1 - Vegetation Communities and Wildlife Habitat Technical Study Report to the TWG on June 17, 2008. 	<ul style="list-style-type: none"> Jun 3, 2008. Discussed and finalized technical study report. 		<ul style="list-style-type: none"> Develop a Supplemental Report with detailed descriptions of riparian vegetation communities at the mouth of Five Lakes Creek, and at upper Hell Hole Reservoir. This information will be reported in the AQ 10 - Riparian Resources TSR. 	None	None
TERR 2 - Special-Status Plants						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Identify and map special-status plants, fungi, and mosses at existing Project facilities, features, recreation facilities, and dispersed concentrated use areas, and at areas associated with proposed Project betterments. Identify and map special-status aquatic and riparian plants and mosses at quantitative geomorphic and riparian sampling sites in bypass and peaking reaches. 	None	None
2008 Activities	<ul style="list-style-type: none"> Conducted field surveys and mapped the locations of terrestrial special-status plants and mosses at existing Project facilities, features, recreation facilities, and dispersed concentrated use areas, and at areas associated with proposed Project betterments. Conducted field surveys and mapped the locations of aquatic and riparian special-status plants and mosses at quantitative geomorphic and riparian sampling sites in bypass and peaking reaches. 	<ul style="list-style-type: none"> Mar 3, 2008. Reviewed and approved list of Special-Status Plants to be included in TERR 2 technical study. Agreed that special-status fungi surveys are not necessary. May 7, 2008. Consulted with agencies regarding blooming periods and verified survey timing through reference population monitoring. Jun 3, 2008. Provided update on TERR 2 TSP implementation. Jul 21, 2008. Consulted with agencies regarding blooming periods and verified survey timing through reference population monitoring. 	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> Timing of the distribution of the 2008 draft Technical Study Report was delayed because additional time was needed to complete data analysis and to prepare final special-status plant maps. <p>Special-Status Fungi Surveys</p> <p><u>Approach Refinement</u></p> <ul style="list-style-type: none"> Special-status fungi identified as potentially occurring in the study area were not included in the special-status plant surveys. Special status fungi are found only in mature mixed-conifer forests. However, based on a review of vegetation community maps developed for the TERR 1 - TSP, it was determined that no mature mixed conifer forest habitat is present in the study area where maintenance activities occur or where potential project betterments would be constructed. This information was presented to the TWG on March 3, 2008. Using this information, the TWG determined that it would not be necessary to include fungi in the special-status plant surveys conducted for the TERR 2 - TSP. 	<ul style="list-style-type: none"> Complete and distribute 2008 TERR 2 - Special Status Species TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
TERR 3 - Noxious Weeds						
2007 Activities	None	N/A	None	<ul style="list-style-type: none"> Identify and map known occurrences of noxious weed populations at existing Project facilities and features, recreation facilities, and dispersed concentrated use areas, and at areas associated with proposed Project betterments. Consult with USDA-FS personnel to develop a list of noxious weeds and invasive non-native plants of highest concern in the ENF and TNF. Conduct noxious weed surveys. Develop a GIS map of noxious weeds and invasive non-native plants with respect to the study area. If additional Project facilities, features, recreation facilities or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the study plan. 	None	None
2008 Activities	<ul style="list-style-type: none"> Identified and map known occurrences of noxious weed populations at existing Project facilities and features, recreation facilities, and dispersed concentrated use areas, and at areas associated with proposed Project betterments. Consulted with USDA-FS personnel to develop a list of noxious weeds and invasive non-native plants of highest concern in the ENF and TNF. Conducted noxious weed surveys. Developed a GIS map of noxious weeds and invasive non-native plants with respect to the study area. 	<ul style="list-style-type: none"> Mar 3, 2008. Reviewed and approved list of noxious weeds of highest concern to be included in the TERR 3 technical study. Jun 3, 2008. Provided update on TERR 3 TSP implementation. 	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> Timing of the distribution of the 2008 draft TSR was delayed because additional time was needed to complete data analysis and to prepare final noxious weeds maps. <p><u>Voluntary Enhancement</u></p> <ul style="list-style-type: none"> The study area was expanded to include quantitative geomorphic and riparian sampling sites in bypass and peaking reaches. 	<ul style="list-style-type: none"> Complete and distribute 2008 TERR 3 - Noxious Weeds TSR. 	None	None
TERR 4 - Special-Status Wildlife						
2007 Activities	<ul style="list-style-type: none"> Identified and mapped known occurrences of special-status wildlife species. Determined Project communication line and powerline consistency with APLIC Guidelines. Documented incidental observations of special-status species during Project field surveys in 2007. Obtained USDA-FS GIS data layers of northern goshawk, California spotted owl, Pacific fisher, and pine marten land allocations. Obtained USDA-FS GIS data layers documenting potential willow flycatcher habitat. 	<ul style="list-style-type: none"> Nov 6, 2007: Provided overview of study elements and preliminary results. 	None	<p>General Wildlife</p> <ul style="list-style-type: none"> Identify and map wildlife species potentially occurring within CWHR designations. Conduct general wildlife surveys at potential Project betterments. If additional Project facilities, features, recreation facilities or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the study plan. <p>Osprey</p> <ul style="list-style-type: none"> Conduct osprey nest surveys in conjunction with bald eagle nest surveys. Develop GIS map of osprey occurrences and nests. <p>Northern Goshawk</p> <ul style="list-style-type: none"> Develop GIS map of existing northern goshawk information with respect to the study area. Conduct northern goshawk surveys at potential Project betterments. <p>California Spotted Owl</p> <ul style="list-style-type: none"> Develop GIS map of California spotted owl land allocations and known occurrences with respect to the study area. <p>Willow Flycatcher</p> <ul style="list-style-type: none"> Develop GIS map of willow flycatcher nesting habitat and known occurrences with respect to the study area. <p>Mesocarnivores</p> <ul style="list-style-type: none"> Develop GIS map of mesocarnivore land allocations and known occurrences with respect to the study area. <p>Mule Deer</p> <ul style="list-style-type: none"> Update GIS map of deer herd migration patterns and important habitats in the MFP watershed. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
TERR 4 - Special-Status Wildlife (continued)						
2008 Activities	<p>General Wildlife</p> <ul style="list-style-type: none"> Identified and mapped wildlife species potentially occurring within CWHR designations. Conducted general wildlife surveys at potential Project betterments. Consulted with resource agencies and PCWA regarding avian electrocutions and mortalities on Project powerlines Assessed consistency of Project communication lines and powerlines with Avian Power Line Interaction Committee (APLIC) guidelines <p>Osprey</p> <ul style="list-style-type: none"> Conducted osprey nest surveys in conjunction with bald eagle nest surveys. Developed GIS map of osprey occurrences and nests. <p>Northern Goshawk</p> <ul style="list-style-type: none"> Developed GIS map of existing northern goshawk information with respect to the study area. Conducted northern goshawk surveys at potential Project betterments. <p>California Spotted Owl</p> <ul style="list-style-type: none"> Developed GIS map of California spotted owl land allocations and known occurrences with respect to the study area. <p>Willow Flycatcher</p> <ul style="list-style-type: none"> Developed GIS map of willow flycatcher nesting habitat and known occurrences with respect to the study area. <p>Mesocarnivores</p> <ul style="list-style-type: none"> Developed GIS map of mesocarnivore land allocations and known occurrences with respect to the study area. <p>Mule Deer</p> <ul style="list-style-type: none"> Updated GIS map of deer herd migration patterns and important habitats <p>Reporting</p> <ul style="list-style-type: none"> Distributed Draft TERR 4 - Special Status Wildlife TSR to the TWG for review and comment on November 13, 2008. 	<ul style="list-style-type: none"> Jun 3, 2008. Selected Northern goshawk nesting survey locations in coordination with TWG. 	<p><u>Reporting Variance</u></p> <ul style="list-style-type: none"> Timing of the distribution of the 2008 draft TERR 4 - Special Status Wildlife TSR was delayed because additional time was needed to complete data analysis and to prepare final special-status wildlife maps. 	<ul style="list-style-type: none"> Address stakeholder comments, finalize, and distribute 2008 TERR 4 - Special Status Wildlife TSR. 	None	None
TERR 5 - Bald Eagle						
2007 Activities	<ul style="list-style-type: none"> Conducted December and January winter roost survey. Conducted Project communication line and powerline evaluation. 	N/A	None	<ul style="list-style-type: none"> Conduct February winter roost surveys. Conduct nesting surveys. Develop GIS map documenting bald eagle winter roost and nest sites. 	None	None
2008 Activities	<ul style="list-style-type: none"> Conducted February winter roost surveys. Conducted nesting surveys. Developed GIS map documenting bald eagle winter roost and nest sites. Distributed Draft TERR 5 - Bald Eagle Technical Study Report to the TWG for review and comment on October 31, 2008. 	N/A	None	<ul style="list-style-type: none"> Address stakeholder comments, finalize, and distribute 2008 TERR 5 - Bald Eagle TSR. 	None	None

Attachment B. 2008 Technical Study Plan Progress Report Summary

Technical Study Plan	Study Elements Completed/ Data Collected	Work Group Update	Technical Study Plan Variances	Outstanding Study Elements (Data analysis and reporting schedules are shown on the implementation schedules provided in Attachment C.)	Proposed Modifications	Proposed New Studies
TERR 6 - Special-Status Bats						
2007 Activities	<ul style="list-style-type: none"> Developed preliminary map of known occurrences. Conducted facility assessment. Selected survey locations. Conducted reproductive surveys. Conducted seasonal use surveys. Developed map of known special-status bat occurrences in the study area. Development of technical study report in progress. 	<ul style="list-style-type: none"> Aug 13, 2007: Provided overview of facility assessment results and selected proposed sampling sites and survey methods. 	None	<ul style="list-style-type: none"> If additional Project facilities, features, recreation facilities or dispersed concentrated use areas are identified, these areas will be surveyed consistent with the study plan. 	None	None
2008 Activities	<ul style="list-style-type: none"> Distributed Draft TERR 6 - Special Status Bats TSR to the TWG for review and comment on March 5, 2008. Distributed Final TERR 6 - Special Status Bats TSR to the TWG on June 17, 2008. 	<ul style="list-style-type: none"> Mar 3, 2008. Provided overview of TERR 6 - Special Status Bats Technical Study Report Jun 3, 2008. Discussed and finalized technical study report. 	<u>Reporting Variance</u> <ul style="list-style-type: none"> Timing of the distribution of the 2008 draft TERR 6 - Special Status Bats TSR was delayed because additional time was needed to complete data analysis and to prepare final special-status bat maps. 	None	None	None