

APPENDIX G

Cultural Resources Supporting Information

Cultural Resources Memo

Paleontological Resources Memo

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CULTURAL RESOURCES MEMO

The 27 actions proposed by the Marin Municipal Water District (MMWD) in the Biodiversity, Fuel, and Fire Integrated Plan (BFFIP) for the Mt. Tamalpais Watershed, Nicasio Reservoir Lands and Soulajule Reservoir Lands include actions that have the potential to adversely affect cultural resources within the 21,600 acres of the three areas administrative units (Mount Tamalpais Watershed, Soulajule Reservoir, and Nicasio Reservoir). The MMWD plans to use combinations of manual and mechanical techniques and prescribed burning to create fuelbreaks and defensible spaces depending on vegetation type. Vegetation management will also include weed control and utilize manual and mechanical techniques, prescribed burning, and herbicides for existing fuelbreak maintenance and defensible spaces. These actions may have temporary or permanent direct, indirect, and/or cumulative physical effects on both recorded and unknown cultural resources within the three administrative units.

The MMWD land in central and southern Marin County with the local climate characterized as Mediterranean with wet, mild winters and warm, dry summers. Elevations range from 80 to 2,571 feet above mean sea level with the highest elevation at East Peak of Mt. Tamalpais. Topography is generally v-shaped valleys between narrow ridge crests, with areas of more gently rolling hills. Vegetation ranges from grassland to chaparral, oak woodland and redwood forests. A wide range of wildlife is present.

The approximately 18,900-acre *Mount Tamalpais Watershed* is south of San Geronimo and west of San Anselmo, Kentfield, and Mill Valley (USGS Inverness, Calif. 1976; San Geronimo, Calif. 1978; Novato, Calif. 1980; Double Point, CA. 1994; Bolinas, CA 1993, and San Rafael, CA 1995; T1-2N, R6-8W, unsectioned). This watershed contains the drainage areas for five reservoirs, and includes the entire upper watershed of Lagunitas Creek and much of Mt. Tamalpais itself. Four main water supply reservoirs are located in the Lagunitas Creek watershed (Lagunitas, Bon Tempe, Alpine, and Kent Lakes). Phoenix Lake is located on Ross Creek, which is a tributary of Corte Madera Creek.

The approximately 1,600-acre *Nicasio Reservoir Lands* is located on Nicasio Creek in Nicasio Valley between the Mount Tamalpais Watershed and Soulajule Reservoir just northwest of Nicasio (USGS Point Reyes NE, CA 1995; Petaluma, Calif. 1981; Inverness, Calif. 1976; San Geronimo, Calif. 1978; T3-4N R8-9W, unsectioned) [Confidential Figures]. The lands include an 845-acre reservoir and 787 acres bordering it. The topography of the MMWD land is relatively flat with a few small hilly areas, since the reservoir occupies what was once a wide valley bottom.

The approximately 1,100-acre *Soulajule Reservoir Lands* in north-central Marin County includes the Arroyo Sausal branch of Walker Creek to the north of Nicasio Reservoir. The reservoir is roughly 290 acres with a narrow band of 810 acres surrounding it (USGS Point Reyes NE, CA 1995; Petaluma, Calif. 1981; T3-4N R8-9W, unsectioned) [Confidential Figures].

The three administrative units are adjacent to open space and recreational lands including Mt. Tamalpais State Park, the Golden Gate National Recreation Area (GGNRA), Point Reyes National Seashore, Muir Woods National Monument, and Samuel P. Taylor State Park.

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REGULATORY CONTEXT - STATE

The California Environmental Quality Act (CEQA) requires the identification and evaluation of cultural resources that could be affected by a project. Public agencies under CEQA must consider the effects of their actions on both “historical resources” and “unique archaeological resources.” Pursuant to California Public Resources Code (PRC) Section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” PRC 21083.2 requires agencies to determine whether a proposed project would have an effect on “unique” archaeological resources.

Historical resource (see PRC 21084.1 and CEQA Guidelines Sections 15064.5(a) and 15064.5(b)) applies to any resource listed in or determined to be eligible for listing in the California Register of Historic Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be “historical resources” for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1 and 14 CCR 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources (PRC 21084.1 and CEQA Guidelines Section 15064.5(a)(3)). In general, a historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

- Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California; and,
- Meets any of the following criteria:
 1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
 2. Is associated with the lives of persons important in our past;
 3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,
 4. Has yielded, or may be likely to yield, information important in prehistory or history (State CEQA Guidelines Section 15064.5(a)(3)).

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The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC 21084.1 and CEQA Guidelines Section 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and “unique archaeological resources.” Under CEQA, an archaeological resource is considered “unique” if it:

Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;

Has a special and particular quality such as being the oldest of its type or the best available example of its type; or

Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared and mitigation measures considered. A “substantial adverse change” in the significance of a historical resource means 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 (CEQA Guidelines Section 15064.5(b)(1)).

The CEQA Guidelines (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2. PRC Section 21083.2 requires the lead agency to treat that effect as a significant environmental effect. When an archaeological resource is listed in or is eligible to be listed in the CRHR, PRC Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. PRC Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Tribal Resources

Assembly Bill 52 (AB 52) provides protections for tribal cultural resources.¹ All lead agencies as of July 1, 2015 approving projects under CEQA are required, if formally requested by a culturally affiliated California Native American Tribe,² to consult with such tribe regarding the impacts of a project on tribal cultural resources prior to the release of any negative declaration,

1. AB 52 amended Section 5097.94 of, and added Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3 to, the California Public Resources Code

2. The Native American Heritage Commission maintains a list of more than 100 federally recognized California tribes and an additional list of tribes not recognized by the federal government but listed as non-recognized California tribes. Both groups have the right to request notification and consultation under the AB 52.

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mitigated negative declaration or draft environmental impact report. Under PRC Section 21074, tribal cultural resources include site features, places, cultural landscapes, sacred places or objects that are of cultural value to a tribe that are eligible or listed on the CRHR or a local historic register or that the lead agency has determined to be a significant tribal cultural resource.

Tribal consultation is to continue until mitigation measures are agreed to or either the tribe or the lead agency concludes in good faith that an agreement cannot be reached. In the case of agreement, the lead agency is required to include the mitigation measures in the environmental document along with the related Mitigation Monitoring and Reporting Program (MMRP) (see PRC Section 21084.3). If no agreement is reached, the lead agency must still impose all feasible mitigation measures necessary for a project to avoid or minimize significant adverse impacts on tribal cultural resources (PRC Section 21084.3).

Other California Laws and Regulations

Other state-level requirements for cultural resources management appear in the California PRC Chapter 1.7, Section 5097.5 "Archaeological, Paleontological, and Historical Sites," and Chapter 1.75 beginning at Section 5097.9 "Native American Historical, Cultural, and Sacred Sites" for lands owned by the state or a state agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98, and falls within the jurisdiction of the Native American Heritage Commission.

CULTURAL AND HISTORIC RESOURCES

Prehistoric

Cultural resources are traces of human occupation and activity. Native American occupation and use of the general Bay Area appears to extend over 5000-7000 years and may be much longer. Evidence for early occupation along the bayshores has been hidden by rising sea levels from about 15,000 to 7,000 years ago, or was buried under sediments caused by bay marshland infilling along estuary margins from about 7,000 years onward.

The project is located within an environmentally advantageous inland area for Native Americans. The study area would have provided a favorable habitat during the prehistoric period with coastal, bay shore, riparian and inland resources readily available. Both permanent and seasonal creeks and springs would have provided year-round accessible sources of water with associated riparian resources. Milliken (2006:34) has noted, "High rainfall along the spine of the Marin Peninsula, a mosaic of woodlands, grasslands, freshwater marshes, and bay shore access, as well as a warm summer climate away from the Golden Gate, combine to make Novato Creek [northeast of the Nicasio Reservoir Lands] and Petaluma Slough [northeast of the Soulajule Reservoir Lands] the two richest regions for people with a 'deer-acorn' economy in the Coast Range central California." Travel would have been possible between the shoreline and interior by trails via the ridgetops, canyons and gulches and stream channels. San Francisco Bay and particularly Bolinas Bay and its margins along with the many perennial and seasonal creeks would have been sources of shellfish, fish, waterfowl, and other resources.

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Occupation sites appear to have been selected in the area for accessibility, protection from seasonal flooding, and the availability of resources. Archaeological information for central California suggests an increase in the prehistoric population over time due to more efficient resource procurement, storage and increasing political complexity with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-collectors to an increased sedentary lifestyle is due to more efficient resource procurement with a focus on staple food exploitation, the increased ability to store food at village locations, and the development of increasing complex social and political systems including long-distance trade networks. The information obtained from archaeological studies in the general area has played a key role in refining both the local and regional interpretations of Native American history for central California.

Stewart (1981), Slaymaker (1982), Moratto (1984:269-283), and Milliken et al. (2007) provide an overview of the northern San Francisco Bay area including Marin County and should be consulted for specific information on the regional prehistory including chronological data.

Ethnographic

The aboriginal inhabitants of the region appear to have been part of the Southern or Marin dialect group of the *Coast Miwok*. Two groups appear to have occupied the general area. The *Olompali* (also known as the *Choquinicos*) occupied the interior valleys and have been variously placed west of the Petaluma River with the *Tamal* placed in the vicinity of Mt. Tamalpais. Aboriginal population estimates range from 1500 to 200 individuals (Barrett 1908:map; Bennyhoff 1977:164, Map 2; Kroeber 1925:274:Fig. 22; Kelly 1978:414-415, Fig. 1; Milliken 1995:228, Map 4, 249, 254-256; Milliken 2006:27, Fig. 5; Goerke 2007:218; Milliken 2008:5, Fig. 2).

None of the known ethnographic village locations were located in or adjacent to the three administrative units although one is south of the Nicasio Reservoir Lands. *Seglogue* appears to have been a small village somewhere on the Tomales Bay south of Marshall; *Olema-loke* was on Olema Creek near Olema; and, *bauli-n* was near in the area northwest of Bolinas Lagoon below the ridge boundary of the Mt. Tamalpais Watershed. The closest village, *ec-a tamal* (*echa-tamal*) was located southwesterly of, or at Nicasio. Reportedly the Nicasio Rancheria Site (date unknown) was located in upper Nicasio Creek Valley very probably at the lower end of the Bull Trail Valley on the San Pedro rancho or on the middle course of Halleck Creek. A diseño³ places the rancheria east of present Nicasio about one league by the diseño scale, or about 2.5 miles. Reportedly "This rancheria gave the name to the grant, but its site does not necessarily fall within the patent lines of the grant (Hendry and Bowman (1940:99-100, #(2)).

After the dissolution of the missions in the 1830s and the arrival of the Americans with a focus on lumbering, dairying and agriculture, some of the few surviving Coast Miwoks found employment in the local sawmills and in agriculture.

3. Date not provided.

Spanish and Mexican Period

The Spanish philosophy of government in northwestern New Spain was directed at the founding of presidios, missions, and secular towns (pueblo) with the land held by the Crown (1769-1821), while the later Mexican policy stressed individual ownership of the land. After the secularization of the missions by Mexico in 1833, vast tracts of the mission lands were granted to individual citizens (Hart 1987).

The first European land expeditions north through what is now Marin County likely followed existing aboriginal trails. None of their routes included the vicinity of the three administrative units. Initially the Spanish explorations were limited to neophyte recruitment expeditions and hunting parties, but on August 5, 1793 an expedition led by Lieutenant Don Felipe de Goycochea landed near Sausalito. He was charged with blazing a road/trail to Bodega Bay and proceeded over the hills to Bolinas Bay and then along Pine Gulch Creek and Olema Creek. They encountered a substantial village, identified as *Olema-loke* near present-day Olema (e.g., Kelly 1978:415, Fig. 1, #33). They proceeded as far north as the end of Tomales Bay and returned on August 14, 1793 to San Francisco [Presidio] (Lang 1979:127-128). Later Gabriel Moraga led parties in 1810 and another three between 1812 to 1814 through Marin County enroute to Russian Settlements at Bodega and Ross (Beck and Haase 1974:#18). Later, Father Payeras visited San Antonio Creek in 1819, associating it with the *Olompalis* (Milliken 1995:249).

Mission San Rafael Arcangel, established formally on December 14, 1817 within present-day City of San Rafael, would have the most impact on the Native Americans within the study area. This *asistencia* (branch) of *Mission San Francisco de Asis (Mission Dolores)*, formally established on October 9, 1776, functioned as a hospice to counter the extremely high death rate of Native Americans at *Mission Dolores*. Mission San Rafael, granted full mission status in 1823, may have thwarted Russian intrusion from their settlement at Fort Ross (founded in 1812) as well as facilitated trade. The mission holdings consisted of most of Marin County with the exception of the "coastal wilderness at Sausalito, Tiburon, and Point Reyes" (Beck and Haase 1974:#19; Lang 1979:127-129; Hart 1987:170 324).

As part of the secularization of Mission Dolores and San Rafael in 1834⁴ Native American neophytes were released from mission jurisdiction and mission holdings privatized. The three administrative units are within former mission lands granted to individuals as ranchos. The former ranchos within each administrative unit are listed below (Hendry and Bowman 1940; Perez 1996; Fredrickson and Staff 1977/S-848; USGS v.d.).

Mount Tamalpais Watershed

Canada de Herrera granted to Domingo Saenz (Saiz) on August 10, 1839 and patented to his heirs and legal representatives on June 26, 1876.

Punta de Quentin granted to Juan B.R. Cooper on September 24, 1840 and patented to Benjamin R. Buckelew on April 10, 1866.

4. Decrees were issued in Spain in 1813 and 1820 and in California in 1826 and 1834 - 10 missions were secularized in 1834, six in 1835, and five in 1836 (Hart 1987:464).

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Saucelito granted to grant to William [Guillermo] A. Richardson on February 11, 1838 and patented to him on August 7th, 1879.

San Geromino granted Rafael Cacho on February 12, 1844 and patented to Jose W. Revere on April 4, 1860.

Tomales y Baulines (Phelps) granted to Rafael Garcia on March 18, 1836 and patented to him on October 15, 1883.

Soulajule Reservoir Lands

Laguna de San Antonio granted in fee to Bartolome Bojorquez on November 25, 1845 and patented to him on November 21, 1871.

Nicasio (Halleck) was granted to Pablo Guerra and Juan Cooper and a portion patented to Henry W. Halleck on November 1, 1861.

Soulajule was granted March 29, 1844 to Ramon and to five individuals on January 18, 1879. Four of the five are located within the *Soulajule Reservoir Lands* administrative unit:

Soulajule (Brackett),
Soulajule (Cornwall),
Soulajule (Gormley), and
Soulajule (Watkins).

Nicasio Reservoir Lands

Nicasio was granted to Pablo Guerra and Juan Cooper and patented to four individuals on November 1, 1861. Three of the four are located within the *Nicasio Reservoir Lands* administrative unit:

Nicasio (Black),
Nicasio (Buckelew), and
Nicasio (Halleck).

No known Hispanic Period sites were situated in or adjacent the proposed project (e.g., missions, pueblos, rancho dwelling sites, roads, etc.).

American Period

Marin County, with San Rafael as its county seat, is one of the original 27 counties created in 1850 (Hoover et al. 1966:175). No known early settlements or towns were located in the three administrative units except for Nicasio developed in the 1850s as an agricultural center just south of the current Nicasio Reservoir. Portions of present-day Mill Valley, Kentfield, San Anselmo, and Fairfax extend to the boundary of the Mount Tamalpais Watershed.

Development proceeded slowly due to a lack of an extensive transportation network to connect the coastal settlements with the interior. In the mid-1850s and early 1860s the dairy industry started along the coast centered on Point Reyes and a paper mill was started on Lagunitas Creek in 1855. Early development focused on developing large cities to rival San Francisco and included Marion City (San Quentin), California City and Corte Madera City - none succeeded although a state prison was located at San Quentin in the 1850s. San Franciscans began to settle in Marin initially with summer homes in Sausalito and Tiburon and then suburban residences in

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San Rafael and elsewhere in the 1860s and 1870s with transport to the city initially by stage and then rail via ferry. Swiss dairymen dominated dairying in the 1870s and by the 1880s this was an important focus with Marin County ranking as one of the leading counties in production.

Agriculture also included fruit orchards and vineyards. Fisheries were present along Tomales Bay and elsewhere. Lumber operations were operational in the interior and along the coast with associated mills and other finished operations.

Railroads arrived with the North Pacific Coast Railroad running from Sausalito into Sonoma County in 1875. The San Francisco & North Pacific Railroad ("Donahue" line) was extended from Petaluma to Tiburon in 1884. A network of ferries and interior wagon roads was in place by the 1880s which used both water and land transportation primarily to move agricultural and lumber to outside markets. The expansion of the rail and ferry network contributed to the growing development of the Marin peninsula.

City and town growth in association with internal and externally funded development projects and settlement continued through the turn of the century and later. The focus of the county was on agriculture and lumber with other associated rural industries including brick making and milling.

The Marin Municipal Water District (MMWD) chartered in 1912 is the government agency that provides drinking water to central and southern Marin County (Web v.d). The district purchased the assets of the privately-owned Marin Water & Power and North Coast in 1915 which had supplied water to various municipalities in the county since the 1870s. The bond sale also allowed the MMWD to complete the Alpine Dam to ensure an adequate supply of water to its customers. The three administrative units include seven lakes/reservoirs which provide potable water to the district.

The *Mount Tamalpais Watershed* has five lakes.

- Alpine Lake on Lagunitas Creek formed by Alpine Dam completed in 1917
- Bon Tempe Lake on Lagunitas Creek formed by Bon Tempe Dam completed in 1949
- Kent Lake on Lagunitas Creek formed by Peters Dam in 1954 and raised in 1982
- Lake Lagunitas on Lagunitas Creek, built in 1873
- Phoenix Lake on Phoenix Creek, built in 1905

Soulajule Reservoir Lands has one lake/reservoir.

- Soulajule Reservoir on Arroyo Sausal built in 1979

Nicasio Reservoir Lands has one lake/reservoir

- Nicasio Reservoir on Nicasio Creek formed by Seeger Dam in 1961

The completion of the Golden Gate Bridge in 1937 led to extensive development in Marin County, as San Francisco was now easily accessible by car. In particular interior coastal areas began to be filled and reclaimed for residential use. Urban development continued through World War II and the post-war years with housing and industry development continuing at a rapid pace. The early 1950s were a time of extensive development in Marin County with San Franciscans moving to the suburbs and commuting to the city to work. The coastal areas and interior valley areas were essentially transformed from generally scattered housing to extensive

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subdivisions. The environmental movement in the 1960s and onward attempted to limit development and encourage open space and planned development. Infrastructure improvements and urbanization continue to date with many areas of the county functioning as bedroom communities for San Francisco and the East Bay.

RESEARCH METHODOLOGY

Basin Research Associates requested two archival record and literature searches from the Northwest Information Center hosted at Sonoma State University in December 2012 and November 2016 (CHRIS/NWIC File No. 12-0568 dated December 12, 2012 and 16-0838 dated December 19, 2016). Basin Research Associates performed a literature review of existing data available to identify known cultural resources in the BFFIP area. Basin Research Associates reviewed lists of various city, state, and federal historically or architecturally significant structures, landmarks, and points of interest in and immediately adjacent to the Mount Tamalpais Watershed, and the Soulajule and Nicasio Reservoirs. Specialized listings reviewed include:

- California Historical Resources - Marin County (CAL/OHP 2012a)
- Historic Properties Directory for Marin County (CAL/OHP 2012b)
- California Historical Landmarks
- California Points of Historical Interest
- Other evaluations of properties reviewed by the State of California Office of Historic Preservation
- California History Plan (CAL/OHP 1973)
- California Inventory of Historic Resources (CAL/OHP 1976)
- Five Views: An Ethnic Sites Survey for California (CAL/OHP 1988)
- Historic Civil Engineering Landmarks of San Francisco and Northern California (ASCE 1977)
- List of Historic Civil Engineering Landmarks (ASCE 2012)
- Archeological Determinations of Eligibility for Marin County (CAL/OHP 2012c)
- Other local inventories, lists, and maps (see References Cited and Consulted)

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands Inventory (Busby 2012). Letters soliciting additional information were sent by the MMWD to four Native American individuals/groups recommended by the NAHC: Gene Buvelot, Greg Sarris (Chairperson), and Frank Ross of The Federated Indians of Graton Rancheria and Ya-Ka-Ama located in Forestville. One response was received from the Federated Indians of Graton Rancheria (Sacred Sites Protection Committee) which recommended the development of cultural resources location map to help determine the potential effects of the proposed BFFIP. Further consultation was suggested (Tipon 2012). The Tribal Historic Preservation Officer (THPO), Federated Indians of Graton Rancheria (FIGR), was notified by Mr. Dain Anderson, MMWD Environmental Services Manager, of the BFFIP on January 4, 2017

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(Anderson 2017). The MMWD requested consultation pursuant to Assembly Bill 52. Consultation was requested via a response on January 19, 2017 by Ms. Buffy McQuillen, THPO, with Mr. Dain Anderson, MMWD, requesting a meeting (McQuillen 2017). A meeting was convened on February 16, 2017 with Ms. McQuillen and other members of FIGR, Mr. Anderson (MMWD) and the consultant team to provide information on the BFFI Plan and request comments from FIGR (Treis 2017). Consultation with FIGR is ongoing as the BFFIP progresses.

No other agencies, departments or local historical societies were contacted as the MMWD provided copies of internal reports and other documents on file concerned with archaeological and historical resources within the administrative units.

Archaeological field inventories and/or field visits to relocate and assess the condition of the recorded resources were not conducted.

FINDINGS

Thirty-nine (39) cultural resources compliance studies include the three administrative units. Seventy-five (75) resources have been formally recorded or identified within the three watersheds (61 historic sites, 13 prehistoric sites, 1 prehistoric/historic site). The prehistoric sites appear to be small, task-specific locales associated with water and nearby raw material sources or on the ridgetops adjacent to potential trails between the interior and coast. The historic resources are generally associated with historic and recent activities focused on resource exploitation, water control infrastructure, habitation, transportation, military use and recreation among others. Only one resource appears to have been formally evaluated although several sites appear to be eligible. With the exception of Peters Dam, none of the components of the *Marin Municipal Water District* have been formally recorded or evaluated as a water system for inclusion on the CRHR or the National Register of Historic Places (NRHP) (see Table 2).

COMPLIANCE REPORTS (Table 1A-C)

Thirty-nine (39) cultural resources compliance studies include the three administrative units and are on file with the CHRIS/NWIC. The reports indicate that the Mount Tamalpais Watershed has been subject to the most intensive study of the administrative units (32) with only minor studies completed in Nicasio (5) and Soulajule (2). Various overview reports include information peripheral to the general area are not included in the tables.

TABLE 1A
Studies within/adjacent to the Mt. Tamalpais Watershed

Study #	Author	Date	Study Type	Title
S-02491	Chavez	1981	Archaeological survey	Cultural Resources Evaluation for the Skye Ranch EIR, Marin County, California.
S-02824	Chavez	1981	Archaeological survey	Tamalpais Highlands Property, Mill Valley, Marin County, California
S-09586	Frances Miller	1987	Archaeological survey	Samuel P. Taylor State Park Cultural Resource Inventory: A Preliminary Study

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TABLE 1A, con't
Studies within/adjacent to the Mt. Tamalpais Watershed

Study #	Author	Date	Study Type	Title
S-10419	Faith L. Duncan	1988	Local history Regional overview	The History of Two Valleys, Frank's and Homestead Valley, Marin County, California
S-13098	Marin County Public Works Department	1980	Historic study	Preliminary Case Report for the Shafter Bridge Replacement Project on Sir Francis Drake Boulevard at Milepost 15.25 in Marin County, California
S-13099	Marin County Public Works Department	1980	Historic study	Historic Property Survey Report for the Shafter Bridge Replacement on Sir Francis Drake Boulevard at Milepost 15.25, Marin County, California
S-15807	Holman	1993	Archaeological survey	Archaeological Field Inspection of the Oak Avenue Vicinity Project
S-17039	Mark Gary	1994	Archaeological survey	Archaeological Review of Haas SIP Plan 1994 (letter report)
S-17321	Vicki Beard Thomas Origer	1995	Archaeological survey	A Cultural Resources Study for the Mount Tamalpais Vegetation Management Project, Marin County, California
S-19040	Cassandra Chattan	1997	Archaeological survey	A Cultural Resources Evaluation of the Meadow Club Golf Course, Fairfax, Marin County, California
S-19809	Lynn Compas Christian Gerike	1997	Archaeological survey	Bolinas Ridge/Olema Valley Archaeological Survey
S-23990	Carolyn Losee	2001	Records/literature search	Record Search for American Tower Site 8521: No Further Recommendations
S-24915	William Rich James Roscoe	2001	Archaeological survey	A Cultural Resources Investigation of the Proposed Lagunitas Creek Watershed Roads Improvements - MMWD Lands, Located Near Forest Knolls, Marin County, California
S-29402	Thomas M. Origer	1998	Other Records/literature search	An Archaeological Sensitivity Analysis of the Whites Hill and Cascade Canyon Open Space Preserves, Marin County, California
S-29895	Amanda Cannon Bethaney Weber James Roscoe	2005	Archaeological survey	A Cultural Investigation of the Lagunitas Creek Sediment Control Project, located in Marin County, California DF&G #317-R3
S-30175	Amanda Cannon Bethaney Weber James Roscoe	2005	Archaeological survey	A Cultural Resources Investigation of the Redwood Creek Watershed Sediment Control on Marin Municipal Water District Lands Project, located in Marin County, California.
S-31664	Eileen Steen Thomas M. Origer	2006	Archaeological survey	A Cultural Resources Survey for the Cascade Canyon Fuel Reduction Project, Marin County, California
S-32785	Roger Kelly	1999	Archaeological survey	Archaeological Clearance Survey Form, Olema Valley and Bolinas Ridge Prescribed Fire Projects: Point Reyes Bayshore, California
S-34429	Lisa Holm	2007	Archaeological survey	Archaeological Study of Sir Francis Drake Boulevard, Golden Gate National Recreation Area and Samuel Taylor State Park, Marin County, CA (PL. No. 2030-01)
S-35293	Brian Hatoff Michelle C. Jerman Christopher Lee	2007	Archaeological survey	Cultural Resources Draft Technical Report, Carson Falls Trails Restoration Project
S-36630	Lisa Holm John Holson Elena Reese	2009	Archaeological survey	Archaeological Survey Report for the Sir Francis Drake Boulevard Improvements Project, Marin County, California
S-36932	Ericka Collins James Roscoe	2010	Archaeological survey	A Cultural Resources Investigation of the Woodacre Creek Upland Habitat Restoration Project Located in Marin County, California, California Department of Fish and game Project #R3-37
S-37077	Heidi Koenig	2010	Archaeological survey	Cultural Resources Survey Report, Lagunitas Watershed Roads Improvement Project, Marin County, California, Lagunitas Creek Sediment Reduction Projects, Federal Project No. R09025, ARPA Permit No. PWR-1979-10-CA-01 (PORE), DPR Permit No. 10-02
S-38218	Phil Clarkson Melinda Salisbury James Roscoe	2011	Archaeological survey	A Cultural Resources Investigation of the Lagunitas-Sinaloa Upland Habitat Restoration, California Department of Fish and Game Project #R3-075, Marin County, California
S-39112	Kent Julin	2011	Archaeological survey	An Archaeological Survey Report for the Throckmorton Ridge Fuel Break, Marin County, California
S-39113	Kent Julin	2012	Archaeological survey	An Archaeological Survey Report for the MMWD VMP, Marin County, California

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TABLE 1A, con't
Studies within/adjacent to the Mt. Tamalpais Watershed

Study #	Author	Date	Study Type	Title
S-39166	Kent Julin	2005	Archaeological survey	An Archaeological Survey Report for the Mt. Tam VMP, Marin County, California
S-43256	Melinda Salisbury and James Roscoe	2012	Archaeological survey	A Cultural Resources Investigation of the California Department of Fish and Game Lagunitas Creek Woody Debris Enhancement Project (R3-46) Marin County, California
S-46397	Tim Spillane	2014	Archaeological survey, evaluation, Regional overview	Archaeological Overview and Assessment: Indigenous Sites of the GGNRA
S-47117	Martin T. Mayer	1990	Archaeological survey	Archaeological Clearance Survey Form: Replace telephone lines, Mill Valley Air Force Station on Mt. Tamalpais, Tamalpais District, Golden Gate National Recreation Area, Marin County, California
S-47117a	Beverly A. Mohler	1991	Concurrence correspondence	Replace telephone lines, Mill Valley Air Force Station on Mt. Tamalpais, Tamalpais District, Golden Gate National Recreation Area, Marin County, California: Archaeological Clearance (Concurrence Correspondence)
S-47168	Carol A. Martin and Martin T. Mayer	1987	Archaeological survey	Archaeological Clearance: install fence for feral pig elimination, Stinson Beach District, Marin Unit, Golden Gate National Recreation Area, California

TABLE 1B
Studies within/adjacent to the Nicasio Reservoir Lands

Study #	Author	Date	Study Type	Title
S-00126	Thomas F. King Ronald F. King Betty Goerke	1973	Archaeological survey Records/literature search	The Russian River Water Supply Project: A Preliminary Synthesis of Archaeological Data.
S-01034	Stephen A. Dietz	1975	Archaeological survey	An archaeological reconnaissance of the approximately 400 acre Cooley Land Subdivision located at Nicasio, California
S-13217	Thomas M. Origer	1991	Archaeological survey	An Archaeological Survey for the AT&T Fiber Optics Cable, San Francisco to Point Arena, California
S-28400	E. Timothy Jones	2004	Site specific Thesis	Petroglyphs in Context: Ritual Functions of Cupule Petroglyphs in Southern North Coast Ranges, California.
S-43717	Ashley Hallock	2014	Archaeological survey	Cultural Resources Constraints Report Woodacre – 1101 Recondutor

TABLE 1C
Studies within/adjacent to the Soulajule Reservoir Lands

Study #	Author	Date	Study Type	Title
S-00519	David Chavez	1977	Archaeological survey	An Archaeological Field Reconnaissance of the Established Soulajule Pipeline Route in Marin County
S-11050	Christian Gerike	1989	Records/literature search	Initial Archaeological Cultural Resources Archival Study for the Santa Rosa Wastewater Pipeline Project, Sonoma and Marin Counties, California

RECORDED CULTURAL RESOURCES (Table 2 to Table 5)

Seventy-five (75) resources have been formally recorded or identified within the three watersheds (61 historic sites, 13 prehistoric sites, 1 prehistoric/historic site). Only one appears to have been formally evaluated although several sites appear to be eligible. With the exception of Peters Dam, none of the components of the *Marin Municipal Water District* have been formally recorded or evaluated as a water system for inclusion on the CRHR or the National Register of Historic Places (NRHP).

Cultural Resources Memorandum

TABLE 2
Site Types and Number Recorded Within Administrative Units

Site Type	Number	Sites
<i>Prehistoric</i>		
Lithic scatter	2	P-21-000308 (periodically inundated), P-21-000612
Cupules with lithic scatter	2	P-21-000307, P-21-000406
Midden	1	P-21-000309
Habitation site	2	P-21-000372, P-21-000654
Temporary camp	1	P-21-000373 (periodically inundated)
Quarry/rock source with debitage (steatite, chert)	3	P-21-000417, P-21-000445, P-21-000550
Unknown	2	Origer #8, Origer #20
TOTAL	13	
<i>Prehistoric/Historic</i>		
Lithic Scatter/Historic Campground	1	P-21-000569
TOTAL	1	
<i>Historic (including Prehistoric/Historic)</i>		
Trash dump/scatter	1	P-21-000448
Cabin site (some with trash dump)	10	P-21-000504, P-21-000696, P-21-000699, P-21-000714, P-21-000722, P-21-000723, P-21-000727, Origer #12, Origer #14, Origer #15 (inundated)
Lodge/tavern/toll house site	3	P-21-000573, P-21-000692, P-21-000693
Historic architecture	5	P-21-000556, P-21-000557, P-21-000558, P-21-000574 P-21-002890
Historic campground includes recreational, hunting, illegal depression-era, and logging	19	P-21-000570, P-21-000571, P-21-000572 (and WWII era garden), P-21-000687, P-21-000697, P-21-000703, P-21-000704, P-21-000705 (and tree), P-21-000706, P-21-000712, P-21-000713, P-21-000715, P-21-000720, P-21-000724, P-21-000725, P-21-000726, Extra Hidden Lake (no #), Origer #13 (inundated)
Road grade	3	P-21-000482, Origer #21, Origer #25
Railroad grade	1	P-21-000575
Airplane crash site	2	P-21-000688, P-21-000709
WWII/Cold War defense Includes gunnery target range and radar station	3	P-21-000690, P-21-000718, Mill Valley Air Force Station
Rock structures (stacked, walls)	2	P-21-000700, P-21-002573
Tree/orchard	5	P-21-000689, P-21-000694, P-21-000707, P-21-000719, P-21-000721
Footbridge/lake	1	P-21-000708
Commemorative plaque	1	P-21-000710
Mine	2	P-21-000711, P-21-000717
Scenic Spot	1	P-21-000716
Water tank	1	P-21-002573
Dam	1	P-21-002683
Planing mill	1	Origer #11
TOTAL	61	

The 13 prehistoric sites appear to be small, task-specific locales associated with water and nearby raw material sources or on the ridge tops adjacent to potential trails between the interior and coast. Several habitation sites and a site with midden (culturally affected soil indicative of occupation) have been recorded but no long-term occupation sites are known. No Native American traditional cultural properties of importance to local groups including collection and gathering areas have yet been defined.

Cultural Resources Memorandum

The single prehistoric/historic resource consists of a very sparse lithic scatter associated with a ca. 1875 historic campground.

The 61 historic resources are America Era and generally associated with historic and recent activities focused on resource exploitation (e.g., mine, logging camps, a planing mill), water control infrastructure (e.g., dam, water tank), habitation (e.g., depression-era camps, cabin sites), transportation (e.g., railroad grade, historic roads, toll house) and recreation (e.g., lodge, campgrounds, scenic spot, tavern) among others. Recent historic resources include two airplane crash locations, a commemorative plaque installed in 1915 for aviators who lost their lives in the new science of aviation, and World War II/Cold War installations including the Mill Valley Air Force Station.

It is probable that all of the recorded resources have been impacted to some degree by past and present activities. These include past wild fires and fire suppression, livestock grazing, previous timber harvesting and other land management activities including water control and transmission infrastructure, resource inundation, recreational activities and the installation of firebreaks and defensible spaces. Natural processes such as flooding, weathering, or erosion may have significantly affected and continue to affect both prehistoric and historic features, especially those of the built environment.

Mt. Tamalpais Watershed

Three recorded prehistoric sites, one site with both a prehistoric and historic component and 60 historic period and/or recent sites have been recorded as well as minimal information on a single potential prehistoric (?) resource (Table 3).

TABLE 3
Site Types – Mt. Tamalpais Watershed

Site Type	Number	Sites
Prehistoric		
Lithic scatter	1	P-21-000612
Quarry/rock source with debitage (steatite, chert)	2	P-21-000445, P-21-000550
Unknown	1	Origer #20 - no site description - possible prehistoric
Prehistoric/Historic		
Lithic scatter/Historic Campground	1	P-21-000569
Historic		
Trash dump/scatter	1	P-21-000448
Cabin site (some with trash dump)	10	P-21-000504, P-21-000696, P-21-000699, P-21-000714, P-21-000722, P-21-000723, P-21-000727, Origer #12, Origer #14, Origer #15 (inundated)
Lodge/tavern/toll house site	3	P-21-000573, P-21-000692, P-21-000693
Historic architecture	5	P-21-000556, P-21-000557, P-21-000558, P-21-000574, P-21-002890

Cultural Resources Memorandum

TABLE 3, con't
Site Types – Mt. Tamalpais Watershed

Site Type	Number	Sites
<i>Historic, con't</i>		
Historic campground includes recreational, hunting, illegal depression-era, and logging	18	P-21-000570, P-21-000571, P-21-000572 (and WWII era garden), P-21-000687, P-21-000697, P-21-000703, P-21-000704, P-21-000705 (and tree), P-21-000706, P-21-000712, P-21-000713, P-21-000715, P-21-000720, P-21-000724, P-21-000725, P-21-000726, Extra Hidden Lake (no #), Origer #13 (inundated)
Road grade	3	P-21-000482, Origer #21, Origer #25
Railroad grade	1	P-21-000575
Airplane crash site	2	P-21-000688, P-21-000709
WWII/Cold War defense, Includes gunnery target range and radar station	2	P-21-000690, P-21-000718, Mill Valley Air Force Station
Rock structures (stacked, walls)	2	P-21-000700, P-21-002573
Tree/orchard	5	P-21-000689, P-21-000694, P-21-000707, P-21-000719, P-21-000721
Footbridge/lake	1	P-21-000708
Commemorative plaque	1	P-21-000710
Mine	2	P-21-000711, P-21-000717
Scenic Spot	1	P-21-000716
Water tank	1	P-21-002573
Dam	1	P-21-002683
Planing mill	1	Origer #11

Nicasio Reservoir Lands

All eight (8) of the recorded sites *Nicasio Reservoir Lands* are prehistoric sites. No historic sites have been recorded (Table 4).

TABLE 4
Site Types – Nicasio Reservoir Lands

Site Type	Number	Sites
Prehistoric		
Lithic scatter	1	P-21-000308 (periodically inundated)
Cupules with lithic scatter	2	P-21-000307, P-21-000406
Midden	1	P-21-000309
Habitation site	2	P-21-000372, P-21-000654
Temporary camp	1	P-21-000373 (periodically inundated)
Quarry/rock source with debitage (steatite, chert)	1	P-21-000417
Historic		
None		

Soulajule Watershed

No prehistoric or historic sites recorded.

Cultural Resources Memorandum

TABLE 5
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed					
P-21-000445 (Origer #7)	CA-MRN-496	P	Quarry/rock source with debitage	Not evaluated	Rock Springs I; probable steatite mining and manufacturing site; quartz crystal fragments, obsidian projectile point, chert and bone tools, flakes, human bone; impacted by Ridgecrest Blvd (Van Anda 1973/74/form).
P-21-000448 (Origer #6)	CA-MRN-501H	H	Trash dump/scatter	Not evaluated	West Point Dump, associated with the former alignment of the Mill Valley & Mount Tamalpais Scenic Railway and the West Point Inn. (Duncan 1979/80/form). Not relocated in 1995 (Beard and Origer 1995).
P-21-000482 (Origer #11A)	CA-MRN-551H	H	Road	Not eligible	SPTSP-87-16H, Sir Francis Drake Boulevard, Old Lagunitas Creek Road segment; various segments and culvert locations recorded (Miller 1987/form; Reese et al. 2009/form; Koenig 2010/form).
P-21-000504 (Origer #9)	CA-MRN-577H	H	Cabin site	Not evaluated	Ziesche Cabin Site; Camp Norway; Cabin site with artifact scatter and features, including domestic dump (Duncan 1989/1990/form; Beard and Origer 1995/form).
P-21-000550 (see Origer #8 for alternate location)	CA-MRN-497	P	Quarry/rock source with debitage	Not evaluated	Rock Springs II; located along Cataract Trail, described as a steatite collection and processing site, with quartz crystal, midden, rock, shell, debitage; impacted by trail maintenance and use (Van Anda et al. 1994/form; Whatford 2005/form).
P-21-000566	None	H	Historic Architecture	Not evaluated	The Marin Stables; located at northern terminus of Canyon and Moore trails. Constructed in the 1930s and still in use (Origer & Associates 1995/form).
P-21-000567	None	H	Historic architecture	Not evaluated	Gate Keeper Complex, located at the Phoenix Lake dam and spillway; house and outbuildings still in use (Origer & Associates 1995/form).
P-21-000568	None	H	Historic architecture	Not evaluated	Hippolyte Ranch Complex; a ca. 1880s dairy ranch located on Phoenix Lake Road; two residences and outbuildings still in use; one constructed in the early 1890s (Origer & Associates 1995/form).
P-21-000569 (Origer #16)	None	P/H	Historic camp	Not evaluated	Laurel Dell; very sparse lithic scatter and historic campground, ca. 1875; camp maintained by MMWD (Origer & Associates 1995/form).
P-21-000570 (Origer #17)	None	H	Historic camp	Not evaluated	Casa Escondido and Barth's Retreat; illegal Depression-era camp and historic recreational or hunting camp; located south of Laurel Dell Road (Origer & Associates 1995/form; Skinner 1999/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-000571 (Origer #18)	None	H	Historic camp	Not evaluated	Potrero Camp; located at the headwaters of Swede George Creek north of Laurel Dell Road; still in use by MMWD (Origer & Associates 1995/form).
P-21-000572 (Origer #19)	None	H	Historic camp	Not evaluated	Rifle Camp; The Victory Garden; recreational/hunting camp on Rock Springs Road (Origer & Associates 1995/form); ca. WWII victory garden (Skinner 1999/form).
P-21-000573 (Origer #24)	None	H	Lodge/tavern/ toll house site	Not evaluated	Tavern of Tamalpais; Summit Tavern; located at the base of East Peak of Mount Tamalpais and the terminus of the Mill Valley & Mount Tamalpais Scenic Railway; originally built in 1896; includes building foundations and debris scatter (Origer & Associates 1995/form). Origer form shows site ca. 300 feet southwest of Northwest Information Center (NWIC) location at end of railroad line.
P-21-000574 (Origer #22)	None	H	Historic architecture	Not evaluated	West Point Inn, constructed in 1904 at the intersection of the Bolinas State Road and the Mill Valley & Mount Tamalpais Scenic Railway; also includes a stable, seven cabins and a small trash dump (Origer & Associates 1995/form).
P-21-000575 (includes Mesa Station) (Origer #23)	CA-MRN-625H	H	Railroad grade	Not evaluated	Mount Tamalpais & Muir Woods Railroad 1913-1930 (Mill Valley & Mt. Tamalpais Scenic Railway Company 1896-1913); includes railroad grade and several features - Boot Jack Siding, Fern Canyon Water Tank, rock retaining wall, Double Bowknot (switchback), Mesa Station (Origer & Associates 1995/form; Warner 2012/form). Origer form shows segment not shown on NWIC maps.
P-21-000612	CA-MRN-632	P	Lithic scatter	Evaluated as May be eligible	Olema 2; "Bolinas Ridge at Shafter Grade Site;" sparse lithic scatter on Bolinas Ridge at Shafter Grade; flakes, flake tools, and hammerstone (Jablonowski and Compas 1997/form; Rich and Johnson 2001/form). Same location as Origer #11B.
P-21-000687	CA-MRN-650H	H	Historic camp	Not evaluated	Professional Hunter's Camp; along Simmons Trail north of Ridgecrest Boulevard; 1880s and 1890s (Skinner 1999/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-000688	None	H	Airplane crash site	Not evaluated	Corsair Crash on Mount Tamalpais; debris from an October 4, 1945 mid-air collision of two Navy F-4-U single-engine fighter planes; 4 discontinuous areas on the north slope of the west Tamalpais Ridge (vicinity of Rock Springs, Laurel Dell, and the Simmons Trail east of Cataract Creek) (Skinner 1999/form).
P-21-000689	None	H	Tree/orchard	Not evaluated	"Master Sargent" Cypress; reportedly the world's tallest Sargent Cypress (<i>Cupressus sargentii</i> Jeps.) within Barths Creek drainage near the western end of Barths Creek Trail (Skinner 1999/form).
P-21-000690	None	H	WWII defense	Not evaluated	WWII Gunnery Range Target; a large, long artificial mound in a meadow, built by U.S. Army during early WWII for rifle target practice; located north of Rock Springs and Ridgecrest Boulevard between Cataract Trail and Cataract Creek; prior to WWII area included a swimming hole, not relocated (Skinner 1999/form).
P-21-000692	None	H	Lodge/tavern/toll house site	Not evaluated	Ridgecrest, Larson's Lodge, Summit House; lodge site at the top of Bolinas Ridge on the stage road just north of the junction of Bolinas-Fairfax Road - Ridgecrest Highway; a stop/way station/ lodge on the stage road between Fairfax and Bolinas (Skinner 2000/form). Possibly outside of MMWD lands.
P-21-000693	None	H	Lodge/tavern/toll house site	Not evaluated	Ridgecrest Boulevard Toll House; located just south of Ridgecrest/Summit House (see P-21-000692) on Bolinas Ridge on the stage road; in operation ca. 1925 to 1941 (Skinner 2000/form). Possibly outside of MMWD lands.
P-21-000694	None	H	Tree/orchard	Not evaluated	Apple Orchard, Fountainhead Orchard; visible on the west downhill side of Ridgecrest Blvd, ca. 1.0 mile south of Summit House, predates 1916 (Skinner 2000/form).
P-21-000696	None	H	Cabin site	Not evaluated	Longley Cabin Site; located downhill on east side at a turn out of Ridgecrest Boulevard 1.1 miles north of the Laurel Dell Fire Road gate; constructed 1886-88; site also included a barn/shed, cooler shed, trees, spring, building debris, trail (Skinner 2000/form).
P-21-000697	None	H	Historic camp	Not evaluated	Camp Elsinore, Cedar Camp; located on the east side of Cataract Creek north of Ridgecrest Boulevard; "out-of-work actor's illegal camp," ca. 1925 (Skinner 2000/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-000699	None	H	Cabin site	Not evaluated	Matt Davis' Cabin Site; early 1930s; demolished 1950s; 75 feet southeast of the stage of Mountain Theater (Skinner 2000/form).
P-21-000700	None	H	Rock structure	Not evaluated	The "Throne" located north of Ridgecrest Blvd, west of Simmons Trail at top of ridge; dry laid stacked rock; 1950s or earlier (Skinner 2000/form).
P-21-000703	None	H	Historic camp	Not evaluated	The Music Camp; north of Barth's Retreat and Laurel Dell Fire Road between Swede George Creek and its West Fork; ca. 1945 (Skinner 2000/form).
P-21-000704	None	H	Historic camp	Not evaluated	Karpi's Camp; south of West Peak and Ridgecrest Boulevard above Rock Springs Trail in a gully of Spike Buck Creek; established 1915-16 (Skinner 2000/form).
P-21-000705	None	H	Historic camp	Not evaluated	Camp Hogan/ Hogan Tree; near Kent Trail and Stocking Trail (Skinner 2000/form).
P-21-000706	None	H	Historic camp	Not evaluated	The Nudist Nest; near the intersection of Rocky Ridge Road and the Rocky Ridge Fire Trail; in operation 1929-32 and perhaps into the 1960s (Skinner 2000/form).
P-21-000707	None	H	Tree/orchard	Not evaluated	The Bunny Tree; located about 0.35 miles north of six points on the Yolanda Trail; likened to roadside shrines/memorials (Skinner 2000/form).
P-21-000708	None	H	Footbridge and lake	Not evaluated	Ted Cooper's Bridge and Lake; on the Upper Berry Trail north of Rifle Camp; original footbridge 1928, rebuilt several times; lake/pool is upstream ca. 30 yards (Skinner 2000/form).
P-21-000709	None	H	Airplane crash site	Not evaluated	Double Bow Knot Crash; The Telephone Trail Crash; just east of Cascade Creek northwesterly of Double Bowknot; November 30, 1944 crash site of the PBM-5 Bu# 45415 (Skinner 2000/form).
P-21-000710	None	H	Commemorative plaque	Not evaluated	Aviation Plaque; below the summit of West Peak on Mount Tamalpais approximately 100 feet west from the door of the Marin County Fire Department Gardner Fire Lookout; installed in 1915 (Skinner 2000/form).
P-21-000711	None	H	Mine	Not evaluated	East Peak Gold Mine; located just west of the East Fork of Lagunitas Creek; probably worked prior to 1896, possibly no earlier than 1885 (Skinner 2000/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-000712	None	H	Historic camp	Not evaluated	Camp Eckert; late 1800s; more than one possible location; below Eldridge Road and Austin Spring; west of the East Fork of Lagunitas Creek, south of Indian Fire Road and east and north of Eldridge Grade; possible reuse of a Chinese railroad construction camp (1884-85) (Skinner 2000/form).
P-21-000713	None	H	Historic camp	Not evaluated	Camp Tucker; before 1900; located 0.25 miles from the Eldridge Grade Road, on a faint trail ca. 100–300 yards beyond the creek; possible reused logging camp (Skinner 2000/form).
P-21-000714	None	H	Cabin site	Not evaluated	Bill Williams Cabin Site; situated west of the foot bridge on Bill Williams Trail; site includes rock foundation, bricks, a small fireplace, a shovel head, part of cast iron stove, timber (Skinner 2000/form).
P-21-000715	None	H	Historic camp	Not evaluated	Kisban Hermitage; camp situated north of Lakeview Road (unpaved, earth) on the east side of Lagunitas Fire Road (trail) on the south side of the faint trail to Redwood Springs; ca. 1956–76 (Skinner 2000/form)
P-21-000716	None	H	Scenic spot	Not evaluated	Redwood Spring; a scenic spot on the north side of Mount Tamalpais almost at the summit of East Peak (Skinner 2000/form).
P-21-000717	None	H	Mine	Not evaluated	The Lost Tourmaline Mine; behind a rock on the Wheeler Trail approximately 0.25 mile north of the Eldridge Grade Road intersection, and then about 60 yards northwesterly (Skinner 2000/form)
P-21-000718	None	H	WWII defense	Not evaluated	World War II Radar Station site/Communications Point; on the east side of Ridgecrest Highway between Rock Spring (1.3 miles distant) and the Laurel Dell Fire Road; vacated by 1944 (Skinner 2000/form). Possibly outside of MMWD lands.
P-21-000719	None	H	Tree/orchard	Not evaluated	The Four Tree Tree; located in the West Fork of Swede George Creek (but mapped east of the West Fork), north of Laurel Dell Road and below the High Marsh Trail; an unusual redwood with four trunks high up (Skinner 2000/form).
P-21-000720	None	H	Historic camp	Not evaluated	Camp Norge; located south of Barth's Retreat and west of Simmons Trail just north of Buck Meadows; milled lumber, camping gear, and kitchen items were noted; date of occupation unknown (Skinner 2000/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-000721	None	H	Tree/orchard	Not evaluated	The Anchor Tree; located in the East Fork of Cataract Creek below the High Marsh Trail east of the Laurel Dell Fire Road junction; a Douglas fir (<i>Pseudotsuga taxifolia</i>) subject to a trauma resulting in old and new trunks (Skinner 2000/form).
P-21-000722	None	H	Cabin site	Not evaluated	Swede George Cabin Site; located near the southwestern edge of Alpine Lake, on the west side of Swede George Creek; ca. 1860–1880; building debris (Skinner 2000/form)
P-21-000723	None	H	Cabin site	Not evaluated	Blake Canyon Cabin Site; east side of Blake Canyon drainage approximately 70–80 yards to a skid road; probably before 1900; unknown occupant; collapsed stone fireplace, bricks (Skinner 2000/form).
P-21-000724	None	H	Historic camp	Not evaluated	Big Trees Camp site; situated on Little Carson Creek near the Alpine-Kent Pump Road; originally Camp Reposo, then "taken over" by the Lagunitas Rod and Gun Club; one of the largest known hunting camps in Marin County; dismantled in the 1970s (Skinner 2000/form).
P-21-000725	None	H	Historic camp	Not evaluated	Camp Mason; located ca. 1.0 mile below Alpine Dam on the south side of Alpine-Kent Pump Road, 0.6 miles from the gate at Alpine Dam; ca. 1880s (Skinner 2000/form).
P-21-000726	None	H	Historic camp	Not evaluated	Camp Mailliard; north of Pine Mountain Road and north/northwest of Pine Mountain on the east side of Big Carson Creek and a trail; hunting camp established sometime between 1873 and 1896; burned ca. 1945; in use until 1976; most features/artifacts from 1960s (Skinner 2000/form).
P-21-000727	None	H	Cabin site	Not evaluated	Has Brouck cabin site; on the east side of Ridgecrest Highway/Bolinas Ridge Fire Road ca. 0.25 miles north of the Fairfax-Bolinas Road; foundations and dump (Skinner 2000/form).
P-21-002535	CA-MRN-654H	H	Rock structure	Not evaluated	San Geronimo Ridge Rock Enclosure; San Geronimo Ridge on the south side of unpaved Mountain Truck Road; loosely stacked, 2-foot high rock and boulder enclosure with lumber fragments and wire-cut nails (Rich 2001/form).

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
P-21-002573	None	H	Water tank	Not evaluated	RCMMWD-1H, a wooden water tank located on the southwest side of the west fork of Fern Creek just downslope of the east side of an old railroad grade; with outflow and inflow pipes (Cannon 2004/form).
P-21-002683	None	H	Dam	Does not appear to be eligible; should be reevaluated	Peters Dam is located on Upper Peters Dam Road at the far northwestern edge of Kent Lake formed by the damming of Lagunitas Creek; construction in 1953-54 (Koenig 2010/form).
P-21-002890	None	H	Historic Architecture	Not considered eligible	Mt. Tamalpais State Park Building Visitor Center - a repurposed comfort station
No Number	None	H	Historic camp	Not evaluated	Extra Hidden Lake, Pig Pond; south of Van Wyck Creek and 0.25 miles west of Hidden Lake and 0.5 miles southeast of the Kent Trail; possibly a logging camp from the late 1800s (Warner 2012/form).
Origer #8 (see P-21-000550 for alternate location)	CA-MRN-497 location uncertain	P	Unknown	Not evaluated	Alternative location for P-21-000550; Rock Springs; located north of Ridgecrest Blvd, near P-21-000445 and Origer #20.
Origer #11B	Not recorded	H	Planing Mill	Not evaluated	Bolinas Ridge Planing Mill on Bolinas Ridge at Shafter Grade; Same location as P-21-000612 (prehistoric), extending to the south; archival research, not located in field
Origer #12	Not recorded	H	Cabin site	Not evaluated	Bolinas Ridge Cabin; on Bolinas Ridge, ca. 2.15 miles north of the intersection of Bolinas-Fairfax Road and Ridgecrest Boulevard; archival research, not located in field.
Origer #13	Not recorded	H	Historic camp	Not evaluated	Big Trees Camp, Liberty Ranch; mapped location is in Alpine Lake, ca. 0.7 miles west of Bon Tempe Dam; archival research, not located in field.
Origer #14	Not recorded	H	Cabin site	Not evaluated	McDuff Cabin Site; mapped location is at the north end of Bon Tempe Dam; archival research, not located in field.
Origer #15	Not recorded	H	Cabin site	Not evaluated	Widow King Cabin Site; mapped location is in Bon Tempe Lake, ca. 0.5 miles southeast of Bon Tempe Dam, just off the shore; archival research, not located in field.
Origer #20	Not recorded	P?	Unknown	Not evaluated	Rock Spring; ca. 400 feet northeast of P-21-000445 and the intersection of Ridgecrest Blvd and Pan Toll Road; archival research, not located in field.

Cultural Resources Memorandum

TABLE 5, con't
Recorded Cultural Resources - By Administrative Unit

Primary Site No.	Trinomial	P/H	Site Type	CRHR Status	Description
Mt. Tamalpais Watershed, con't					
Origer #21	Not recorded	H	Road	Not evaluated	State Road to Stinson Beach; the Stagecoach Fire Road; runs from West Point Inn to Panoramic Highway at Pan Toll Road.
Origer #25	Not recorded	H	Road	Not evaluated	Eldridge Grade Stage Road; mapped section runs from of Mount Tamalpais summit to east of Pilot Knob near Lake Lagunitas.
None	Not recorded	H	Cold War era defense radar station	Not evaluated	Mill Valley Air Force Station; potential site; in use from WWII through 1980; construction 1951–53; operations area, administrative and housing area with recreational facilities.
Soulajule Reservoir Lands					
No Resources					
Nicasio Reservoir Lands					
P-21-000307	CA-MRN-329	P	Cupules with lithic scatter	Not evaluated	Almost Lost It and/or Rock #2; a cupule on a large outcrop of sandstone with chert, basalt, and obsidian, and a tool on a knoll located west of Nicasio Road (Fenenga 1949/form; Heizer 1949/form; Miller and Whitson 1976/form).
P-21-000308	CA-MRN-330	P	Lithic scatter	Not evaluated	None B; a 7,500 square yard area (300 yards by 25 yards) with scattered tools—obsidian point, chert scrapers—observed along the first bench above Nicasio Creek (Fenenga 1949/form).
P-21-000309	CA-MRN-331	P	Midden	Not evaluated	"Black stony mound soil" ca. 100 feet in diameter and 24 inches high; to the east of a road on the northern outskirts of Nicasio; no artifacts (Heizer 1949/form). Possibly outside of MMWD lands.
P-21-000372	CA-MRN-409	P	Habitation site	Not evaluated	Habitation site along north side of Nicasio Creek, obsidian and chert flakes (Jackson 1972/form).
P-21-000373	CA-MRN-410	P	Temporary camp	Not evaluated	Temporary campsite with midden exposed in the north bank of Nicasio Creek, inundated since 1962 (Jackson and Chavez 1972/form).
P-21-000406	CA-MRN-451	P	Cupules with lithic scatter	Not evaluated	Almost Lost it; Rock #1; at least 20 small cupules, dark brown midden, chert, quartz, obsidian, and basalt tools; cupules possibly originally recorded as CA-MRN-432 (Miller and Whitson 1976/form).
P-21-000417	CA-MRN-463	P	Quarry/rock source with debitage	Not evaluated	Joe's Quarry; a single large chert rock with red brown cores, choppers, and waste flakes also noted (Whitson 1976/form).
P-21-000654	CA-MRN-408	P	Habitation site	Not evaluated	Small habitation site just north of the "new school in Nicasio" with chert and obsidian flakes and flake tools (Jackson 1972/form).

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ETHNOGRAPHIC RESOURCES

No known ethnographic, traditional or contemporary Native American use areas and/or other features of cultural significance have been identified in or adjacent to the project.

HISTORIC ERA RESOURCES

No known Hispanic Era dwellings, other structures, features, etc. have been reported in or adjacent to the three administrative units. Sixty-one (61) historic period (American Era) resources have been recorded within or adjacent to the Mt. Tamalpais Watershed (see Table 5).

LISTED AND/OR KNOWN HISTORIC PROPERTIES/LANDSCAPES/PARKS

Most of the recorded sites within the three watersheds have not been formally evaluated for inclusion on the California Register of Historical Resources (CRHR) (see Table 5).

Only one resource appears to have been formally evaluated although several recorded sites appear to be eligible based on initial observations. With the exception of Peters Dam, none of the components of the *Marin Municipal Water District* have been formally recorded or evaluated as a water system for inclusion on the CRHR or the National Register of Historic Places (NRHP).

A portion of the Golden Gate National Recreation Area (GGNRA), the Mount Tamalpais special use zone, is located in the Mt. Tamalpais Watershed. Bolinas Ridge adjacent to the Mt. Tamalpais Watershed forms the western boundary of the GGNRA. The GGNRA was established by Congress in 1972 to ". . . preserve for public use and enjoyment certain areas . . . possessing outstanding natural, historic, scenic, and recreational values, ..." (USNPS/GGNRA 1993:2). The GGNRA cultural overview does not include the archaeological resources within the state park and associated coastal game reserve (Kelly 1976;USNPS 1980:148) although the document notes that 10 structures in the Mount Tamalpais special use zone were to be preserved and include nine fire control stations and a radar set [possible P-21-000718].

Mount Tamalpais State Park is within the Mt. Tamalpais Watershed.

No listed, determined eligible, or potentially eligible historic properties for inclusion on the NRHP and/or CRHR have been identified in the Nicasio Reservoir Lands or the Soulajule Reservoir.

ARCHAEOLOGICAL SENSITIVITY

The cultural resource sensitivity of the three administrative units cannot be accurately determined using the available data. Previous qualitative studies for the Mt. Tamalpais Watershed used a crude site locational model linked to variables such as elevation, topography and distance to water and the presence/absence of recorded cultural resources to develop a tentative sensitivity overlay (see Beard and Origer 1995). The model is skewed as large portions of the administrative units have not been subject to systematic inventory due to the rugged terrain with the majority of the inventories completed in relatively accessible areas used during the historic era.

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IMPACT ASSESSMENT METHODOLOGY

PRC *Section 21084.1* stipulates that any resource listed in, or eligible for listing in, the CRHR is presumed to be historically or culturally significant. PRC *Section 21083.2* stipulates that a project that may adversely affect a unique archaeological resource requires the lead agency to treat that effect as a significant environmental effect. When an archaeological resource is listed in or is eligible to be listed in the CRHR, PRC *Section 21084.1* requires that any substantial adverse effect (*emphasis added*) to that resource be considered a significant environmental effect. PRC *Sections 21083.2* and *21084.1* operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Guidance for evaluating significance thresholds is based on the CEQA Environmental Checklist (CEQA Guidelines Appendix G). Using these guidelines, the proposed project actions would result in a significant impact if it would:

- Cause a substantial adverse change in the significance of historical resources as defined in §15064.5
- Cause a substantial adverse change in the significance of archeological resources pursuant to §15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

Vegetation Management Protocols

The main objectives of the BFFIP are to reduce fire hazards through the construction of 185 acres of new fuelbreak and the maintenance of existing fuelbreaks; and, implement biodiversity protection through vegetation management including weed control and restoration of native vegetation.

The MMWD plans to use various combinations of manual and mechanical techniques and prescribed burning to create fuelbreaks and defensible spaces depending on vegetation type (e.g., grasslands, shrublands, woodlands and forests). Vegetation management will also include weed control and utilize manual and mechanical techniques, prescribed burning, and formulated organic herbicides (FOH) or conventional herbicides for existing fuelbreak maintenance and defensible spaces.

The creation of fuelbreaks and defensible spaces will utilize hand or hand-operated power tools, such as chain saws and brush cutters and mowers mounted on heavy equipment. Disposal of the cut material would be performed by chipping, pile burning, or scattering. Prescribed burning would include broadcast burning, pile burning, hedgerow burning, of areas such as closed canopy forest, grassland, wide area fuelbreaks, and of piled slash in shrublands.

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Vegetation management of existing features is divided into three categories: areas greater than five acres; small-scale; and, site specific each with appropriate protocols. Proposed protocols include:

- prescribed burning
- cutting or mowing with heavy equipment;
- pulling large plants with heavy equipment;
- pulling plants by hand or with a non-powered tool;
- propane torch flaming of seedlings;
- scalping seedlings;
- cutting with loppers;
- competitive planting;
- scalping with heavy equipment;
- cutting plants below the surface;
- cutting and peeling bark of plants;
- mulching;
- solarization; and,
- animal grazing.

Impacts

Many of the control protocols associated with the proposed actions may: (1) directly or indirectly affect cultural resource sites/districts that may be eligible for inclusion on the CRHR by altering the landscape in which they are located; (2) directly or indirectly affect cultural resources that may not be identified prior to project implementation; and, (3) may directly or indirectly affect Native American culturally significant sites by altering the landscape in which they are located. Only one historic resource of the 75 formally recorded or identified resources present within the three administrative units appears to have been formally evaluated although several sites appear to be eligible.

The short and long-term future desired condition of both prehistoric and historic archaeological sites and culturally significant sites is preservation of elements and data that make a site eligible for the CRHR and management to insure conservation for both scientific and cultural values.

CEQA Guidelines (Appendix G) for evaluating significance thresholds define a significant impact as one that may cause a substantial adverse change or result in the destruction of a cultural resource. Impacts are considered adverse when the proposed action(s) diminish the integrity of a property's location, setting, materials, workmanship, feeling, or association. The following table assigns an "action classification" linked to the potential for affecting resource significance, provides a change level for the resource and then provides a qualitative determination of the change that could occur. For example, mowing to a height of four inches in an area may be classified as a negligible or minor action that would result in no change or no significant change to a known resource.

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TABLE 6
Action Classification, Level of Significance, Change and Determination of Change

Action Classification	Level of Significance	Change	Determination of Change
Negligible	None or barely measurable	Neither beneficial or significant	No change
Minor	Measurable, slight and localized	Neither beneficial or significant	No significant change
Moderate	Measurable, changes one or more character defining features	May be beneficial or significant	No significant change if beneficial Significant adverse change if not beneficial
Major	Substantial, changes to one or more character defining features are permanent	Significant	Significant adverse change

It is probable that the recorded resources have been impacted to some degree by past and present activities. These include past wild fires and fire suppression, livestock grazing, previous timber harvesting and other land management activities including water control and transmission infrastructure and the inundation of resources, recreational activities and the installation of firebreaks and defensible spaces. Natural processes such as flooding, weathering, or erosion may have significantly affected and continue to affect both prehistoric and historic features, especially those of the built environment and may contribute to the destruction of a resource's integrity and eligibility for inclusion on the CRHR. Non-active management of historic sites may result in neglect and the deterioration of buildings and other structures that can help to identify and define site history and significance.

It is difficult to state definitively what level of impacts can be expected at any site within a proposed treatment area since each site is unique and possesses its own set of characteristics that may make it a significant resource. Of particular concern is that nearly all of the resources have not been formally evaluated and/or field reviewed to determine their current location and status. The proposed management and control actions including prescribed burning, removal via equipment and herbicides, among others all possess the potential to change the known cultural resources.

TABLE 7
Actions, Impact Classification and Determination of Change

Action	Potential Equipment	Classification	Determination of Change
Prescribed burning	Fire suppression equipment Ignition equipment (e.g., drip torch) Support Vehicles	Major	Significant adverse change within or 50 feet from recorded resource except for use within existing roads and historic railroad grades
Pulling large plants with heavy equipment	Backhoe/excavator Truck	Moderate/Major	Significant adverse change within or 50 feet from recorded resource except for use within existing roads and historic railroad grades
Scalping with heavy equipment	Backhoe Two trucks	Moderate/Major	Significant adverse change within or 50 feet from recorded resource except for use within existing roads and historic railroad grades

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TABLE 7, con't
Actions, Impact Classification and Determination of Change

Action	Potential Equipment	Classification	Determination of Change
Cutting or mowing with heavy equipment	Mower/excavator/chipper One to two vehicles	Minor	No significant change if used outside recorded resource boundary
Cutting plants with powered hand equipment	Powered brush cutter Chainsaw Support Vehicles	Minor	No significant change outside area of recorded resource. No change for actions within former roads and/or historic railroad grades
Pulling plants by hand or with a non-powered tool	Weed wrench Small hand tools Support Vehicles or Weed wrench Small hand tools 10 to 20 cars Two trucks	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Propane torch flaming of seedlings	Propane Torch kit Fire suppression equipment — extinguisher, shovel, occasionally a type III engine with 50 gallons of water Support Vehicle	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Scalping seedlings	Shovel Hula hoe McLeod tool Power brush cutter Truck or van	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Cutting with loppers	Loppers Truck or van	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Competitive planting	Mulch Native seeds/plants Shovels Trowels Support vehicles Or 5 to 40 cars 2 Trucks	Minor/Moderate	No significant change if no parking within recorded site boundaries Action has no significant change if native plantings are similar to species present prior to weed infestation. Removal of invasive species may have minor to major impact.
Cutting plants below the soil surface	Chainsaw Pole saw Truck or van	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Cutting and peeling bark of plants	Chainsaw Saw Truck or van	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Mulching	Mulch, corrugated sheet mulch, landscape fabric Hand tools for adult plant removal Support vehicles	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades
Solarization	Plastic tarp Rakes Water Support vehicle	Minor	No significant change if no parking within recorded site boundaries. No change for actions within former roads and/or historic railroad grades

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TABLE 7, con't
Actions, Impact Classification and Determination of Change

Action	Potential Equipment	Classification	Determination of Change
Animal grazing	Goats/cattle Herding dogs Livestock hauler (big rig) Water station—tank, dispenser Temporary fencing with electrical supply Trailer/camper (on-site housing for herder) Plastic tarp (tree protection for sensitive species) Supplemental feed Hay	Minor	No significant change if no grazing operations including animals allowed within recorded site boundaries. No change for actions within former roads and/or historic railroad grades

IMPACTS OF PROGRAM AND MITIGATION MEASURES

IMPACT CUL-1 - Cause a Substantial Adverse Change in the Significance of a Historical or Archaeological Resource as Defined in Section 15064.5

A cultural resources review of the three administrative units has demonstrated that Mount Tamalpais Watershed and Nicasio Reservoir contain sensitive prehistoric and historical archaeological resources, culturally significant sites and elements of the built environment. Seventy-five (75) formally recorded or identified resources are known (61 historic sites, 13 prehistoric sites, 1 prehistoric/historic site). Only one resource appears to have been formally evaluated although several sites appear to be eligible based on initial recordation observations.

Sixty-one (61) historic period (American Era) resources have been recorded within or adjacent to the Mt. Tamalpais Watershed. No historic period resources have been recorded within the Nicasio and Soulajule reservoir lands. Sixty of the recorded historic resources have not been formally evaluated and the single built environment structure, Peters Dam across Lagunitas Creek at Kent Lake, requires further evaluation since it is now over 50 years in age.

The historic resources are generally associated with historic and recent activities focused on resource exploitation (e.g., mine, logging camps, a planing mill), water control infrastructure (e.g., dam, water tank), habitation (e.g., depression-era camps, cabin sites), transportation (e.g., railroad grade, historic roads, toll house) and recreation (e.g., lodge, campgrounds, scenic spot, tavern) among others. Recent historic resources include two airplane crash locations, a commemorative plaque installed in 1915 for aviators who lost their lives in the new science of aviation, and World War II/Cold War military installations.

Thirteen (13) prehistoric sites and one (1) combined prehistoric/historic site are present in two of the three administrative units. The prehistoric sites appear to be small, task-specific locales associated with water and nearby raw material sources or on the ridgetops adjacent to potential trails between the interior and coast. Several habitation sites and a site with midden (culturally affected soil indicative of occupation) have been recorded but no long-term occupation sites are known. None of the ethnographic Native American villages associated with the Coast Miwok are within the administrative units.

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Under CEQA, a project may cause a substantial adverse change in the significance of a historical or archaeological resource through demolition, destruction, relocation, or alteration of a resource or its immediate surroundings. Changes are considered adverse when the proposed action(s) diminish the integrity of a property's location, setting, materials, workmanship, feeling, or association.

Many of the control protocols associated with the proposed management actions for: (1) fuelbreak and defensible space construction and maintenance; (2) weed control; and, (3) restoration and other activities may directly or indirectly affect cultural resource sites/districts that may be eligible for inclusion on the CRHR by altering the landscape in which they are located and/or directly or indirectly affect cultural resources that may not be identified prior to project implementation. In particular, prescribed burning and use of heavy equipment have a high potential to cause substantial adverse changes to cultural resources (see Table 7).

The short and long-term future desired condition of both prehistoric and historic archaeological sites and other culturally significant resources is preservation of elements and data that make a site eligible for the CRHR.

Proposed vegetation management may result in the following impacts:

Hand Labor - minor pruning, mulch and plastic covers, pulling weeds by hand, and shrub removal - generally low risk impacts to cultural resources. Medium-to-large-shrub removal could result in substantial removal and/or disturbance of subsurface soil and the disturbance of intact archaeological deposits.

Mechanical Treatment - generally grading, mowing, overstory removal, use of landings, yarding, mechanical cutting, and mulching or chipping - often use large tracked equipment that require site preparation in operating areas and/or access corridors. As a consequence, impacts to archaeological sites are high in areas where landings and/or roads are employed.

Prescribed Burning - burning of larger areas (broadcast burning) or piles of cut brush (pile burning) by hand ignition result in little-to-no risk ground disturbance. Buildings or structures obscured by vegetation would be impacted - destroyed and/or partially destroyed. The structural and geochemical characteristics of some types of prehistoric artifacts could also be altered, thus affecting their information potential. Note Native Americans employed fire as a landscape management tool during the late prehistoric and early historic period and appears to have been linked to "enhancing the growth and diversity of economically important plant and animal resources" (e.g., Lightfoot and Parrish 2009:94, 99).

Grazing - an option primarily within area of grasslands or shrublands that appears to have a low risk of ground disturbance except for cattle wallows, the creation of trails and stock watering areas which generally result in soil compaction and erosion. These actions could impact both surface and subsurface archaeological deposits. In addition, the introduction of livestock could result in impacts to the historic built environment through adaptive "reuse" of buildings either deliberate or inadvertent animal shelter and damage to any associated historic landscaping.

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Recommendation CUL-1a: Cultural Resources Training

All employees and subcontractors shall receive adequate cultural resource training prior to working on BFFIP projects. The training shall address appropriate work practices necessary to effectively implement the mitigation measures, for historical resources, archaeological resources, tribal cultural resources, and human remains. The training shall address the potential for exposing subsurface resources, basic signs of a potential resource, and required procedures if a potential resource is identified and all procedures required under Health and Safety Code § 7050.5 and PRC §§ 5097.94, 5097.98, and 5097.99 for the discovery of human remains.

Recommendation CUL-1b: Known Cultural Resources

The District shall maintain a confidential GIS database of all survey areas and discovered historic and archaeological resources in the BFFIP area. Prior to conducting any work under MA-21, MA-23, MA-24, MA-26, or if heavy equipment would be used for MA-22, the work areas shall be compared against the GIS data to determine if the area has been previously surveyed and if it has been surveyed, if any historic or archaeological resources are found in the work area. Any resources that have not been evaluated shall be assumed eligible for listing in the CRHR and assumed significant.

If the GIS data shows that the areas have not been previously surveyed a pre-activity cultural resources survey shall be conducted by a qualified archaeologist or cultural resources specialist in accordance with industry standards, prior to performing work. If a resource is identified during the pre-activity surveys, it shall be handled as described here.

If historic or archaeological resources are located in the work area (either as identified in previous surveys or pre-activity surveys), the area around the resource, plus a 50-foot buffer shall be avoided. For resources that are not readily evident in the field, the boundaries around the resource shall be temporarily such as with fencing or flagging. If work must commence in the sensitive area, it can only be performed using hand tools or hand powered tools, cannot include ground disturbance below the topsoil layer, and can only be accessed on foot. Alternatively, the resource can be evaluated for eligibility for the CRHR. If found ineligible, work could proceed as normal. If found eligible, impacts to the resource must be avoided (through total avoidance of the area, or through use of hand methods only in the area of the resource, as described here). After work is completed, all cultural resource delineators (flags, fencing) shall be removed in order to avoid potential vandalism, unauthorized excavation(s), etc.

For pile burning, which can occur for any management action, prior to stashing slash for pile burning, the areas where piles are proposed for location shall be examined by the workers creating the piles to ensure that no resources are located on the ground surface under the piles. All workers shall be trained in the identification of cultural resources. If a potential resource is identified, piles for burning shall be moved to avoid the resource(s).

Recommendation CUL-1c: Previously Unidentified Cultural Resources

In the event that a previously unidentified cultural resource is discovered during implementation of an activity all work within 165 feet (50 meters) of the discovery shall be halted. The resource shall be located, identified, and recorded in the District's cultural resources GIS identified in

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Recommendation CUL-1b.

A qualified cultural resource specialist/archaeologist shall inspect the discovery and determine whether further investigation is required. If the discovery can be avoided and no further impacts will occur, the resource shall be documented on California State Department of Parks and Recreation cultural resource record forms and no further effort shall be required. If the resource cannot be avoided and may be subject to further impact, the cultural resource specialist/archaeologist shall evaluate the resource and determine whether it is:

- Eligible for the CRHR (and a historical resource for purposes of CEQA),
- A unique archaeological resource as defined by CEQA, or
- A tribal cultural resource.

If the cultural resources specialist/archaeologist determines that the resource could be a tribal cultural resource, he or she shall, within 48 hours of the discovery, notify each Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the project site of the discovery. If the resource is determined to be neither a unique archaeological, an historical resource, or tribal cultural resource, work may commence in the area.

If the resource meets the criteria for either a historical resource, unique archaeological resource, or tribal cultural resource work shall remain halted, and the cultural resources specialist/archaeologist shall consult with the District staff regarding methods to ensure that no substantial adverse change would occur to the significance of the resource pursuant to CEQA Guidelines Section 15064.5(b). The responding tribes shall be given an opportunity to participate in determining the appropriate mitigation methods for tribal cultural resources in consultation with the District.

Avoidance of the area, or avoidance of impacts to the resource, is the preferred method of mitigation for impacts to cultural resources and shall be required unless there are other equally effective methods. Other methods to be considered shall include evaluation, collection, recordation, and analysis of any significant cultural materials in accordance with a Cultural Resources Management Plan prepared by the qualified cultural resource specialist/archaeologist. The methods and results of evaluation or data recovery work at an archaeological find shall be documented in a professional level technical report to be filed with California Historical Resources Information System (CHRIS).

Work may commence upon completion of treatment, as approved by the qualified archeologist.

IMPACT CUL-2 - Disturb any Human Remains, Including those Interred Outside of Formal Cemeteries

The archival review identified one prehistoric resource with potential human remains (MRN-496/P-21-000445). No other archaeological resources with human remains are known. Several vegetation management methods may directly disturb human remains, particularly removal of vegetation and use of heavy equipment.

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Recommendation CUL-2: Human Remains

The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the proposed project area shall comply with applicable state laws.

- If human remains are at any time noted during activities around MRN-496/P-21-000445 or in the plan area, work within 100 feet of the discovery. The professional archaeologist and the District shall notify the Marin County Coroner's office as prescribed in Public Resources Code §5097.98 and Health and Safety Code §7050.5.
- In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission is required, who shall appoint a Most Likely Descendant (MLD) (PRC §5097.98).
- The human remains shall be protected until a decision is reached on the final disposition of the remains.
- The District, the professional archaeologist, and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. If the MLD and the other parties do not agree on the disposition of the remains, the reburial method will follow PRC §5097.98(b) which states that:

. . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.

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Abbreviations

n.d. no date v.d. various dates N.P. no publisher noted
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APPENDIX G

Cultural Resources Supporting Information

Cultural Resources Memo

Paleontological Resources Memo

Memorandum

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September 6, 2017

Subject: Potential impact on paleontological resources in the Biodiversity, Fire, and Fuels Integrated Plan of the Marin Municipal Water District.

Ms. Gilleran, I am pleased to present this memorandum of my review and recommendations for the possible paleontological impacts of the Biodiversity, Fire, and Fuels Integrated Plan of the Marin Municipal Water District.

Introduction

This memorandum was prepared to review the potential for impacting paleontological resources in the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP, or Plan) of the Marin Municipal Water District (MMWD, or district).

This memorandum summarizes the results of a search of online database of paleontological repositories and available geologic maps and literature for the proposed project area. The project areas are found on the Bolinas, San Rafael, Point Reyes NE, Petaluma, Inverness and San Geronimo USGS quadrangles.

This memorandum was prepared to conform to or exceed CEQA (California Environmental Quality Act) environmental mitigation requirements and the Society of Vertebrate Paleontologist *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines* (2010), here after referred to as the SVP Guidelines.

CEQA call for the protection of paleontological resources specifically in Section V(c) of Appendix G, the "Environmental Checklist Form". The SVP guidelines characterize geologic

units as having a: high, undetermined, low or no potential for containing significant paleontological resources. Low potential is defined by the SVP as:

Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.

Rocks with no potential are defined by the SVP as:

Some rock units have no potential to contain significant paleontological resources, for instance high- grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

A significant paleontological resource is defined as:

fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i. e., older than about 5,000 radiocarbon years).

The SVP guidelines states that specific mitigation measures generally need not be developed for areas of no or low paleontological potential.

Project Description

The purpose of the BFFIP is to define and guide the methods to minimize the risk from wildfires while simultaneously preserving and enhancing existing significant biological resources. This work will take place around three separate reservoirs watersheds in Marin County listed from north to south they are:

- Soulajule
- Nicasio
- Mt. Tamalpais

The physical actions related to vegetation management include fuelbreak construction and maintenance, weed control, and habitat restoration, which include improvements to forest stand structure, improvements to grasslands and oak woodlands, re-introduction of special-status species, and meadow restoration (Panorama, 2016). These actions have the

potential for grounds disturbance and may impact paleontological resources (if present) in the area.

Regional Geology

Metamorphic rocks of the Franciscan Complex underlie most of Marin County east of the San Andreas Fault. Much of the Franciscan Complex in the area is called the Central terrane (Blake and others, 1982, 1984). The Central terrane or Melange is composed of sheared mudstone (argillite) and sandstones, within which blocks and slabs of greenstone, chert, metamorphic rocks, serpentinite, and other rocks are present. Other mapped rock types of the Franciscan Complex in the project area include:

- greenstone (Jurassic)
- graywacke (Cenomanian or late Albian)
- sandstone and shale (late Cretaceous)
- Coast Range ophiolite, serpentinite (Late and Middle Jurassic)
- Chert (Cretaceous and Jurassic)
- Gneiss (Jurassic)

Surficial deposits composed of Quaternary deposits are also present in the watersheds of the project reservoirs. The Quaternary deposits are composed of landslide deposits and Pleistocene and Holocene alluvium. The Pleistocene alluvium makes up a very small percentage of the geologic units present but is the most likely to contain paleontological resource of interest.

Regional Paleontology

Paleontology in Marin County is well documented. Most of the vertebrate paleontology is found to the west of the San Andreas Fault and in the northern most portions of the county, well outside of the project areas. The described paleontological resources in the project areas are invertebrates.

Methods

Data sources

A review of relevant literature, maps and databases was undertaken to determine the likelihood of encountering paleontological resources. Most of the maps are geologic maps and are used in conjunction with other data sources to assess the potential for paleontological finds. Reports and papers may or may not contain accurate maps of paleontological finds. Databases usually do not give the location with greater accuracy than county but may name the containing geologic unit names.

Geologic Maps

The following geologic maps were used in this study:

- Geologic Map of the Petaluma 7.5' Quadrangle Sonoma And Marin Counties, California: A digital database version 1.0. Wagner and others, 2002
- Geologic map and map database of parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma counties, California, Blake and others, 2000.
- Map Showing the Distribution of Potassium Feldspar and Fossils in Mesozoic rocks of Marin and San Francisco counties, and parts of Alameda, Contra Costa, and Sonoma counties, California, Wright, 1974.
- Geologic map of the San Francisco Bay Region, Graymer and others, 2006.

Databases

The following Databases were accessed and searched:

- University of California Museum of Paleontology Database (Accessed 9-1-17).
- California Academy of Sciences, Institute for Biodiversity Science and Sustainability, invertebrate zoology and geology, Fossil Collection Database (Accessed 9-1-17).

Literature

The following reports and papers were reviewed:

- Names and Definitions of the Geologic Units of California, Wilmarth, 1931.

Results

Because the Databases do not give specimen locations it was necessary to cross-reference the geologic units against other resources in order to determine if they are within the project boundaries. Some of the geologic units found in the databases were not shown or used on the geologic maps so it was necessary to locate them based on written descriptions of the locations.

Relevant Geologic Units

All of the Franciscan Complex rocks were determined to have a low or no potential.

Franciscan Complex Rocks

Geologic Unit	Potential
greenstone (Jurassic)	None
graywacke (Cenomanian or late Albian)	Low
sandstone and shale (late Cretaceous)	Low
Coast Range ophiolite, serpentinite (Late and Middle Jurassic)	None
chert	None
gneiss	none
Central Terrane/mélange	low

The landslide deposit is composed of the underlying Franciscan Complex mélange. It was established after reviewing the databases and geologic maps that the only geologic units that might contain significant paleontological finds are the Pleistocene alluvial deposits. The Pleistocene deposits are located near Alpine Lake, Lake Lagunitas (Figure 1), Nicasio (Figure 2) and Soulajule reservoirs (Figure 3) (Graymer and other 2006).

Known Paleontological Resources

Appendices A and B show the UCMP database search results Appendix C shows the results for the California Academy of Sciences database.

The only geologic units in the region that contain significant paleontological finds and lie within the project boundaries are the Pleistocene alluvium deposits. However the only known Pleistocene age vertebrate fossil are found in the San Antonio Creek water shed. San Antonio Creek is outside of all the project areas boundaries.

Potential Impacts

Given the above the Pleistocene alluvium in Alpine Lake, Lake Lagunitas and Nicasio and Soulajule reservoirs (Figures, 1, 2 and 3) are considered to have a low potential.

Conclusions

Review of Paleontology

The only geologic unit within the project boundaries that has a record of significant paleontological finds are Pleistocene alluvium deposits. These are found within the project boundaries at Alpine Lake, Lake Lagunitas and Nicasio and Soulajule reservoirs. None of the Pleistocene alluvium deposits within the project boundaries at Alpine Lake, Lake Lagunitas, Nicasio and Soulajule reservoirs have ever yielded significant paleontological finds and so are deemed to have a low potential.

Recommendations

Because of the low or no potential of the geologic units and the general shallow nature of the ground disturbing activities no mitigation activities are deemed necessary.



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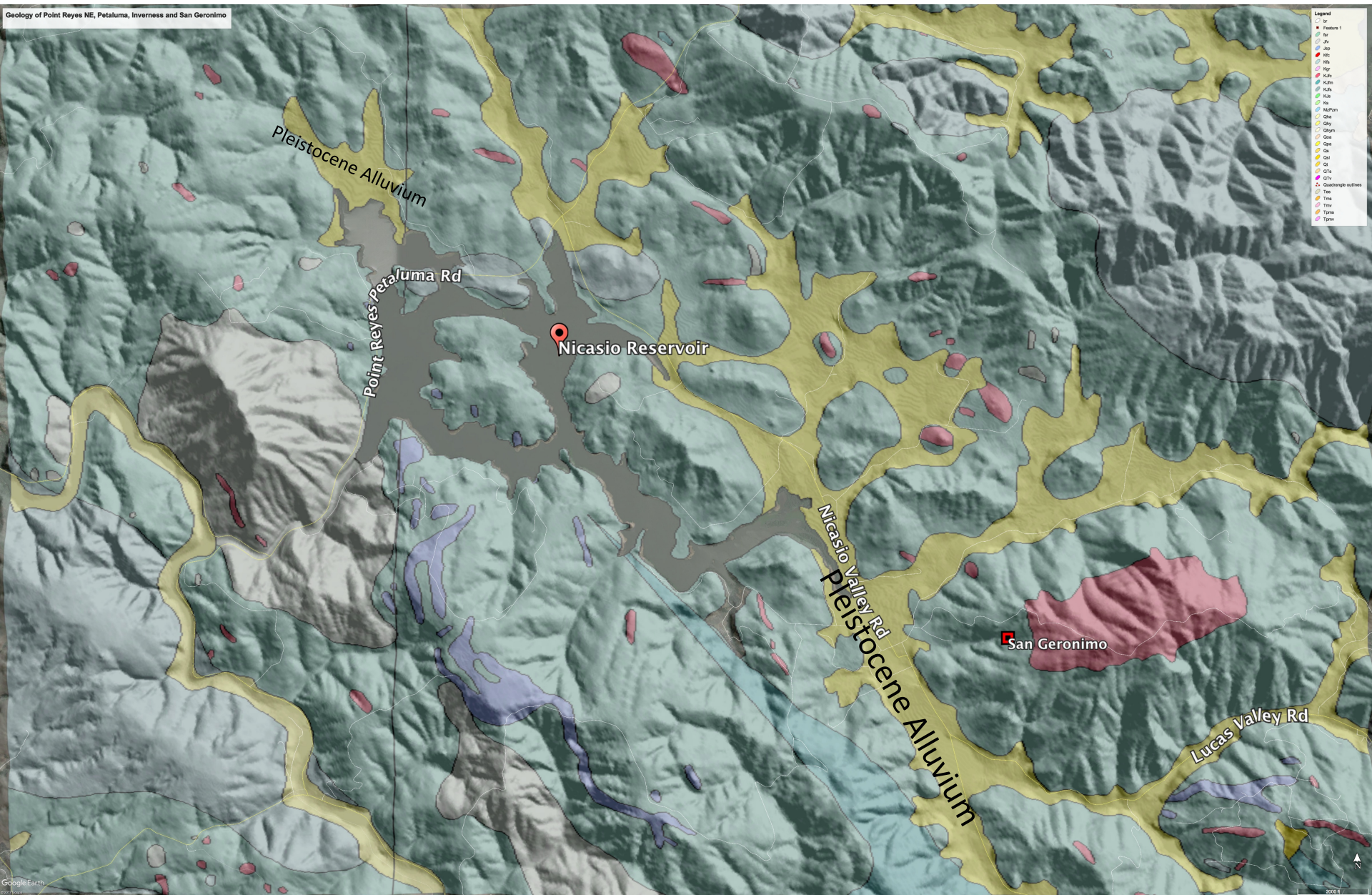




Figure 3, Soulajoule Reservoir, and Pleistocene deposits as mapped by Graymer and others 2006.

Appendix A UCMP Marin Vertebrate List.xls

specimen id	class	genus	species	other id	epoch	location name
V27132	Mammalia	Glossotherium	harlani		Pleistocene	Hamlet Station S
V29169	Mammalia	Mammuthus	primigenius		Pleistocene	San Antonio Creek
V29170	Mammalia	Mammuthus	primigenius		Pleistocene	San Antonio Creek
V29171	Mammalia	Mammuthus	primigenius		Pleistocene	San Antonio Creek
V29172	Mammalia	Mammut	americanum		Pleistocene	San Antonio Creek
V29173	Mammalia	Mammut	americanum		Pleistocene	San Antonio Creek
V29174	Mammalia	Bison			Pleistocene	San Antonio Creek
V29175	Mammalia	Mammut	americanum		Pleistocene	San Antonio Creek
V29852	Mammalia	Balaenula			Miocene	Drakes Estero 1
V29853	Mammalia				Miocene	Drakes Estero 1
V37362	Mammalia	Odocoileus			Pleistocene	Bolinas 1
V38360	Mammalia				Miocene	Drakes Estero 2
V39268	Mammalia			Mysticeti	Miocene	Drakes Estero 2
V40229	Mammalia	Equus			Pleistocene	Weisman Locality
V43011	Osteichthyes	Ganolytes	aratus		Miocene	Blacksmith Shop E
V43012	Osteichthyes	Euleptorhamphus	peronides		Miocene	Blacksmith Shop E
V78950	Aves				Pleistocene	Bolinas 2
V81001	Mammalia	Balaenoptera			Miocene	Drakes Bay 2
V82988	Osteichthyes				Miocene	Drakes Bay 2
V82992	Mammalia			Mysticeti	Miocene	Duxbury Point
V83369	Chondrichthyes	Isurus			Miocene	Nunes Ranch 1
V83370	Mammalia	Dusignathus	santacruzensis		Miocene	Nunes Ranch 1
V83371	Mammalia	Scaldicetus			Miocene	Nunes Ranch 1
V83372	Mammalia	Scaldicetus			Miocene	Nunes Ranch 1
V83373	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V94717	Mammalia			Delphinapter	Miocene	Drakes Estero 1
V95872	Mammalia				Miocene	Bolinas Point
V99191	Osteichthyes			Teleostei	Miocene	Drakes Beach 3
V108553	Mammalia	Dusisiren		SPECIES D	Miocene	Nunes Ranch 2
V112169	Mammalia	Loxolithax	stocktoni		Miocene	Drakes Bay 4
V112809	Mammalia	Thalassoleon	macnallyae		Miocene	Drakes Beach 1
V112827	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Estero 2
V112828	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Estero 2
V112829	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Estero 2
V112830	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Estero 2
V112831	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Bay 4
V112832	Osteichthyes	Smilodonichthys	rastrusus		Miocene	Drakes Estero 2
V113125	Mammalia			Odontoceti	Miocene	Nunes Ranch 2
V113128	Mammalia	Plesiocetus			Miocene	Drakes Beach Boulders 1
V114277	Chondrichthyes			Elasmobranc	Miocene	Nunes Ranch 2
V114528	Mammalia	Thalassoleon			Miocene	Drakes Beach 5
V123275	Mammalia				Miocene	Duxbury Reef General
V125400	Aves				Miocene	Drakes Estero 4
V125401	Aves				Miocene	Drakes Estero 4
V125794	Osteichthyes				Miocene	Bolinas Point 2
V134808	Mammalia				Miocene	Drakes Estero SE
V136028	Osteichthyes	Smilodonichthyes			Miocene	Drakes Bay 4
V136518	Mammalia				Miocene	Drakes Estero SE
V137408	Mammalia				Miocene	Duxbury Reef General
V137409	Mammalia				Miocene	Duxbury Reef General
V137410	Mammalia				Miocene	Duxbury Reef General
V137411	Mammalia				Miocene	Duxbury Reef General
V152846	Mammalia				Miocene	Duxbury Point

specimen id	class	genus	species	other id	epoch	location name
V179357	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V179358	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V179359	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V179360	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V179361	Chondrichthyes	Isurus			Miocene	Nunes Ranch 2
V192646	Mammalia			Pinnipedia	Miocene	Drakes Estero SE
V194000	Mammalia			Balaenoptero	Pliocene	Drakes Estero West
V194001	Mammalia			Balaenoptero	Pliocene	Drakes Estero West
V194002	Mammalia			Balaenoptero	Miocene	Drakes Bay General
V194057	Mammalia				Miocene	Nunes Ranch General
V212947	Osteichthyes				Pleistocene	Tom's Point
V219126	Osteichthyes	Oncorhynchus	rastrusus		Pliocene	Drake's Beach 8
V219127	Osteichthyes	Oncorhynchus	rastrusus		Pliocene	Drake's Beach 8
V219128	Osteichthyes	Oncorhynchus	rastrusus		Pliocene	Drake's Beach 8
V219129	Mammalia	Herpetocetus			Pliocene	Drake's Beach 6
V219130	Mammalia				Pliocene	Drake's Beach 6
V219131	Mammalia				Pliocene	Drake's Beach 6
V219133	Mammalia	Thalassoleon	macnallyae		Pliocene	Drake's Beach 7
V219505	Mammalia	megaptera	miocaena		Pliocene	Drake's Beach 9
V219685	Mammalia				Pliocene	Drakes Head 3
V219686	Mammalia				Pliocene	Drakes Head 3
V219687	Mammalia	megaptera	miocaena		Pliocene	Drakes Head 3
V219688	Mammalia	Hydrodamalis			Pliocene	Drakes Head 3
V219689	Chondrichthyes	Hexanchus			Pliocene	Drakes Head 3
V219690	Mammalia				Pliocene	Drakes Head 1
V219691	Mammalia				Pliocene	Drakes Head 1
V219692	Aves	Mancalla			Pliocene	Drake's Beach 9
V219693	Mammalia				Pliocene	Drake's Beach 9
V219694	Mammalia				Pliocene	Drake's Beach 9
V219695	Mammalia	Thalassoleon	macnallyae		Pliocene	Drake's Beach 9
V219696	Mammalia	Thalassoleon	macnallyae		Pliocene	Drake's Beach 9
V219697	Mammalia				Pliocene	Drake's Beach 9
V219698	Osteichthyes				Pliocene	Drake's Beach 9
V219699	Mammalia				Pliocene	Drake's Beach 9
V219701	Mammalia				Pliocene	Drake's Beach 9
V219702	Chondrichthyes				Pliocene	Drake's Beach 9
V219718	Mammalia	Herpetocetus			Pliocene	Drakes Head 3
V239278	Osteichthyes				Pleistocene	
V258701	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258702	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258703	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258704	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258705	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258706	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258707	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258708	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258709	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258710	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258711	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258712	Osteichthyes	Smilodonichthys			Miocene	Drakes Estero 3
V258713	Osteichthyes			Teleostei	Miocene	Drakes Estero 3
V258714	Osteichthyes			Teleostei	Miocene	Drakes Estero 3
V258715	Osteichthyes			Teleostei	Miocene	Drakes Estero 3
V258716	Osteichthyes			Teleostei	Miocene	Drakes Estero 3

Appendix A UCMP Marin Vertebrate List.xls

specimen id	class	genus	species	other id	epoch	location name
V258717	Osteichthyes				Miocene	Ottinger Ranch
V258718	Osteichthyes				Miocene	Ottinger Ranch
V258719	Osteichthyes				Miocene	Ottinger Ranch
V258720	Osteichthyes				Miocene	Ottinger Ranch
V258721	Osteichthyes				Miocene	Ottinger Ranch
V258722	Osteichthyes				Miocene	Ottinger Ranch
V258723	Osteichthyes				Miocene	Ottinger Ranch
V258724	Osteichthyes				Miocene	Ottinger Ranch
V258725	Osteichthyes				Miocene	Ottinger Ranch
V258726	Osteichthyes				Miocene	Ottinger Ranch
V258727	Osteichthyes				Miocene	Ottinger Ranch
V258728	Osteichthyes				Miocene	Ottinger Ranch
V258729	Osteichthyes				Miocene	Ottinger Ranch
V258730	Osteichthyes				Miocene	Ottinger Ranch
V258731	Osteichthyes				Miocene	Ottinger Ranch
V258732	Osteichthyes				Miocene	Ottinger Ranch
V258733	Osteichthyes				Miocene	Ottinger Ranch
V258734	Osteichthyes				Miocene	Ottinger Ranch
V258735	Osteichthyes				Miocene	Ottinger Ranch
V258736	Osteichthyes				Miocene	Ottinger Ranch
V258737	Osteichthyes				Miocene	Ottinger Ranch
V258738	Osteichthyes				Miocene	Ottinger Ranch
V258739	Osteichthyes				Miocene	Ottinger Ranch
V258740	Osteichthyes				Miocene	Ottinger Ranch
V258741	Osteichthyes				Miocene	Ottinger Ranch
V258742	Osteichthyes				Miocene	Ottinger Ranch
V258743	Osteichthyes				Miocene	Ottinger Ranch
V258744	Osteichthyes				Miocene	Ottinger Ranch
V258745	Osteichthyes				Miocene	Ottinger Ranch
V258746	Osteichthyes				Miocene	Ottinger Ranch
V258748	Osteichthyes				Miocene	Ottinger Ranch
V258749	Osteichthyes				Miocene	Ottinger Ranch
V258750	Osteichthyes				Miocene	Ottinger Ranch
V258751	Osteichthyes				Miocene	Ottinger Ranch
V258752	Osteichthyes				Miocene	Ottinger Ranch
V258753	Osteichthyes				Miocene	Ottinger Ranch
V258754	Osteichthyes				Miocene	Ottinger Ranch
V258755	Osteichthyes				Miocene	Ottinger Ranch
V258756	Mammalia				Miocene	Nunes Ranch 2

Appendix B UCMP Marin Plant List.xls

specimen id	class	genus	species	other id	epoch	location name
PBCL560	Magnoliopsida	Euonymus	bungeana			Mt. Tamalpais
PBCL851	Magnoliopsida	Cercocarpus	traskiae	C. montanus		Marin
P447		Fomes	applanatus		Pleistocene	Millerton Head I
P448	Filicopsida	Pteris	aquilina		Pleistocene	Tomales General
P449	Pinopsida	Torreya	californica		Pleistocene	Millerton Head I
P450	Pinopsida	Picea	sitchensis		Pleistocene	Millerton Head I
P451	Pinopsida	Pseudotsuga	taxifolia		Pleistocene	Tomales General
P452	Pinopsida	Pseudotsuga	taxifolia		Pleistocene	Tomales General
P453	Pinopsida	Pseudotsuga	taxifolia		Pleistocene	Tomales General
P454	Pinopsida	Pinus	muricata		Pleistocene	Tomales General
P455	Pinopsida	Pinus	muricata		Pleistocene	Tomales General
P456	Pinopsida	Pinus	radiata		Pleistocene	Tomales General
P457	Pinopsida	Pinus	radiata		Pleistocene	Tomales General
P458	Pinopsida	Cupressus	goveniana		Pleistocene	Tomales General
P459	Pinopsida	Cupressus	goveniana		Pleistocene	Tomales General
P460	Pinopsida	Cupressus	goveniana		Pleistocene	Tomales General
P461	Pinopsida	Cupressus	goveniana		Pleistocene	Tomales General
P462	Pinopsida	Cupressus	goveniana		Pleistocene	Tomales General
P463	Liliopsida	Ruppia	maritima		Pleistocene	Tomales General
P464	Liliopsida	Ruppia	maritima		Pleistocene	Tomales General
P465	Liliopsida	Ruppia	maritima		Pleistocene	Tomales General
P466	Liliopsida	Scirpus			Pleistocene	Tomales General
P467	Liliopsida	Scirpus			Pleistocene	Tomales General
P468	Liliopsida	Carex			Pleistocene	Tomales General
P469	Liliopsida	Camassia	leichlinii		Pleistocene	Millerton Head I
P470	Magnoliopsida	Alnus	rubra		Pleistocene	Tomales General
P471	Magnoliopsida	Alnus	rubra		Pleistocene	Tomales General
P472	Magnoliopsida	Alnus	rubra		Pleistocene	Tomales General
P473	Magnoliopsida	Corylus	rostrata		Pleistocene	Tomales General
P474	Magnoliopsida	Quercus	agrifolia		Pleistocene	Millerton Head I
P475	Magnoliopsida	Quercus	agrifolia		Pleistocene	Millerton Head I
P476	Magnoliopsida	Quercus	agrifolia		Pleistocene	Millerton Head I
P477	Magnoliopsida	Myrica	californica		Pleistocene	Tomales General
P478	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P479	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P480	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P481	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P482	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P483	Magnoliopsida	Arceuthobium	campylopodum		Pleistocene	Tomales General
P484	Magnoliopsida	Rumex	occidentalis		Pleistocene	Millerton Head II
P485	Magnoliopsida	Rumex	occidentalis		Pleistocene	Millerton Head II
P486	Magnoliopsida	Rumex	salicifolius		Pleistocene	Millerton Head I
P487	Magnoliopsida	Atriplex	hastata		Pleistocene	Millerton Head I
P488	Magnoliopsida	Montia	fontana		Pleistocene	Tomales General
P489	Magnoliopsida	Montia	howellii		Pleistocene	Tomales General
P490	Magnoliopsida	Montia	perfoliata		Pleistocene	Millerton Head II
P491	Magnoliopsida	Montia	siberica		Pleistocene	Tomales General
P492	Magnoliopsida	Calandrinia	caulescens		Pleistocene	Tomales General
P493	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P494	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P495	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P496	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General

Appendix B UCMP Marin Plant List.xls

specimen id	class	genus	species	other id	epoch	location name
P497	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P498	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P499	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P500	Magnoliopsida	Umbellularia	californica		Pleistocene	Tomales General
P501	Magnoliopsida	Amelanchier	alnifolia		Pleistocene	Millerton Head I
P502	Magnoliopsida	Adenostoma	fasciculatum		Pleistocene	Millerton Head I
P503	Magnoliopsida	Rubus	spectabilis		Pleistocene	Tomales General
P504	Magnoliopsida	Rubus	vitifolius		Pleistocene	Tomales General
P505	Magnoliopsida	Rubus	vitifolius		Pleistocene	Tomales General
P506	Magnoliopsida	Rubus	vitifolius		Pleistocene	Tomales General
P507	Magnoliopsida	Rubus	parviflorus		Pleistocene	Tomales General
P508	Magnoliopsida	Rubus	parviflorus		Pleistocene	Tomales General
P509	Magnoliopsida	Rubus	parviflorus		Pleistocene	Tomales General
P510	Magnoliopsida	Fragaria	californica		Pleistocene	Tomales General
P511	Magnoliopsida	Prunus	emarginata		Pleistocene	Millerton Head I
P512	Magnoliopsida	Prunus	subcordata		Pleistocene	Millerton Head I
P513	Magnoliopsida	Photinia	arbutifolia		Pleistocene	Millerton Head I
P514	Magnoliopsida	Rhus	diversiloba		Pleistocene	Millerton Head I
P515	Magnoliopsida	Acer	macrophyllum		Pleistocene	Millerton Head I
P516	Magnoliopsida	Ceanothus	rigidus		Pleistocene	Tomales General
P517	Magnoliopsida	Ceanothus	thyrsiflorus		Pleistocene	Tomales General
P518	Magnoliopsida	Ceanothus	thyrsiflorus		Pleistocene	Tomales General
P519	Magnoliopsida	Datisca	glomerata		Pleistocene	Headland
P520	Magnoliopsida	Oenanthe	sarmentosa		Pleistocene	Millerton Head I
P521	Magnoliopsida	Oenanthe	sarmentosa		Pleistocene	Millerton Head I
P522	Magnoliopsida	Oenanthe	sarmentosa		Pleistocene	Millerton Head I
P523	Magnoliopsida	Daucus	pusillus		Pleistocene	Millerton Head I
P524	Magnoliopsida	Garrya	elliptica		Pleistocene	Tomales General
P525	Magnoliopsida	Garrya	elliptica		Pleistocene	Tomales General
P526	Magnoliopsida	Cornus	californica		Pleistocene	Tomales General
P527	Magnoliopsida	Arctostaphylos	columbiana		Pleistocene	Tomales General
P528	Magnoliopsida	Arctostaphylos	columbiana		Pleistocene	Tomales General
P529	Magnoliopsida	Arctostaphylos	columbiana		Pleistocene	Tomales General
P530	Magnoliopsida	Arctostaphylos	uvaursi		Pleistocene	Tomales General
P531	Magnoliopsida	Arbutus	menziesii		Pleistocene	Millerton Head I
P532	Magnoliopsida	Vaccinium	ovatum		Pleistocene	Tomales General
P533	Magnoliopsida	Vaccinium	ovatum		Pleistocene	Tomales General
P534	Magnoliopsida	Vaccinium	ovatum		Pleistocene	Tomales General
P535	Magnoliopsida	Galium	californicum		Pleistocene	Tomales General
P536	Magnoliopsida	Symphoricarpos	albus		Pleistocene	Tomales General
P537	Magnoliopsida	Sambucus	glauca		Pleistocene	Tomales General
P538	Magnoliopsida	Sambucus	glauca		Pleistocene	Tomales General
P539	Magnoliopsida	Eriophyllum	artemisiaefolium		Pleistocene	Millerton Head I
P540	Magnoliopsida	Baccharis	pilularis		Pleistocene	Millerton Head I
P5799	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5800	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5801	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5802	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5803	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5804	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5805	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5806	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5807	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay

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specimen id	class	genus	species	other id	epoch	location name
P5808	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5809	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5810	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5811	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5812	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5813	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5814	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5815	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5816	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5817	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5818	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5819	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5820	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5821	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5822	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5823	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5824	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5825	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5826	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5827	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5828	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5829	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5830	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5831	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5832	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5833	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5834	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5835	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5836	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5837	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P5838	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6297	Pinopsida	Cupressus	goeniana		Pliocene	Drakes Bay
P6298	Pinopsida	Cupressus	goeniana		Pliocene	Drakes Bay
P6299	Pinopsida	Cupressus	goeniana		Pliocene	Drakes Bay
P6300	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6301	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6302	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6303	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6304	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P6305	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P7141	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P7142	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P151930	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat
P390229					Holocene	Vedanta Marsh Retreat
P390230					Holocene	Vedanta Marsh Retreat
P390231					Holocene	Vedanta Marsh Retreat
P390232					Holocene	Vedanta Marsh Retreat
P390233	Magnoliopsida	Alnus			Holocene	Vedanta Marsh Retreat
P398019	Pinopsida	Pinus	radiata		Pliocene	Drakes Bay
P398130	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat
P398131	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat
P398132	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat
P398133	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat

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specimen id	class	genus	species	other id	epoch	location name
P398134	Pinopsida	Pseudotsuga			Holocene	Vedanta Marsh Retreat

AccessionNo	Genus	Species	TypeStatus	AuthorDate	Country	State	County	Formation	Age
10561.00			VOUCHER	Anonymous, 1958	USA	California	Marin		PLEISTOCENE
33062.00					USA	California	Marin		
72236.00					USA	California	Marin	Merced	PLIOCENE
72799.00	Carcharodon	branneri	HOLOTYPE	Jordan, 1907	USA	California	Marin		PLIOCENE
5983.00	Chione	undatella	VOUCHER	Hertlein, 1951	USA	California	Marin		PLEISTOCENE
4290.00	Mantelliceras	sp.	VOUCHER	Hertlein, 1956	USA	California	Marin	Franciscan	CRETACEOUS
8481.00	Nassarius	moranianus	VOUCHER	Hertlein, 1951	USA	California	Marin		PLIOCENE
60976.00	Oncorhynchus	rastrusus			USA	California	Marin	Drakes Bay	PLIOCENE
66660.00	Parabalaenoptera	baulinensis	HOLOTYPE	Zeigler, Chan, & Barnes, 1997	USA	California	Marin	Santa Cruz Mudstone	MIOCENE
66661.00	Parabalaenoptera	baulinensis	HOLOTYPE	Zeigler, Chan, & Barnes, 1997	USA	California	Marin	Santa Cruz Mudstone	MIOCENE
66662.00	Parabalaenoptera	baulinensis	HOLOTYPE	Zeigler, Chan, & Barnes, 1997	USA	California	Marin	Santa Cruz Mudstone	MIOCENE
61949.01	Pecten (Patinopecten)	turneri	PARATYPE	Arnold, 1906	USA	California	Marin		PLIOCENE
61949.02	Pecten (Patinopecten)	turneri	HOLOTYPE	Arnold, 1906	USA	California	Marin		PLIOCENE
61949.03	Pecten (Patinopecten)	turneri	PARATYPE	Arnold, 1906	USA	California	Marin		PLIOCENE
9964.00	Scutellaster	interlineata	VOUCHER	Durham, 1955	USA	California	Marin		PLEISTOCENE
13119.00	Scutellaster	interlineatus	VOUCHER	Richardson, 1968	USA	California	Marin		PLIOCENE