

APPENDIX E-6F

HPMP OUTLINE, PROPOSED PM&E MEASURES, AND ASSOCIATED COSTS

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HPMP Outline

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PROPOSED PM&ES AND ASSOCIATED COSTS

PM&E: Monitoring

This would involve monitoring site conditions for changes from 2003 baseline conditions documented during the pedestrian survey conducted for the new FERC license. Specific “monitoring” parameters will be developed in consultation with the CRWG and included in the HPMP. A likely scenario would be as follows:

PacifiCorp provides (from either in-house “implementation” staff or a contractor) a two-person monitoring team that visits all sites within the final APE/final FERC “project boundary” every 5 years for the life of the 30-year license (e.g., six monitoring expeditions spaced out every 5 years). Each site can be visited and redocumented (update the existing impact assessment forms) by the monitoring team in 1 month.

In constant 2003 dollars this effort could cost \$204,000, for six monitoring expeditions. (Monitors: 160 hours x 2 [320 man-hours] @ \$75/hour [average of mid-level and junior archaeologist “market rates”]—\$24,000 total labor per expedition. Expenses: vehicle costs, per diem, miscellaneous—approximately \$10,000 per expedition)

PM&E: Capping

This would involve capping sites with a protective layer of soil. The number of sites that would benefit from capping has not yet determined by the CRWG. It is conceivable that there are five sites of extraordinary significance that would benefit from capping.

Site capping requires site-specific design and planning (technical assistance is probably available from the USACE CERL facility in Illinois). Site capping costs are highly variable and depend on the size of the site being capped and the specific design (careful vegetation removal, installation of water-permeable geotextile cloth barrier, manual and mechanical covering of the site with approved materials [sand, pea gravel, non-rocky loam, etc.] and revegetation). Important variables include the haul distance between the source of approved capping materials and the site to be capped, the nature of mechanical equipment used to place and spread the cap fill material, and associated labor costs, including inspection of the entire field operation by an archaeologist and tribal representative(s).

An intuitive cost estimate for capping a 1-acre site is about \$150,000 in 2003 constant dollars; this includes design, planning, materials, labor, inspection, and revegetation. Capping five sites of various sizes located in widely differing settings (with challenging logistics) would

necessarily be front-end loaded in the first 5 years of the 30-year license; in other words, if a site warrants capping, it warrants capping now. If all the sites to be capped are 1 acre in size, nominal costs for capping five sites would be \$750,000. Given that some of the sites could be much larger than 1 acre, a reasonable ballpark estimate for capping five sites is approximately \$2.5 million.

PM&E: Site Concealment

This would involve concealing sites using planted vegetation to obscure the site surface or to inhibit access by propagating thorny, spiny, or densely growing native species or native species that cause contact dermatitis (poison oak, poison sumac, stinging nettle, etc.) The number of sites that would benefit from concealment has not yet been discussed by the CRWG. It is conceivable that there are 10 sites of high significance that would benefit from concealment.

Site concealment requires site-specific design and planning (technical assistance is probably available from the USACE CERL facility in Illinois). Site concealment costs are moderately variable and depend on the size of the site being concealed and the specific design (careful vegetation removal, replanting with selected vegetation). Important variables include the cost of nursery stock or seeds of selected plants and associated labor costs, including inspection of the entire field operation by an archaeologist and tribal representative(s).

An intuitive cost estimate for concealing a 1-acre site is about \$50,000 in 2003 constant dollars; this includes design, planning, materials, labor, inspection, and revegetation. Concealing 10 sites of variable size located in widely differing settings (with challenging logistics) would necessarily be front-end loaded in the first 5 years of the 30-year license. In other words, if a site warrants concealment, it warrants concealment soon. If all the sites to be concealed are 1 acre in size, nominal costs for capping 10 sites would be \$500,000. Given that some of the sites could be much larger than 1 acre, a reasonable ballpark estimate to conceal 10 sites is probably \$750,000.

PM&E: Proactive Site Isolation

This would involve proactively isolating or quarantining sites using fencing, boulders, or other physical barriers to deter vehicle and pedestrian access to sites. The number of sites that would benefit from “proactive isolation” has not yet been discussed by the CRWG. PacifiCorp estimates that there are up to five sites of high significance that would benefit from isolation.

Site isolation requires site-specific design and planning. Site isolation costs are moderately variable and depend on the size of the site being isolated and the specific design (fencing, boulders, barriers, etc.). Important variables include the type of fencing, the size and number of boulders and barriers, the costs of fence maintenance once installed, and labor costs, including inspection of the entire field operation by an archaeologist and tribal representative(s).

An intuitive cost estimate for isolating a 1-acre site is about \$75,000 in 2003 constant dollars; this includes design, planning, materials, labor, inspection, and revegetation if needed. Isolating five sites of variable size located in widely differing settings (with challenging logistics) would necessarily be front-end loaded in the first 5 years of the 30-year license. In other words, if a site warrants isolation, it warrants isolation soon. If all the sites to be isolated are 1 acre in size, nominal costs for isolation of five sites would be \$370,000. Given that some of the sites could be much larger than 1 acre, a reasonable ballpark estimate to isolate five sites is approximately \$500,000.

PM&E: Passive Site Isolation

This would involve passively isolating sites by diverting vehicle and pedestrian access using hardening measures to discourage site access. Hardening measures that “channel” recreational uses into certain areas can help divert human activities away from sensitive sites. Misinformation signage (“Warning – Poisonous Snakes”) can also be used to divert entrance into sensitive areas. The number of sites whose protection would benefit from “passive isolation” has not yet been determined by the CRWG. It is conceivable that there are five sites of moderately high significance that would benefit from isolation.

Site isolation requires site-specific design and planning. Site isolation costs are moderately variable, depending on the size of the site being isolated and the specific design (hardening measures, signage, etc.). Important variables include the type of hardening measures employed and the associated labor costs, including inspection of the entire field operation by an archaeologist and tribal representative(s).

An intuitive cost estimate for isolating a 1-acre site is about \$25,000 in 2003 constant dollars; this includes design, planning, materials, labor, inspection, and revegetation if needed. Isolating five sites of variable size located in widely differing settings (with challenging logistics) would necessarily be front-end loaded in the first 10 years of the 30-year license. In other words, if a site warrants isolation, it warrants isolation fairly soon. If all the sites to be isolated are 1 acre in size, nominal costs for isolation of five sites is \$125,000. Given that some of the sites could be much larger than 1 acre, a reasonable ballpark estimate to isolate five sites is approximately \$250,000.

PM&E: Remove Incompatible Uses

This would involve removing incompatible uses to protect sites by eliminating activities that disturb sites. Removing incompatible uses could include, among other things:

- Eliminating livestock grazing and/or livestock movement across site areas
- Relocating recreation sites such as raft put-ins and take-outs to remove vehicular and pedestrian activity from sensitive sites
- Relocating campgrounds or individual/groups of campsite(s) to remove vehicular and pedestrian activity from sensitive sites
- Removing/obliterating roads and trails that cross or closely skirt the edge of sensitive sites

The number of sites that would benefit from removal of incompatible uses has not yet been discussed by the CRWG. This approach may be broadly applied to larger areas targeted by the CRWG as needing a combination of strategies (Frain Ranch, the central canyon in general, etc.). Cost implications would include the following:

- Eliminating livestock grazing would result in loss to PacifiCorp of grazing/lease fees (if applicable). Changes in existing livestock management regimes would require PacifiCorp time for planning and negotiating with lease holders.

- Relocating recreation sites would require PacifiCorp time for planning and negotiating with recreation stakeholders; in addition, there would be currently undeterminable costs to remove or create alternate rafting access sites stipulated in the new license.
- Relocating campgrounds would require PacifiCorp time for planning and negotiating with FERC with respect to camping facilities required in the new license.
- Removing or obliterating roads and trails could be accomplished on PacifiCorp-owned lands in consultation with the CRWG as key sites are identified where road/trail removal would enhance site protection.
- Total costs are estimated to be \$150,000 for the term of the new license.

PM&E: Law Enforcement

This would involve enforcing laws that proscribe unauthorized looting and vandalism of archaeological resources. Active enforcement of Oregon and California state laws and federal laws could be achieved by hiring a full-time monitor/enforcement officer or posting warning signs.

Hiring a Monitor

This would involve hiring a full-time monitor and training the monitor in ARPA enforcement. (Courses are offered annually by the University of Nevada, Reno; the Confederated Tribes of the Umatilla Indian Reservation; the Colville Indian Reservation; and the HAMMER facility located at the Hanford Site. The HAMMER facility is operated by Battelle Pacific Northwest National Laboratory—Richland). Also, the Oregon and California county law-enforcement authorities could “deputize” the monitor (examples exist with the Columbia River Inter-Tribal Fish Commission) to make citizen’s arrests, issue citations, and receive immediate formal law enforcement backup by uniformed officers that can arrest and/or cite looters.

One potential approach would be for PacifiCorp to hire a full-time employee in the license compliance department. This employee would be headquartered in one of PacifiCorp’s local offices (Medford, Yreka, or Klamath Falls) and would implement law enforcement and monitoring on a full-time basis approximately 50 weeks per year.

The estimated costs and benefits package for such a full-time hire would be approximately \$85,000 per year in constant 2003 dollars; this would cover salary, a standard benefits package, and the employer’s share of FICA/FUTA taxes, etc. In constant dollars, this would cost \$2,550,000 labor for the entire 30-year license period. Training costs would run \$5,000 per year (includes salary, tuition, travel costs, etc.), or \$150,000 for the life of the license. Vehicle expenses would be one PacifiCorp truck in full-time use (approximately \$15,000 per year for purchase cost, insurance, operating costs, and depreciation), or \$450,000 for the life of the license. Total projected costs would be \$3,150,000, or \$105,000 per year. In theory, a full-time monitor could justify *not* spending as much money on the other measures and approaches described above.

Posting Warning Signs

This would involve posting warning signs in critical areas outlining laws that prohibit collection and vandalism, state the penalties (misdemeanor, Class-C Felony, etc.), and state that the area is under daily surveillance and patrol (even if it isn't) by plain-clothes deputized monitors with arrest authority.

A reasonable estimate to create, install, and maintain signs for 30 years is \$60,000. Signs would be placed and maintained by the full-time monitor as needed. When signs are first prepared, back-up signs would be produced (and stored) to replace signs worn and vandalized through the years.

PM&E: Erosion Control

This would involve placing riprap on eroding riverbanks and armoring site deposits against stream or other forces of a terrestrial origin (road culverts that create erosive flows that wash away site deposits, etc.). The number of sites that would benefit from erosion control has not yet been discussed by the CRWG. It is conceivable that there are five sites of extraordinary significance that would benefit from erosion control.

Erosion control requires site-specific design and planning (technical assistance is probably available from the USACE CERL facility in Illinois). Site armoring costs are highly variable and depend on the size of the site being protected and the specific design (installation of water-permeable geotextile cloth barrier, manual and mechanical covering of the site with approved materials [rocks, boulders, rock "cages," poured concrete wing-walls, etc.] and revegetation). Important variables include the haul distance between the source of approved riprap materials and the site to be armored, the nature of mechanical equipment used to place and spread the riprap material, and associated labor costs, including inspection of the entire field operation by an archaeologist and tribal representative(s).

An intuitive cost estimate for armoring a 1-acre site is about \$250,000 in 2003 constant dollars; this includes design, planning, materials, labor, inspection, and revegetation. Protecting 10 sites of variable size located in widely differing settings (with challenging logistics) would necessarily be front-end loaded in the first 5 years of the new license. In other words, if a site warrants protection, it warrants armoring now. If all the sites to be capped are 1 acre in size, nominal costs for armoring five sites would be \$1,250,000. Given that some of the sites could be much larger than 1 acre, a reasonable ballpark estimate to protect five sites is probably \$1,500,000.

PM&E: Education

Possible PM&E measures could include educating river users about the traditional cultural importance of the river to the tribes. This could involve using informational signs at river access points and posting information on the Internet (USDA Forest Service, 2003) requesting that river users avoid particular locations at times when the tribes are conducting ceremonies. Educational materials about the cultural heritage importance of places along the river also could request that river users avoid undesirable behavior such as camping in certain areas. No cost estimate has been developed for possible education PM&ES at this time.

Table E-6F-1 summarizes PM&E measures for historic properties within the new Project boundary.

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
CB-03	Prehistoric	Looting and Recreation Development	80-60	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-02	Prehistoric	Recreation, Utilities and Road Development; Erosion	40-20	E	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; BARRIERS (road closure)
JS-07	Prehistoric	Recreation, Utilities and Road Development, Erosion, Looting, Livestock Activities, Logging	100-80	PE	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (heavily used by OHV traffic); BARRIERS (road closure, signage)
35KL1942	Prehistoric	Road and Recreation Development, Looting, Erosion, Research Collection	80-60	PE	AVOID
JS-05	Prehistoric	Recreation Utilities and Road Development, Erosion, Looting, Livestock Activities	80-60	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of J.C. Boyle drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-20	Prehistoric	Siltation/Erosion, Looting, Utilities Development	80-60	E	AVOID; ACTIVE MONITORING (periodic, non-law—specifically at time of J.C. Boyle drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC03-09	Prehistoric	Looting, Erosion, Recreation Development	60-40	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of J.C. Boyle drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC03-10	Prehistoric	Looting, Erosion, Utilities and Recreation Development	40-20	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of J.C. Boyle drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (heavily used by OHV traffic); BARRIERS (boulders, signage)
35KL1943	Prehistoric	Road and Recreation Development, Looting, Erosion, Research Collection	80-60	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; maintain SIGNING of “no camping”

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
35KL1941	Prehistoric	Road and Recreation Development, Looting, Erosion, Research Collection	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
35KL14	Prehistoric	Erosion, Data Recovery	40-20	E	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
35KL13	Prehistoric	Erosion, Data Recovery	40-20	E	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
35KL15	Prehistoric	Road and Recreation Development, Looting, Erosion, Data Recovery	80-60	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-06	Prehistoric	Looting, Erosion, Utilities Development	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
RM-01	Prehistoric	Looting, Erosion, Utilities Development	40-20	PE	AVOID
LA-01	Historic	Looting, Weathering, Road Development	80-60	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-1721	Prehistoric	Road and Recreation Development, Erosion, Data Recovery	60-40	E	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (rafting takeout); maintain SIGNING (no camping, no vehicles) and BARRIERS (cable fencing, boulders)
CA-SIS-2263	Prehistoric	Recreation and Road Development, Erosion, Livestock Activities, Research Collection	80-60	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2571H	Historic	Erosion, Livestock Activity	100-80	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; maintain REMOVE INCOMPATIBLE USES (ranching—grazing) and BARRIERS (fencing)
CA-SIS-2401	Prehistoric	Recreation and Road Development, Erosion, Livestock Activities, Research Collection	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (ranching—road, grazing); BARRIERS (fencing)

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
CB-07	Historic	Road and Rural Development, Weathering, Erosion	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (ranching—road, grazing); BARRIERS (fencing)
CA-SIS-2570	Prehistoric	Rural Development, Erosion, Livestock Activities	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2569	Prehistoric	Recreation, Road and Rural Development, Erosion, Livestock Activities, Research Collection	60-40	PE	AVOID; ACTIVE MONITORING (intensive, law); AND FOLLOW-UP ACTIONS AS APPROPRIATE DATA RECOVERY (now) —or— REMOVE INCOMPATIBLE USES (rafting takeout) and BARRIERS (fencing, boulders)
CA-SIS-2400/H	Prehistoric / Historic	Looting, Road, Residential and Rural Development, Research Collection	60-40	E / NE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (ranching--road, grazing); BARRIERS (fencing, boulders)
CA-SIS-2568	Prehistoric	Rural Development, Livestock Activities	40-20	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-1839/H	Prehistoric / Historic	Looting, Erosion, Road Development, Utilities Development, Recreation Development; Historic Site Use	60-40	E / NE	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (Fishing Access #5 parking)
CA-SIS-2578 (Locus 2)	Prehistoric	Road and Recreation Development, Looting, Erosion	20-0	PE	AVOID; ACTIVE MONITORING (intensive, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-513H	Historic	Dismantled or Destroyed, Rural Development, Grazing, Weathering	40-20	E	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; REMOVE INCOMPATIBLE USES (ranching--grazing); SIGNING (educational); BARRIERS (fencing and/or boulders)
CA-SIS-2577	Prehistoric	Rural Development, Looting, Erosion, Livestock Activities	80-60	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2577H	Historic	Weathering, Residential Development	80-60	PE	AVOID; ACTIVE MONITORING (intensive, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE

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Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
CA-SIS-2576	Prehistoric	Rural and Recreation Development, Looting, Erosion, Livestock Activities	80-60	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC-02	Historic	Erosion, Weathering, Recreational Development	100-80	NE	N/A
CA-SIS-2575H	Historic	Erosion, Livestock Activity, Logging, Road Development	60-40	NE	N/A
CA SIS 2574	Prehistoric	Road and Recreation Development, Erosion, Research Collection, Looting	20-0	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2573	Prehistoric	Road and Recreation Development, Erosion, Research Collection, Looting	20-0	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
RM-20	Prehistoric	Recreation, Rural and Road Development, Erosion, Looting, Livestock Activities	80-60	PE	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2827	Prehistoric	Rural and Road Development, Erosion, Research Collection	20-0	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2572	Prehistoric	Erosion, Livestock Activity, Disking	20-0	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-1840	Prehistoric	Recreation Development, Erosion, Livestock Activities, Research Collection, Looting	100-80	PE	AVOID; ACTIVE MONITORING (intensive, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; maintain BARRIERS (fencing)
CA-SIS-2579	Prehistoric	Road Development, Erosion, Research Collection, Faunal Activities	40-20	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE

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Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
CB-15	Prehistoric	Utilities Development, Looting, Erosion	20-0	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE; HARDEN (reservoir, stone)
CB-16	Prehistoric	Utilities Development, Looting, Erosion	20-0	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-17	Prehistoric	Rural, Recreation and Utilities Development, Erosion	40-20	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
FH-06	Prehistoric	Erosion, Looting, Utilities, Rural, and Recreational Development	20-0	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC03-06	Prehistoric	Erosion, Looting, Utilities, Road, and Recreational Development	20-0	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC03-07	Prehistoric	Recreation and Road Development, Erosion, Looting	40-20	PE	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
JC03-08	Prehistoric	Recreation, Rural, Utility and Road Development, Erosion, Looting, Livestock Activities	40-20	E	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
FH-07	Prehistoric	Erosion, Utility Development	60-40	E	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Copco drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE; HARDEN (reservoir, stone)
FH-21	Historic	Looting, Weathering, Road and Recreation Development	100-80	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-29	Prehistoric / Historic	Looting, Residential and Road Development, Utilities Development	80-60	PE / PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CA-SIS-2824H	Historic	Looting, Weathering, Road and Recreation Development	40-20	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
JC03-26	Historic	Erosion, Road and Utility Development	80-60	NE	N/A
CB-18	Historic	Erosion, Weathering	80-60	NE	N/A
JC03-25	Historic	Road, Recreation and Utility Development, Erosion, Livestock Activity	60-40	NE	N/A
RM-21	Prehistoric	Rural Development, Looting, Livestock Activities	80-60	PE	AVOID
CB-08	Prehistoric	Erosion	100-80	PE	AVOID
CB-28	Prehistoric	Rural, Road, and Utilities Development, Erosion	80-60	Unk	AVOID
CA-SIS-2403	Prehistoric	Looting, Road, Utility Development, Erosion, Livestock Activities, Data Recovery	60-40	E	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; maintain BARRIERS (road closure and boulders)
JC03-01	Prehistoric	Erosion, Looting, Utilities, Road, and Rural Development	60-40	E	AVOID; ACTIVE MONITORING (intensive, law—specifically at time of Iron Gate drawdown) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-10	Prehistoric	Road, Recreational, Utilities Development, Looting, Erosion	40-60	E	AVOID; ACTIVE MONITORING (intensive, law) AND FOLLOW-UP ACTIONS AS APPROPRIATE; BARRIERS (road closure); HARDEN (fluvial and reservoir, stone); REMOVE INCOMPATIBLE USES (day-use area)
FH-01	Prehistoric	Looting, Erosion, Utilities Development	20-0	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
FH-03	Prehistoric	Erosion, Rural Development	80-60	PE	AVOID
JC03-02	Historic	Erosion, Weathering	60-40	NE	N/A
JC03-03	Historic	Erosion, Road Development	80-60	NE	N/A
CA-SIS-326	Prehistoric	Utilities Development	Unk	E	N/A
CB-11	Historic	Erosion, Looting	60-40	NE	N/A

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
CB-12	Prehistoric	Rural and Utilities Development, Looting, Erosion	80-60	PE	AVOID; ACTIVE MONITORING (intermittent, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-13	Historic	Erosion, Livestock Activity	100-80	NE	N/A
FH-05	Historic	Looting, Erosion, Livestock Activity	20-0	PE	N/A
FH-04	Prehistoric/ Historic	Erosion, Looting	80-60	PE	AVOID; ACTIVE MONITORING (periodic, non-law) AND FOLLOW-UP ACTIONS AS APPROPRIATE
CB-14	Historic	Erosion	80-60	NE	N/A

E = Eligible.

NA = No action.

NE = Not eligible.

PE = Potentially eligible.

Unk = Unknown (site not relocated/revisited).

AVOID = Avoid sites by design/planning via 50-year Operating Plan.

ACTIVE MONITORING = Actively monitor site's condition. Identify specific level of effort as "intensive" (monitor visits several times/year), "periodic" (visits once/year), or "intermittent" (visits once/year or every other year) and level of patroller ("law" enforcement or "non-law" enforcement). "Law" enforcement is monitoring by an ARPA-enforcement-trained police or sheriff-deputized cultural resources technician or actual sworn officer of the law such as a sheriff, patrolman, etc. "Non-law" enforcement is monitoring by a cultural resources technician who has no formal ARPA enforcement training. If impacts continue at a cultural resource location, active monitoring will require follow-up actions, as appropriate.

REMOTE MONITORING = Apply remote surveillance techniques. Specify type of remote surveillance as motion/vibration "sensors," motion-activated "cameras," or "other" (specify method of surveillance). If impacts continue at a cultural resource location, remote monitoring will require follow-up actions, as appropriate.

VEGETATION MANAGEMENT = Plant vegetation as access deterrent. Specify species to be planted and coverage (if less than 100% of site).

BARRIERS = Restrict human access to the site location by either fencing around site (specify fencing type: chain link, barbed wire, cable, etc.), making a specific road closure (identify the barrier type for the closure as boulders, signage, and/or a type of fencing), or using some other barrier method (specify).

CAP DEPOSITS = Place earth fill on site deposits as prevention against unauthorized surface or subsurface artifact collection. This method is not necessarily a method for preventing natural erosion. Specify the projected depth of fill and identify fill materials if other than clean earth fill.

REMOVE INCOMPATIBLE USES = Eliminate incompatible uses by closing selected recreation areas (specify the activity to be eliminated: camping, recreation, roads, trails, rafting put-ins/take-outs, etc.); limit or remove ranching operations (specify the activity to be eliminated: grazing, herding, ranch access roads, etc.), that are at/near cultural sites; or other (specify source of impact and activity to be eliminated or managed).

SIGNING = Erect signage that discourages site usage. Signage may take the form of a warning (includes semi-

Table E-6F-1 Summary of recommended NRHP eligibility and PM&E measures for archaeological sites recorded in 2002-2003 within the proposed Klamath River Hydroelectric Project Boundary.

Site No.	General Site Period	Site Impacts	Estimate of remaining intact deposits (%)	Draft NRHP eligibility	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
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misinformation; for example, “Warning - Environmentally Sensitive Area - Keep Out - Patrolled Daily by PacifiCorp - Unauthorized entrance subject to arrest and prosecution”), hazard (may be misinformation; for example, “Rattlesnakes - Keep Out!”), or educational (direct request to not disturb deposits; for example, “Archaeological resources are precious. It is against the law to collect objects or disturb the ground at archaeological sites”).

HARDEN = Use site hardening methods to reduce erosion. This is not necessarily a method for reducing human access. State reason for hardening as “reservoir” or “ramping” (Project-related water erosion) erosion control, armoring against natural “fluvial” (non-Klamath River water) or “colluvial” (terrestrial) erosion, or “other” (specify) types of erosion. Specify the appropriate type of materials to be applied to hardening (“stone” such as riprap, “cloth” such as biofiber or burlap, or “other” [specify]).

DATA RECOVERY = Immediate (emergency) data recovery. Specify period of initial action as “now” (data recovery within 1 to 2 years), or “soon” (data recovery within 5 years).

HISTORICAL RESOURCES

Table E-6F-2 lists the individual historical hydroelectric resources that make up the historic Klamath River Hydroelectric Project facilities that are NRHP eligible (e.g., the “contributing” elements to the historic district) and recommended PM&E measures.

Table E-6F-2. Historic project structures, date of construction, and draft PM&Es.

ID Number	Description	Date	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
J.C. Boyle Complex			
3.1	Dam	1956-58	Preserve/Maintain
3.7	Water conveyance features	1958	Preserve/Maintain
3.7.1	Steel pipe	1958	Preserve/Maintain
3.7.3	Open flume/concrete	1958	Preserve/Maintain
3.7.4	Headgate structure	1958	Preserve/Maintain
3.7.5	Forebay/spillgates	1958	Preserve/Maintain
3.7.6	Spillway house	ca. 1958	Preserve/Maintain
3.7.7	Tunnel	1958	Preserve/Maintain
3.7.8	Surge tank	1958	Preserve/Maintain
3.7.9	Penstocks	1958	Preserve/Maintain
3.8	Powerhouse	1958	Preserve/Maintain
3.8.1	Substation	1958	Preserve/Maintain
3.10	Armco warehouse	1957	Preserve/Maintain

Table E-6F-2. Historic project structures, date of construction, and draft PM&Es.

ID Number	Description	Date	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
Copco No. 1 Complex			
4.1	Dam	1912-1918, 1921-1922	Preserve/Maintain
4.1.1	Dam	1912-1918, 1921-1922	Preserve/Maintain
4.1.2	Gatehouse 1	1918	Preserve/Maintain
4.1.3	Gatehouse 2	1922	Preserve/Maintain
4.1.4	Gate hoist system/rails	1918	Preserve/Maintain
4.2	Penstocks	1912-1918, 1921-1922	Preserve/Maintain
4.2.1	Double penstock	1912-1918	Preserve/Maintain
4.2.2	Single penstock	1921-1922	Preserve/Maintain
4.3	Powerhouse	1918	Preserve/Maintain
4.4	Copco guest house (remains)	1917, 1980s	Preserve/Maintain
4.5	House/Garage 1	ca.1922	Preserve/Maintain
4.6	House/Garage 2 (21600 Copco Rd)	ca.1922	Preserve/Maintain
4.7	Garage/warehouse	ca.1922	Preserve/Maintain
Copco No. 2 Complex			
5.1	Dam	1925	Preserve/Maintain
5.1.1	Mortared stone wall	1925	Preserve/Maintain
5.2	Water conveyance features	1925	Preserve/Maintain
5.2.1	Headgate	1925 (rebuilt)	Preserve/Maintain
5.2.2	Tunnel intake	1925	Preserve/Maintain
5.2.3	Concrete-lined tunnel	1925	Preserve/Maintain
5.2.4	Wood stave pipeline	1925	Preserve/Maintain
5.2.5	Concrete tunnel	1925	Preserve/Maintain
5.2.6	Steel penstocks	1925	Preserve/Maintain
5.3	Timber cribbing	1925	Preserve/Maintain
5.4	Coffer dam	1925	Preserve/Maintain
5.5	Powerhouse	1925, 1996	Preserve/Maintain
5.8	Oil and gas shed		Preserve/Maintain
5.9	Cookhouse/bunkhouse	ca. 1925	Preserve/Maintain
5.13	Bungalow housing	ca. 1925	Preserve/Maintain
5.13.1	Bungalow/Garage 1	ca. 1925	Preserve/Maintain
5.13.2	Bungalow/Garage 2	ca. 1925	Preserve/Maintain
5.13.3	Bungalow/Garage 3	ca. 1925	Preserve/Maintain
Fall Creek Complex			
6.1	Dam	1902-1903, 1970, 1988	Preserve/Maintain
6.2	Water conveyance system	1902-03	Preserve/Maintain
6.2.1	Intake	1902	Preserve/Maintain

Table E-6F-2. Historic project structures, date of construction, and draft PM&Es.

ID Number	Description	Date	Recommended Site-Specific Protection, Mitigation and Enhancement Measures
6.2.2	Earthen canal	1902	Preserve/Maintain
6.2.3	Intake	1902	Preserve/Maintain
6.2.4	Penstock	1902	Preserve/Maintain
6.2.5	Penstock operator valve	1902	Preserve/Maintain
6.3	Powerhouse	1902-03, 1906, 1910	Preserve/Maintain
6.4	Transformer house/office	1903	Preserve/Maintain
6.7	Fish hatchery	1919	Preserve/Maintain

PRESERVE/MAINTAIN = Avoid resource degradation by preserving and maintaining the contributing elements in accordance with specific provisions of the HPMP.