

4.15 Cultural Resources

This section discusses the potential for the Restoration Project to affect cultural resources. The section describes the prehistory, ethnography, and history of the project region; study methods and results; the findings and conclusions of previous studies relevant to the Restoration Project; the effects of the Restoration Project on cultural resources; and available mitigation measures for effects to significant cultural resources.

This analysis is based on a cultural resources inventory, evaluation, determination of effect, and a Memorandum of Agreement (MOA) prepared by Reclamation pursuant to Section 106 of the National Historic Preservation Act (Section 106) and NEPA (West 2001; West and Welch 2000). The MOA is attached to this EIS/EIR in Appendix P.

Affected Environment

Prehistoric Context

The region's prehistory probably extends back more than 8,000 years although no direct evidence has been noted for the Battle Creek area. Other than a few minor archeological surveys, very little archeological work has taken place in the Battle Creek drainage. The prehistory of Battle Creek is probably very similar to nearby areas as they share similar environments and were most likely occupied by related populations.

Baumhoff (1957) provided one of the first temporal-cultural reconstructions for the Southern Cascade Mountain foothill region based on data recovered from Kingsley Cave and Payne Cave. He postulated a two-phase chronology, with the earlier prehistoric phase termed the Kingsley Complex and the following phase termed the Mill Creek Complex. The major distinction between these two complexes was the difference in projectile point styles.

Since the late 1960s, investigations in the Southern Cascade region have resulted in the expansion and refinement of Baumhoff's interpretations. Based on the analysis of materials recovered from eight Southern Cascade sites, researchers from California State University, Sacramento, have postulated a five-phase chronological sequence that spans the last 4,000 years (Johnson n.d.). Johnson's (n.d.) phases, which incorporated Baumhoff's, are, from earliest to latest: Deadman, Kingsley, Dye Creek, Mill Creek, and Ethnographic Yana.

Ethnographic Context

At the time of contact, the Yana, a Hokan-speaking group, occupied the Battle Creek study area. The Yana inhabited the upper Sacramento River valley, and the foothills east of the Sacramento River and south of the Pit River and north of Pine and Rock Creeks (primarily along the Deer Creek drainage). The crest of the southern Cascades passing through Lassen Peak formed the eastern boundary. The Yanas' numbers probably never exceeded 2,000 individuals. Much of what is known about Yana culture was provided by Ishi, a Yahi Yana, who was brought to the University of California in 1911 after his family group died and he was left alone to survive.

The Yana lived in small bands that seasonally occupied villages and campsites along the perennial streams of the region. Gathering, fishing, and hunting provided subsistence and material resources. Manufacturing was restricted to stone, bone, and wood tools, and the weaving of baskets, nets, and bags.

The Yana suffered severely from Anglo-American contact. In 1844, Mexican land grants to Peter Lassen and Job F. Dye were established along the east side of the valley and extended into the foothills occupied by the Southern and Yahi Yana. Daniel Sill settled on part of the Lassen grant in 1846 (Johnson 1978:362). The first major hostility took place when Captain John Fremont attacked a peaceful gathering of Indians at a village on Bloody Island (at the mouth of Battle Creek) in the Sacramento River. Researchers attribute the village to the Yana (Johnson 1978.). This initial conflict marked the beginning of the end for the Yana. Johnson (1978) estimates that in approximately 20 years, their numbers were reduced from 1,900 individuals to fewer than 100. Today, while a few individuals claim Yana ancestry, there are no federally recognized Yana Indian tribes.

Historic Context

Although there were some early settlers, primarily sheep and cattle ranchers, in the area, they had little effect on the Battle Creek watershed. The area had no gold deposits and, therefore, was passed by the prospectors racing to the gold discoveries northwest of Battle Creek. The history of the area is related primarily to the history of hydropower in the region.

Hay (1991) provides a general historic context of hydroelectric power. Specific historical documentation of the Battle Creek hydropower system is provided in a number of documents. The Historic American Engineering Record (HAER) document contains a detailed account of hydroelectric development on the Battle Creek watershed (Reynolds and Scott 1980). Reynolds (1995) provides the most complete summary and analysis of the system and its management from 1900 to 1919. Reynolds and Scott (1980) provide a summary of PG&E operation of the system. Finally, several articles found in industry journals deal with components of the hydropower system (Van Norden 1910, 1911, 1912).

Development of hydropower on Battle Creek is the story of a small electric company that was eventually incorporated into a large utility company. The hydropower system was constructed originally to provide power to mines and smelters in the Keswick area.

In 1900, the property, water rights, and franchises to erect poles and transmit electricity were transferred from Shasta County to the Keswick Electric Power Company, the corporate predecessor of the Northern California Power Company (NCPC). In the fall of 1900, Keswick Electric Power Company began construction of a hydroelectric plant on North Fork Battle Creek. By 1901, the new plant, named Volta, began delivering power to Mountain Copper Company's smelters at Keswick. Over the next decade, the NCPC increased its Battle Creek generating capacity, expanding its first plant at Volta, and building three more plants, the South, Inskip, and Coleman Powerhouses, to become one of the largest electric utilities in northern California. In 1911, NCPC's complete system consisted of four hydroelectric plants, 15 storage and diversion dams, seven reservoirs, and more than 60 miles of artificial watercourses. Water collected from the Battle Creek watershed above Volta was passed successively through the Volta (1 & 2), South, Inskip, and Coleman Powerhouses, being used four different times (Reynolds 1995:16). The NCPC also expanded its customer base by providing power to cities, towns, and farms.

The second decade of the twentieth century was disastrous for the NCPC. Profits dropped, dividends were suspended, and interest debt increased on bonds used to finance construction and purchase Sacramento Valley Power. PG&E offered to purchase the system and NCPC stockholders approved the offer by a large majority in 1919. Thus, "...on April 1, 1919, Northern California Power Company, consolidated, joined a long list of electric utilities that vanished in the early 20th century due to either poor technological judgment or, as in NCPC's case, poor managerial judgment" (Reynolds 1995:21).

Between 1919 and 1979, PG&E made only a small number of major improvements to NCPC's Battle Creek hydroelectric system. The relative lack of change supports Reynolds' argument that it was poor management that led to NCPC's demise. Ultimately, the NCPC would have been absorbed into a larger system, possibly in the 1930s or 1940s (Reynolds 1995). Unattended, float-controlled, semiautomatic-automatic plants replaced the original powerhouses in 1980 and all old powerhouses and ancillary support structures were removed.

Nine diversion dams associated with the Battle Creek hydroelectric system are included as part of the Restoration Project. These diversion dams include North Battle Creek Feeder, Eagle Canyon, and Wildcat Diversion Dams on North Fork Battle Creek; South, Inskip, and Coleman Diversion Dams on South Fork Battle Creek; Asbury on the mainstem of Battle Creek; Lower Ripley Creek Feeder on Ripley Creek (a tributary to South Fork Battle Creek); and Soap Creek Feeder on Soap Creek (a tributary to South Fork Battle Creek). Each diversion dam is described in Chapter 3 of this report.

Regulatory Setting

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA requires that, before beginning any undertaking, a federal agency must take into account the effects of the undertaking on historic properties and afford the Advisory Council on Historic Preservation an opportunity to comment on these actions. Specific regulations (36 Code of Federal Regulation [CFR] 800) regarding compliance with Section 106 state that, although the tasks necessary to comply with Section 106 may be delegated to others, the federal agency is ultimately responsible for ensuring that the Section 106 process is completed according to the provisions of 36 CFR 800. The Section 106 process has four basic steps:

1. initiation of the Section 106 process (define area of potential effects [APE] and scope of identification efforts),
2. identification of historic properties,
3. assessment of adverse effects to historic properties, and
4. resolution of adverse effects to historic properties.

California Environmental Quality Act

CEQA requires that public or private projects financed or approved by public agencies assess the effects of the project on historic resources. Historic resources are defined in the CEQA Guidelines as buildings, sites, structures, objects, or districts, each of which may have historical, architectural, archaeological, cultural, or scientific significance. CEQA states that if a proposed project would result in an effect that may cause a substantial adverse change in the significance of a historic resource, alternative plans or mitigation measures must be considered; however, only significant historical resources need to be addressed. Therefore, before mitigation measures are developed, the significance of cultural resources must be determined.

The steps normally taken in a cultural resources investigation for CEQA compliance are as follows:

1. identify cultural resources,
2. evaluate the significance of the resources,
3. evaluate the effects of a project on *all* cultural resources, and
4. develop and implement measures to mitigate the effects of the project on *significant* resources.

Methods

The methods employed in the cultural resources inventory consisted of a record search at the Northeast Center of the California Historical Resources Information System, implementation of an oral history program, examination of PG&E maintenance and building records, archival research at various repositories, consultation with Native Americans, and an intensive cultural resources inventory of the Restoration Project's APE (West and Welch 2000). Information gathered from prefield research was used to establish the cultural setting of the Restoration Project and to evaluate identified cultural resources.

Results and Identified Cultural Resources

The records search revealed that 54 prehistoric and historic sites had been previously recorded and only one large survey had been completed (Atwell and Bowyer 1992) in the vicinity of the Restoration Project. None of the surveys or sites occurred in the APE. Reclamation initiated consultation via notification letters with the Redding Rancheria, Berry Creek Rancheria, Enterprise Rancheria, and Mooretown Rancheria. Reclamation received no response from the rancherias (West and Welch 2000). Reclamation subsequently contacted the Chico Band of Mechoopda Indians regarding the Restoration Project. Reclamation has received no response from the Chico Band of Mechoopda Indians to date (Welch pers. comm.).

Reclamation's inventory of the APE recorded two prehistoric sites (one campsite and one flake scatter and rock shelter); three historic sites and eight diversion dams were newly recorded. The prehistoric campsite also has an overlay of historic debris, primarily the old type of soldered tin cans (West and Welch 2000).

Prehistoric Sites

Flake Scatter and Rock Shelter

A flake scatter is present on the 20-degree slope extending from a small rock overhang near the Inskip Powerhouse. This site consists of an observed scatter of 60 basalt flakes, six basalt cores, an elliptical core, one unifacial retouched basalt flake, one corner-notched basalt projectile point, and two tertiary obsidian flakes. No cultural remains were found within the rock overhang.

Downslope of the main flake scatter are large flaking debris indicating primary and secondary reduction of fine-grained basalt. Surface scrapes revealed additional flakes were confined within the top $\frac{3}{4}$ inch (2 centimeters) of the surface.

Campsite

The campsite consists of a midden deposit on a terrace/fan of South Fork Battle Creek. Basalt flakes and fire-cracked rocks are present. The primary occupation is likely prehistoric, but other than the degree of midden development, direct evidence is lacking. An access road to South Diversion Dam and Canal bisects the site.

A number of soldered tin cans of a type dating to the early twentieth century are scattered over the southeastern quarter of the site. These cans probably are from the work camp for the construction of South Diversion Dam and Canal as the area is one of the few level surfaces nearby.

Historic Sites

South Battle Creek Diversion Dams and Canals

The South Battle Creek diversion dams and canals (South Diversion Dam and South Canal, Inskip Diversion Dam and Inskip Canal, Coleman Diversion Dam and Coleman Canal, and Asbury Diversion Dam) are described and photographed in Chapter 3 of this document. Discussion of modifications to these historic features is provided below under “Evaluation of Identified Cultural Resources.”

North Battle Creek Diversion Dams and Canals

The North Battle Creek diversion dams and canals (North Battle Creek Feeder Diversion Dam and Cross Country Canal, Eagle Canyon Diversion Dam and Eagle Canyon Canal, Wildcat Diversion Dam and Wildcat Canal, Soap Creek Feeder, Lower Ripley Creek Feeder, and Penstock from Inskip Head Box to Inskip Powerhouse) are described and photographed in Chapter 3 of this report. Discussion of modifications to these historic features is provided below under “Evaluation of Identified Cultural Resources.”

Other Historic Sites

Three additional historic-age sites (a rock wall, a rock pile, and a foundation) were recorded during fieldwork. These resources are not directly related to the diversion dams. Although the origin of the rock pile is unknown, it could represent the remains of quarry trimmings. The foundation, which is near the Inskip Powerhouse, must have served as some kind of support to the original facility or the community that once existed there.

Crescent-Shaped Rock Wall

This low rock wall is located on volcanic uplands approximately 550 feet north of the Inskip penstock and 2,400 feet north of the Inskip collector box. The site consists of a curved low rock wall that appears to have been partly filled, possibly to create a relatively flat platform. The wall, approximately 46 feet (14 meters) long and 2.5 to 3 feet (0.75 to 0.9 meters) high, is made of multiple courses of large country rock (basalt boulders and cobbles) three courses high.

Rock Pile/Quarry

The rock pile is an elliptical- to crescent-shaped pile of medium- to small-sized angular cobbles. The south side has been disturbed, possibly more recently by heavy equipment.

Immediately to the north of the rock pile about 30 feet is a bedrock outcrop composed of the same type of stone found in the rock pile. The face of the outcrop shows evidence of having been quarried. It can be reasonably assumed that the rock pile is the result of trimming quarried blocks that were being prepared for construction purposes, possibly in the manufacture of the rectangular blocks used to build structures at Inskip Powerhouse and Coleman Diversion Dam. A small, poorly preserved trail or road extends from the rock pile to the Inskip Powerhouse area.

Foundation

A structure foundation is located on South Fork Battle Creek upstream near the proposed alignment of the Inskip Powerhouse Tailrace. It consists of two adjacent parts, a partly dilapidated brick and mortar structure and a patio-like feature. The second part consists of a concrete-bordered, brick patio-like structure. The structure is adjacent to the brick remains and measures approximately 15 feet (4.6 meters) long by 21 feet (6.5 meters) deep.

Environmental Consequences

Summary

Significant impacts on cultural resources are associated with all alternatives except the No Action Alternative. The Five Dam Removal, Six Dam Removal, and Three Dam Removal Alternatives would result in significant and unavoidable impacts on cultural resources. Significant and unavoidable impacts would result from removal of Coleman, Eagle Canyon, Wildcat, and Inskip Diversion Dams. Significant and unavoidable impacts cannot be reduced to a less-than-significant level. Significant impacts would result from the installation of fish screens and fish ladders on significant cultural resources, as well as potential damage to a significant archaeological site. Reclamation will implement mitigation measures to reduce significant impacts resulting from project activities to a less-than-significant level.

Impact Significance Criteria

Section 106 of the National Historic Preservation Act and the National Environmental Policy Act

Because the NEPA and Section 106 processes were completed in parallel and because Section 106 provides clear guidance regarding effects (impacts) to historic properties, the criteria of resource significance and adverse effect (stipulated in 36 CFR 60 and 36 CFR. 800.5, respectively) were applied to the Restoration Project.

For federal undertakings, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. Specific NRHP significance criteria are applied to evaluate cultural resources and are defined in 36 CFR 60.4 as follows:

- The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
- that are associated with events that have made a significant contribution to the broad patterns of our history; or
- that are associated with the lives of persons significant in our past; or
- that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- that have yielded, or may be likely to yield, information important in prehistory or history.

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5[a][1]).

In order to retain its eligibility, a resource must retain its overall integrity, which is the ability of the property to convey its historic significance. The importance and applicability of the qualities of integrity listed above depend on the significance of the property and the nature of the character defining features that convey the significance.

The regulations further provide examples of adverse effects on historic properties:

- physical destruction of or damage to all or part of the property;

- alteration of a property that is not consistent with the Secretary of the Interior's standards for the treatment of historic properties (36 CFR 68) and applicable guidelines;
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance (36 CFR 800.5[a][2]).

California Environmental Quality Act

The CEQA statutes define a historical resource as "a resource listed or eligible for listing on the California Register of Historical Resources" (Public Resources Code [PRC] 5024.1; 14 California Code of Regulations [CCR] 15064.5). A historical resource may be eligible for inclusion in the California Register of Historical Resources (CRHR) if it:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- is associated with the lives of persons important to our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction;
- represents the work of an important, creative individual; or possesses high artistic values; or
- has yielded, or may be likely to yield, information important to prehistory or history.

In addition, CEQA also distinguishes between two classes of significant archaeological resources: archaeological sites that meet the definition of a historical resource as above, and "unique archaeological resources." An archaeological resource is considered unique if it:

- is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory;
- can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions;

- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;
- is at least 100 years old and possesses substantial stratigraphic integrity; or
- involves important research questions that historical research has shown can be answered only with archaeological methods (PRC 21083.2).

The CEQA Guidelines (14 CCR 15064.5[c]) state that the lead agency must treat an archaeological resource that meets the definition of a historical resource according to the provisions of PRC 21084.1, 14 CCR 15064.5, and 14 CCR 15126.4. If an archaeological resource does not meet the definition of a historical resource, but does meet the definition of a unique archaeological resource, the lead agency is obligated to treat the resource according to the provisions of PRC 21083.2 (14 CCR 15064.5[c][3]).

According to the CEQA Guidelines (14 CCR 15064.5), a project with an effect that may cause a substantial adverse change in the significance of a historical resource or a unique archaeological resource is a project that may have a significant effect on the environment (14 CCR 15064.5[b]). CEQA further states that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its significance and qualify it for inclusion in the CRHR or in a local register or survey that meets the requirements of PRC 5020.1(k) and 5024.1(g).

Evaluation of Identified Cultural Resources

Background

The hydraulic system that provides water to the Battle Creek powerhouses consists of diversion dams, canals, flumes, junction boxes, and penstocks. The canal system is composed of lined and unlined earthen canals, flumes, tunnels, and siphons. The following evaluation of the Battle Creek hydraulic system is considered within the larger contexts outlined in *Hydraulic Systems* (Hay 1991) and *Dams and Hydroelectric Technology in the American West: A Different Model* (Reynolds 1996). The eligibility status of each cultural resource identified by Reclamation is summarized in Table 4.15-1.

Table 4.15-1. Eligibility Status of Identified Cultural Resources

Cultural Resource	Eligible for Listing in the NRHP and CRHR?
South Diversion Dam and South Canal	No
Inskip Diversion Dam and Canal	Yes
Coleman Diversion Dam and Canal	Yes
Asbury Diversion Dam	No
North Battle Creek Feeder Diversion Dam and Cross Country Canal	No
Eagle Canyon Diversion Dam and Canal	Yes
Wildcat Diversion Dam and Canal	Yes
Soap Creek Feeder Dam	No
Lower Ripley Creek Feeder Canal	No
Penstock from Inskip Head Box to Inskip Powerhouse	No
Flake Scatter and Rock Shelter	No
Prehistoric/Historic Campsite	Yes

The utilitarian nature of the Battle Creek hydraulic system, with little exception, placed minimizing costs above other considerations. Large storage reservoirs were not required because of the relatively even flows in Battle Creek throughout the year. The dams were used to shunt water rather than to store it for later use. The Battle Creek hydraulic system used existing technology; no design elements were unique or innovative. Use of native rock and wood for construction economized on steel and concrete. Flumes were chosen over tunnels because of costs. However, in some instances, tunnels were selected over flumes despite costs because the tunnels would be more reliable and require less maintenance (Van Norden 1910). Despite emphasizing the cost-effective approach, the basic diversion and conveyance system design has survived because the original engineering was sound (Reynolds 1995).

Van Norden (1912:237), a consulting engineer for the NCPC, stated in a review of the hydraulic system that it “is a typical old-style California construction, dependable and simple.” The NCPC was “typical of many of the small power companies that emerged in the decades immediately following the development of electric power distribution (Reynolds and Scott 1980:6).” As Reynolds and Scott (1980:6) further point out, the Battle Creek hydroelectric system is important because it is “typical of the California electric power industry and representative of California hydroelectric practice at the turn-of-the-century.” Williams (1998:4–5) argues that “California’s electric power history involves internationally significant developments in fields such as high-head hydropower, long-distance power transmission, rural electrification, marketing, and resource conservation and regulation.”

Evaluation of Historical Significance

The historical significance of the Battle Creek hydraulic system cannot be evaluated in isolation from the entire hydropower system. As with any hydropower system, the hydroelectric generators are the key element of the Battle Creek system. The Battle Creek hydraulic system only offers support to the powerhouses, and no element or subsystem of the Battle Creek hydroelectric system exists in isolation. It is difficult to consider the diversion dams as a district in the absence of the original hydroelectric plants for which they were built.

By 1900, about 10 hydroelectric power systems were operating in California. Thus, while early, the Battle Creek hydroelectric system was not the first as it was not initiated until October 18, 1900, and the bulk of the system was not placed on line until 1910. The Battle Creek hydroelectric system also did not involve innovations, but instead relied upon proven, existing technologies.

The replacement concrete slab, bunker-like powerhouses, and the removal of all powerhouse-related structures have eliminated any feelings or association with the project's history. While there is "continuity of use" from the NCPC system to the modern-day system, there is no historic landscape and consequently no district here.

Initially, Battle Creek power was supplied directly to the Mountain Copper Company's smelters at Keswick. However, by 1911, with the addition of the South, Inskip, and Coleman Powerhouses, the NCPC had become one of the larger electric utilities in northern California. When the NCPC faltered in 1919, PG&E purchased the company. With relatively little change, PG&E continued to operate NCPC's hydroelectric generation system as part of its grid through the 1970s (Reynolds 1995).

In the late 1970s, PG&E replaced the four original power plants with new semiautomated plants. The original basalt masonry hydroelectric plants and their associated support facilities (e.g., housing, shops, storage, and garages) were demolished by 1980. Nothing of the original hydroelectric plants remains. The Battle Creek hydroelectric system has also been altered over time. Individual dams have been replaced, altered, rehabilitated, repaired, or raised. Table 4.15-2 depicts the modifications that each diversion dam has experienced.

Table 4.15-2. Summary of Major Repairs and Actions Substantially Altering the Integrity of Diversion Dams on North Fork and South Fork Battle Creek

Dam	Date	Description of Modification
Coleman	1923	Raise dam and install log boom.
	1932	Install radial spill gate and construct spillway.
	1936	Install radial gate in diversion dam.
	1938	Replace fish ladder.
	1978	Replace operating deck and walkway.
	not known	Cover downstream face with wire mesh and shotcrete.
	not known	Left abutment concrete block installed.
Eagle Canyon	1938	Install log boom at diversion dam; repair damage at canal head.
	1979	Repairs.
	1985	Modify fish ladder intake and replace fish ladder.
Inskip	1928	Fish ladder repaired and modified.
	1945	Replace headgate platform.
	1961	Replace headgate at dam.
	1984	Install cap on dam and install Alaskan fish ladder.
North Fork Feeder	1929	Raise dam.
	1939	Install hydraulic sluice gate control.
	1987	Install prefabricated steel fish ladder.
Lower Ripley	1929	Replace wooden diversion with concrete diversion.
	1944	Replace diversion on Ripley Creek.
Soap Creek	1933	Repair dam and flume.
	1936	Install concrete dam and sand trap at head of flume.
	1963	Replace sluice gate at dam.
	not known	Cover dam with gunite or shotcrete.
South	1927	Replace dam.
	1938	Replace timber crib dam and repair damage to dam.
	1941	Replace wood facing on radial gate with steel.
	1952	Repair diversion dam.
	1981	Replace diversion dam.
Wildcat	1987	Repair right abutment.
	1925	Construct permanent fish ladder around diversion.

Other alterations to the system have occurred. All of the original wooden flumes have been replaced with standard gage steel flumes. Scaffolding, walkways, and fish ladders have been added or replaced on most dams. Power lines have been replaced with modern structures and wire. Portions of the original unlined canals have been lined with gunite or similar concrete coatings. Major segments of the penstocks have been replaced. Thus, the Battle Creek hydroelectric system does not retain integrity of design, materials, or workmanship.

The modifications to the entire hydroelectric system of North Fork and South Fork Battle Creek preclude the possibility of considering the diversion dams and interlinking canals systems in a district format. Nothing exceptional or

innovative in the design and construction of the dams, canals, tunnels, flumes, and penstocks indicates that the system as a whole is eligible. Thus, individual dams and other sites documented during fieldwork will be evaluated for possible inclusion in the NRHP and the CRHR under an individual site format.

South Diversion Dam

In past years, three previous diversion dams were at the current South Diversion Dam site. The first diversion dam was a masonry structure that was replaced with a timber crib structure in 1926–1927. The 1927 dam was replaced by a second diversion dam in 1938.

The South Canal flumes originally were constructed of wood carried on wooden trestles. Beginning about 1941, but mainly in the 1980s, the wooden flumes were replaced by steel ones with new concrete and foundations for the steel flume supports. A number of the canals have been lined with hand plaster and gunite within the last 50 years.

South Diversion Dam was replaced again in 1981 by a steel bin structure that has no historical significance; “continuity of use” is too much of a rationalization to consider it eligible for listing in the NRHP or the CRHR. Because the South Diversion Dam does not meet the eligibility criteria of the NRHP or the CRHR, the South Diversion Dam is neither a historical resource nor a historic property.

Lower Ripley Creek Diversion Dam

Lower Ripley Creek Diversion Dam (Ripley Creek Feeder) was constructed by PG&E in 1929 to replace a wooden dam and was replaced again in 1944. A weir was installed in 1952. A small piece of plywood serves as the gate. This very small concrete structure does not resemble the dam from the NCPC period other than that it is in the same location. It does not exhibit any important design or construction techniques. It is not associated with any historically significant person or event, nor does it qualify under any of the remaining NRHP or CRHR criteria. This resource therefore does not meet the definition of a historical resource nor is it a historic property.

Soap Creek Feeder Diversion Dam

Soap Creek Feeder Diversion Dam, as well as the associated pipeline and flume, have received five major changes and repairs since 1933, the most significant being the replacement of the sluice gate in 1963 and encasing the dam in gunite, which has affected the dam’s historical integrity. Like the Lower Ripley Creek Feeder Diversion Dam, Soap Creek Feeder Diversion Dam does not exhibit any important design or construction techniques and is not associated with any historically significant individuals or historical events. Other than their minor role as ancillary structures in the hydroelectric system, the recordation of these two very small feeder dams has yielded all the information they contain that is important to the history of the system. Therefore, the Soap Creek Diversion Dam is not eligible for listing in the NRHP or the CRHR and does not qualify as a historical resource or historic property.

Inskip Diversion Dam

Rising to a height of about 28 feet, Inskip Diversion Dam is the tallest of the dams in the Battle Creek APE. Constructed prior to 1910, Inskip Diversion Dam and Inskip Canal have retained their basic forms. In 1929, the fish ladder's pools were repaired and new pools were added. The dam's headgate was replaced in 1961. In 1984, an Alaska Steeppass fish ladder and a steel cap on the crest of the dam were installed. Other changes have included the automation of the intake gate for the Inskip Canal. The dam retains its rock rubble face and, with the exception of the fish ladders and motorized head gates, looks much as it did when constructed early in the twentieth century. However, the dam's historic setting or landscape has been severely compromised by a fishing resort on the south bank of the reservoir. Portions of the canal prism have been coated with gunite.

Because it is a simple rock-filled masonry structure, Inskip Dam has no outstanding engineering features that would make it eligible under criterion C of the NRHP or the third criterion of the CRHR. It has been modified and repaired and its fish ladders have been modified, so there is some question as to its historic integrity. The dam was an important part of the NCPC Battle Creek hydroelectric system and still functions as part of that same system today, yet the rest of the hydroelectric system has been so altered as to negate the dam's historical value as an element within a historic district.

J.A. Strutt and H.A. Tedford were the design engineers, and Hamden Holmes Noble was the president and prime mover behind the NCPC. Both Strutt and Tedford had important roles as engineers in northern California. Strutt had been the chief engineer for Pacific Power Company, and Tedford was the head of the NCPC engineering corps and apparently played an important role in the design and construction of the first three NCPC hydroelectric plants (Reynolds 1995). Noble, the largest stockholder in the NCPC, was involved in mining, smelting, promoting hydropower, and other business ventures, and had a significant role in the development of California's hydroelectric system. Thus, it appears that Inskip Diversion Dam is eligible under criteria A and B of the NRHP and the second and third criteria of the CRHR. Other than its specifications and recordation, the dam has yielded all the information important to history and is not eligible under criterion D of the NRHP and the fourth criterion of the CRHR. The Inskip Diversion Dam meets the definition of a historical resource for the purposes of CEQA and a historic property.

Coleman Diversion Dam and Canal

Coleman Diversion Dam and Coleman Canal are similar in construction to the other NCPC rubble masonry gravity dams. It has no outstanding engineering features that would make it eligible under criterion C. The dam has been altered from its original configuration (a concrete panel on the left abutment blocks the original fish ladder, its elevation has been raised, and crest and downstream surfaces have been covered with wire-reinforced shotcrete or gunite). The associated diversion structure is relatively unaltered masonry.

Coleman Diversion Dam, Canal, and Powerhouse were designed by Rudolph Van Norden (1866–1954). Van Norden had a long and impressive career. After graduating from Stanford in 1896, he became the chief engineer of the Central California Electric Company. When PG&E acquired that company, Van Norden became the division superintendent. In 1906, Van Norden set up a private practice as a consulting engineer. In the 1930s, he served as technical adviser to the U.S. Secretary of the Interior on the construction of Boulder (Hoover) Dam. During his lifetime, Van Norden designed 30 hydroelectric plants and 50 high dams and was successor to John S. Eastwood's business for the design and construction of multiple arch dams (Reynolds and Scott 1980). While the Coleman unit was a minor benchmark in his distinguished career, because of Van Norden's involvement, the Coleman unit would appear to be eligible under criterion B. The dam is also eligible under criterion A of the NRHP and the first criterion of the CRHR because of its importance in the NCPC hydroelectric system. Therefore, Coleman Diversion Dam meets the definition of a historical resource and a historic property.

Asbury Diversion Dam

Asbury Diversion Dam, which feeds the Coleman Canal, is a small auxiliary feature that has no outstanding or unique elements that would make it significant. It is a minor part of the hydroelectric system and is not associated with any important individual or persons. Because the Asbury Diversion Dam does not meet any of the eligibility criteria of the NRHP and the CRHR, it does not qualify as a historical resource or a historic property.

North Battle Creek Feeder Diversion Dam

The diversion dam, fish ladder, and flume have been repaired, replaced, or modified from their original condition. The dam was raised in 1929, a hydraulic sluice gate control was installed in 1939, a breast wall was added in 1985, and an Alaska Steeppass fish ladder was installed in 1987. The original wooden flume was replaced by the standard No. 96 steel flume. Old concrete foundations associated with the flume are visible in places.

North Battle Creek Feeder Diversion Dam has been altered significantly from its original design and does not retain sufficient integrity of the NCPC system to be historically significant. Because the North Battle Creek Feeder Diversion Dam does not meet the eligibility criteria of the NRHP and the CRHR, it does not qualify as a historical resource or a historic property.

Eagle Canyon Diversion Dam and Canal

PG&E made several repairs and replacements to Eagle Canyon Diversion Dam and Eagle Canyon Canal. These repairs included twice rebuilding and later replacing the access stairway in 1934, 1941, and 1980, respectively; repairing flood damage to the headwork structure of the canal in 1938; replacing the sluice gate and improving the sand trap in 1963; modifying the fish ladder intake in 1979; and repairing the radial gate at the diversion and replacing the fish ladder in 1985. Throughout this period, PG&E built and repaired the numerous pickup flumes that collected water from the many Eagle Canyon springs along North Fork Battle Creek and diverted the spring flow into the Eagle Canyon Canal.

Eagle Canyon Diversion Dam retains its basic form; however, the fish ladders, headworks, and access elements have all been modified or replaced. The dam has no exceptional engineering features but is associated with the original NCPC project proponents. Thus, it is concluded that Eagle Canyon Diversion Dam is eligible under criteria A and B of the NRHP and the first and second criteria of the CRHR. Eagle Canyon Diversion Dam therefore meets the definition for both a historic property and a historical resource.

Eagle Canyon Canal, however, retains no historical integrity because the flumes have been replaced by standardized steel flumes. Therefore the Eagle Canyon Canal does not meet the definition of a historical resource or a historic property.

Wildcat Diversion Dam and Canal

With an overall length of 55 feet and a crest height of about 8 feet, Wildcat Diversion Dam is one of the smallest diversion dams. It was constructed in 1923 to divert additional water to the Coleman Powerhouse, which was completed in 1911. A permanent fishway was constructed in 1925. The steel conduit apparently replaced a wooden flume in 1937.

The Wildcat Canal was constructed by PG&E in 1923 to provide additional flows to the Coleman Powerhouse. Before 1995, water was diverted through a 30-inch-diameter pipe in the right abutment section. From the pipe, a canal extends nearly 2 miles to its confluence with the Coleman Canal. In 1996, a rockfall damaged a section of the pipe about 1,000 feet downstream of the dam.

Although these features no longer function for their original purpose, their association with the Coleman Powerhouse and Van Norden would make the dam eligible under criteria A and B of the NRHP and the first and second criteria of the CRHR. It has no outstanding or distinctive characteristics that would make it eligible under criterion C of the NRHP or the third criterion of the CRHR. Wildcat Diversion Dam does not have any additional information, other than its recordation and location, which would make it eligible under criterion D of the NRHP or the fourth criterion of the CRHR. Because of its association with important historical figures and events, the Wildcat Diversion Dam qualifies as a historical resource and a historic property.

Wildcat Canal has been altered significantly from its original design and does not retain sufficient integrity of the NCPC system to be historically significant. The canal does not meet the eligibility criteria of the NRHP or the CRHR and, therefore, does not meet the definition of a historical resource or a historic property.

Inskip Powerhouse Headbox and Penstock

The Inskip Penstock is a 72-inch-diameter steel tube supported by concrete saddles on the flat upland and partially buried in rock masonry supports on the hill slope. The welded steel-tube penstock on the upland replaced an earlier wooden stave pipe and lap-riveted steel-pipe penstock. The hill slope penstock segment is the original riveted curved-plate pipe, which was formed and riveted together on site from prefabricated steel plates.

While the headbox has had some modifications, the entire original wooden stave section of the penstock that had been supported by rock rubble has been replaced with a steel tube supported by concrete foundations. The Inskip Powerhouse headbox and penstock do not retain the integrity to be considered a historic property or a historical resource.

Archeological Sites

Flake Scatter/Rock Shelter

The flake scatter extending from a small rock overhang near the Inskip Powerhouse contains a very limited expression of lithic technology, represented mainly by the reduction of local basalt cobbles. At least one elliptical biface/core was apparently manufactured on site. The activities conducted at this site were very limited, and little can be gained from additional study of this site. The absence of subsurface deposits, the apparent late prehistoric period of use indicated by the single projectile point, and the general lack of obsidian indicate that this site is not eligible under criterion D for inclusion in the NRHP, nor is it a historical resource for the purposes of CEQA, as the flake scatter/rock shelter does not meet the significance criteria of the CRHR. In addition, the flake scatter/rock shelter does not exhibit the outstanding qualities required by CEQA to be considered a unique archaeological resource.

Campsite

The prehistoric midden on a terrace/fan of South Fork Battle Creek is eligible under criterion D of the NRHP and appears to meet the fifth criterion of the CRHR, because the deposits undoubtedly contain scientifically consequential information on Battle Creek's prehistory. About 10% of the site's integrity has been compromised by a graded access road to South Diversion Dam that crosses through the site. The historic component of the site may provide additional information on the life in construction camps during the early twentieth century.

Other Historic Sites

The curved rock wall on the volcanic uplands near the Inskip penstock and collector box has no association that would make it historically significant and is such an insignificant feature that it is not eligible for inclusion in the NRHP or the CRHR.

The rock pile/quarry does not have sufficient association to qualify as a historic property or a historical resource.

The foundation near the proposed alignment of the Inskip Powerhouse tailrace connector is not eligible for listing in the NRHP or the CRHR because it retains

no integrity, other than *in situ* fragments of a former structure, and the remains are not important for understanding NCPC history. That is, other than by their location, the concrete and brick remains add nothing to the history of the NCPC.

Impact Assessment

All alternatives except the No Action Alternative will have adverse effects on historic properties eligible for listing on the NRHP and significant impacts on historical resources under CEQA (Table 4.15-3). With the exception of the No Action Alternative, the alternatives share one or more adverse effect.

Table 4.15-3. Summary of Effects to Historic Properties by Alternative

Action	Alternative			
	No Dam Removal	Five Dam Removal	Six Dam Removal	Three Dam Removal
Construct Wildcat Diversion Dam fish screen and ladder.	Adverse	NA	NA	NA
Remove Wildcat Diversion Dam and appurtenant facilities.	NA	Adverse	Adverse	Adverse
Construct Eagle Canyon Diversion Dam fish screen and ladder.	Adverse	Adverse	NA	NA
Remove Eagle Canyon Diversion Dam and appurtenant facilities.	NA	NA	Adverse	Adverse
Construct North Battle Creek Feeder Diversion Dam fish screen and ladder.	No Effect	No Effect	No Effect	No Effect
Construct Coleman Diversion Dam fish screen and ladder.	Adverse	NA	NA	NA
Remove Coleman Diversion Dam and appurtenant facilities.	NA	Adverse	Adverse	Adverse
Construct Inskip Powerhouse bypass facility.	NA	No Effect	No Effect	NA
Construct Inskip Diversion Dam fish screen and ladder.	Adverse	Adverse	Adverse	Adverse
Construct Inskip Powerhouse tailrace connector.	NA	No Effect	No Effect	No Effect
Construct South Powerhouse tailrace connector tunnel.	NA	No Effect	No Effect	NA
Reoperate and gage Asbury Dam.	NA	No Effect	No Effect	No Effect
Construct South Diversion Dam fish screen and ladder.	No Effect	NA	NA	No Effect
Remove South Diversion Dam and appurtenant facilities.	NA	No Effect	No Effect	NA

Note: NA = not applicable

No Action Alternative

No changes would occur as the result of this alternative. The dams, canals, and fishways would continue to be affected by existing use and upgrades.

Five Dam Removal Alternative (Proposed Action)

Impact 4.15-1 Significant and Unavoidable—Removal of historic properties

The Five Dam Removal Alternative would adversely affect Coleman Diversion Dam and Wildcat Diversion Dam, which are considered to be historic properties under Section 106 and historical resources for the purposes of CEQA. Under the Five Dam Removal Alternative, Coleman Diversion Dam and Wildcat Diversion Dam would be removed. These impacts are considered significant and unavoidable because the dam removals would be irrevocable and would permanently alter the characteristics of the dams that convey their significance. Although this impact is considered significant and unavoidable under CEQA, implementing the following mitigation measure would meet Reclamation's Section 106 responsibilities.

Mitigation Measure for Impact 4.15-1. To comply with Section 106 of the NHPA, Reclamation has consulted with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation regarding the potential effects of the Restoration Project on significant cultural resources. An MOA between Reclamation and SHPO was prepared that outlines measures to mitigate the adverse effects to historic properties (see Appendix P).

Mitigation measures identified in the MOA include preparing HAER documentation for all eligible properties and seeking out and reproducing historic photographs and current and historic drawings for each property. A CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study (Paquin-Gilmore 2001) will be prepared and distributed to historical societies and other interested parties.

Impact 4.15-2 Significant—Historic properties would be adversely affected

The Five Dam Removal Alternative would adversely affect Eagle Canyon and Inskip Diversion Dams, which are considered to be historic properties under Section 106 and historical resources for the purposes of CEQA. A fish screen and ladder would be constructed at Eagle Canyon and Inskip Diversion Dams. These additions are considered significant impacts because adding new features to Eagle Canyon and Inskip Diversion Dams would alter the original configuration of the dams. Implementing the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure for Impact 4.15-2. To comply with Section 106 of the NHPA, Reclamation has consulted with the SHPO and the Advisory Council on Historic Preservation regarding the potential effects of the Restoration Project on significant cultural resources. An MOA between Reclamation and the SHPO was prepared that outlines measures to mitigate the adverse effects to historic properties (see Appendix P).

Mitigation measures identified in the MOA include preparing HAER documentation for all eligible properties and seeking and reproducing historic

photographs and current and historic drawings for each property. A CD-ROM containing the interviews and summary report of the Battle Creek Watershed Conservancy's study (Paquin-Gilmore 2001) will be prepared and distributed to historical societies and other interested parties. This mitigation measure reduces the impact to a less-than-significant level under CEQA.

Impact 4.15-3 Significant—Potential damage to archaeological deposits as a result of vehicular traffic

The Five Dam Removal Alternative has the potential to affect the prehistoric/historic campsite, which is a historic property under Section 106 and a historical resource under CEQA. Vehicular traffic along the South Diversion Dam access road would affect archaeological deposits associated with the prehistoric/historic campsite if vehicular traffic strayed from the road. Disturbance to archaeological deposits threatens the stratigraphic integrity of the site, which in turn degrades the information potential of the site. Such an effect would be considered a significant impact. Damage to the prehistoric/historic campsite would be reduced to a less-than-significant impact by implementing the following mitigation measure.

Mitigation Measure for Impact 4.15-3. Impacts on the prehistoric/historic campsite would be reduced by avoiding the site, as specified in Reclamation's determination of effect (West 2001). The access road will be flagged during construction and the contractor and construction crew will be instructed to prevent any traffic or activities beyond the flagging.

No Dam Removal Alternative

Impact 4.15-4 Significant—Historic properties would be adversely affected

This impact is similar to Impact 4.15-2. Under the No Dam Removal Alternative, fish screens and ladders would be constructed on Wildcat, Eagle Canyon, Coleman, and Inskip Diversion Dams, which are considered to be historic properties under Section 106 and historical resources for the purposes of CEQA. Similar to Impact 4.15-2 described above, this alternative would have a significant impact on historic properties because the new features would alter the original configuration of the dams. This impact would be reduced to a less-than-significant level by implementing the Mitigation Measure for Impact 4.15-2.

Impact 4.15-5 Significant—Potential damage to archaeological deposits as a result of vehicular traffic

This impact is similar to Impact 4.15-3. The No Dam Removal Alternative has the potential to affect the prehistoric/historic campsite located along the access road to South Diversion Dam as described under Impact 4.15-3. This campsite is a historic property under Section 106 and a historical resource under CEQA. This impact would be reduced to a less-than-significant level by implementing the Mitigation Measure for Impact 4.15-3.

Six Dam Removal Alternative

Impact 4.15-6 Significant and Unavoidable—Removal of historic properties

This impact is similar to Impact 4.15-1. The Six Dam Removal Alternative would adversely affect Coleman Diversion Dam, Eagle Canyon Diversion Dam, and Wildcat Diversion Dam, which are considered to be historic properties under Section 106 and historical resources for the purposes of CEQA. Under the Six Dam Removal Alternative, Coleman Diversion Dam, Eagle Canyon Diversion Dam, and Wildcat Diversion Dam would be removed. These removals are considered significant and unavoidable impacts because they would be irrevocable and would permanently alter the characteristics of the dams that convey their significance. Although this impact is considered significant and unavoidable under CEQA, implementing the Mitigation Measure for Impact 4.15-1 would meet Reclamation's Section 106 responsibilities.

Impact 4.15-7 Significant—Historic properties would be adversely affected

This impact is similar to Impact 4.15-2. The Six Dam Removal Alternative would adversely affect Inskip Diversion Dam, which is considered to be a historic property under Section 106 and a historical resource for the purposes of CEQA. A fish screen and ladder would be added to Inskip Diversion Dam. Similar to Impact 4.15-2 described above, this alternative would have a significant impact on a historic property because adding new features to Inskip Diversion Dam would alter the original configuration of the dam. Implementing the Mitigation Measure for Impact 4.15-2 would reduce this impact to a less than significant level.

Impact 4.15-8 Significant—Potential damage to archaeological deposits as a result of vehicular traffic

This impact is similar to Impact 4.15-3. The Six Dam Removal Alternative has the potential to affect the prehistoric/historic campsite located along the access road to South Diversion Dam as described under Impact 4.15-3. This campsite is a historic property under Section 106 and a historical resource under CEQA. This impact would be reduced to a less-than-significant level by implementing the Mitigation Measure for Impact 4.15-3.

Three Dam Removal Alternative

Impact 4.15-9 Significant and Unavoidable—Removal of historic properties

This impact is similar to Impact 4.15-1. The Three Dam Removal Alternative would adversely affect Coleman Diversion Dam, Eagle Canyon Diversion Dam, and Wildcat Diversion Dam, which are considered to be historic properties under Section 106 and historical resources for the purposes of CEQA. Under the Three Dam Removal Alternative, Coleman Diversion Dam, Eagle Canyon Diversion Dam, and Wildcat Diversion Dam would be removed. These removals are considered significant and unavoidable impacts because they would be

irrevocable and would permanently alter the characteristics of the dams that convey their significance. Although this impact is considered significant and unavoidable under CEQA, implementing the Mitigation Measure for Impact 4.15-1 would meet Reclamation's Section 106 responsibilities.

Impact 4.15-10 Significant—Historic property would be adversely affected

This impact is similar to Impact 4.15-2. The Three Dam Removal Alternative would adversely affect Inskip Diversion Dam, which is considered to be a historic property under Section 106 and a historical resource for the purposes of CEQA. A fish screen and ladder would be added to Inskip Diversion Dam. Similar to Impact 4.15-2 described above, this alternative would have a significant impact on a historic property because adding new features to Inskip Diversion Dam would alter the original configuration of the dam. Implementing the Mitigation Measure for Impact 4.15-2 would reduce this impact to a less-than-significant level.

Impact 4.15-11 Significant—Potential damage to archaeological deposits as a result of vehicular traffic

This impact is similar to Impact 4.15-3. The Three Dam Removal Alternative has the potential to affect the prehistoric/historic campsite located along the access road to South Diversion Dam, as described under Impact 4.15-3. This campsite is a historic property under Section 106 and a historical resource under CEQA. This impact would be reduced to a less-than-significant level by implementing the Mitigation Measure for Impact 4.15-3.

Cumulative Impacts

The cumulative projects, programs, and studies that are related to the Proposed Action and that could potentially contribute to cumulative impacts in the project area are identified in Chapter 6, "Related Projects." The Proposed Action would significantly impact Wildcat, Eagle Canyon, Coleman, and Inskip Diversion Dams, all of which are considered historic properties and historical resources. The Proposed Action would also significantly affect one prehistoric/historic campsite. Therefore, the incremental effect of the Proposed Action on these cultural resources is considerable and the potential for cumulative impacts associated with these resources must be discussed.

The related projects presented in Chapter 6 would not result in significant cumulative impacts on historic properties or historical resources affected by the Proposed Action because none of these related projects would involve direct or indirect modification of the Proposed Action diversion dams. None of the cumulative projects or activities that could occur in the vicinity of the project area would involve direct or indirect impacts on cultural resources identified and evaluated for significance in the project area.

The evaluation of significance also indicates that the modifications to the entire Battle Creek hydroelectric system preclude the possibility of considering this

hydroelectric system a historic district. Therefore, the cumulative impacts of past, present, and reasonably foreseeable projects on cultural resources within the project area are restricted to those historic or archaeological resources that would be affected by the Proposed Action, namely the diversion dams and the campsite. As stated above, no cumulative impacts on the diversion dams or the prehistoric/historic campsite would result from implementing related projects in the Battle Creek Watershed because none of these actions would involve direct or indirect impacts to cultural resources identified in the project area.