Technical Appendix 13

Tribal Resources

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Acronyms and Abbreviations

Acronym or Abbreviation	Full Phrase
CAP	Central Arizona Project
CCS	Continued Current Strategies
Draft EIS	Draft Environmental Impact Statement
LB Priority	Lower Basin Priority
LB Pro Rata	Lower Basin Pro Rata
maf	million acre-feet
NRHP	National Register of Historic Places
Reclamation	Bureau of Reclamation
SIB	Southerly International Boundary
TCP	traditional cultural place

TA 13. Tribal Resources

The Colorado River, its canyons and associated ecosystems figure prominently in the cultural traditions of many tribal communities. For these tribes, the river and canyons are living entities consisting of sacred spaces, the homes of their ancestors, the residence of the spirits of their dead, and the source of culturally important resources. Many tribes see themselves as stewards of the Colorado River and its canyons, which are a vital part of the living and spiritual world; caring for the river and the canyons is their responsibility. Tribal resources can include archaeological resources, structures, topographic features, habitats, plants, wildlife, and minerals that Indigenous peoples, tribal nations, or other groups consider essential for the preservation of traditional culture and traditional values. Tribal interests also include values and resources reflected in other sections of this Draft Environmental Impact Statement (Draft EIS) including water for drinking water and agriculture, recreational resources, and many other socioeconomic and environmental aspects that overlap with other sections. These resources are not just those that are essential for the preservation of traditional culture and values but for contemporary use and exercise of tribal sovereignty.

Traditional values of living communities can be manifested at locations called traditional cultural places (TCPs), Indian sacred sites, or cultural landscapes. The Colorado River and its canyons are considered by many tribes to be a TCP. As described by National Park Service guidance on TCPs (NPS 2024:7), a TCP is "a building, structure, object, site, or district that may be listed or eligible for listing in the National Register for its significance to a living community because of its association with cultural beliefs, customs, or practices that are rooted in the community's history and that are important in maintaining the community's cultural identity." Of the groups concerned, the Hualapai Tribe (Coulam 2011), Hopi Tribe (Hopi CPO 2001), Navajo Nation (Maldonado 2011), and Pueblo of Zuni (Dongoske 2011) have prepared National Register of Historic Places (NRHP) nomination forms for the Colorado River and its canyons as a TCP. The Bureau of Reclamation (Reclamation) is actively consulting with tribes regarding the Colorado River and its canyons, including associated Traditional Ecological Knowledge, that will be incorporated as it becomes available.

TA 13.1 Affected Environment

The study area for tribal resources is identical to that discussed in **TA-11**, Cultural Resources, and **TA-18**, Indian Trust Assets. It extends from the northern extent of Lake Powell to the Southerly International Boundary (SIB) and consists of the Colorado River channel from bank to bank except from Glen Canyon Dam to Lake Mead, where it stretches from canyon rim to canyon rim, as well as a 0.5-mile buffer on either side of the riverbank or canyon rim. The study area coincides with the search area used for a Class I records search conducted for this Draft EIS document (Tremblay, Griset, and Rawson 2024a; Tremblay, Lemoine, et al. 2024b; Eddy et al. 2024; Winslow et al. 2024; Eskenazi 2024).

The fourteen Native American tribes listed here consider portions of the study area to be part of their homelands: eight are associated directly with the Grand Canyon: A:shiwi (Zuni), Ndee (Western Apache), Diné (Navajo), Havasupai, Hualapai, Hopi, Nüümü (Southern Paiute), and Yavapai; five have homelands along the lower Colorado River where it flows south to the Gulf of California: Cocopah, Pipa Aha Macav (Mojave), Piipaash (Maricopa), Quechan, and Xalchidom (Halchidhoma); and one group, the Núuchi (Ute), used northeastern portions of the river and study area. The brief summaries provided below are derived primarily from the multi-volume Class I cultural resources literature review conducted in support of this analysis (Tremblay et al. 2024a, 2024b; Eddy et al. 2024; Winslow et al. 2024; Eskenazi et al. 2024).

TA 13.1.1 A:shiwi (Zuni)

The Zuni (A:shiwi) origin story recounts that the People emerged from the fourth underworld via a hole at *Chimik'yana'kya dey'a*, (Ribbon Falls) on a tributary drainage of Bright Angel Creek which flows south from the North Rim of the Grand Canyon into the Colorado River. From the Grand Canyon, groups spread in four directions, leaving behind glyphic symbols on rocks and structural signs that the Zuni recognize today. Some continued to Chavez Pass, others into Mexico, the San Francisco Peaks, the present-day Bandelier National Monument in the Fremont archaeological area, and ultimately to *Halona:wa* "Anthill" where they created Zuni Pueblo, *A:shiwi,* at the central or Middle place. Zuni religion is focused on water, and the waters of the Colorado River are described as sacred. Even dry washes are important—Zuni deem them "passageways" for water, whether water flows there year-round or not. Long before Europeans first saw and named the Colorado River, the Zuni named this watercourse *K'yawan' A:honanne.*

The lands through which the Zuni migrated were never abandoned, their ancestors still inhabit the land. Each ancestral site is incorporated into a broad cultural landscape that encapsulates the Zuni pilgrimage experience and the lessons learned therefrom. The Zuni have provided the following account regarding the Zuni cultural landscape within the study area considered in this document:

> To *A:shiwi*, Chaco Canyon is known as *Heshoda Bitsulliya/Ki:whihtsi Bitsulliya* and in the name *K'yakwe: A:mossi*, or "House of Puebloan High Priests." The greater *A:shiwi* Chaco traditional cultural land/waterscape is simultaneously a dynamic and diverse and inter-functional and unified geographical area densely lined and dotted with multiple intensive zones of historical significance and ongoing traditional religious and cultural importance. The interconnected and interrelated layers and dimensions of multiple intensive middle zones of the district both circularly and circuitously pivot—in space and time—on *Heshoda Bitsulliya/Ki:whihtsi Bitsulliya*, Chaco Canyon, while always connecting and radiating to and from the spatial anchors of *Idiwana'a*, the Zuni Pueblo, and *Chimik´yana´kya dey´a* and *Kuhnin A´l´akk´wa*, the Grand Canyon. The connective umbilical tissues and relations of *Heshoda Bitsulliya/Ki:whihtsi Bitsulliya* are vast for *A:shiwi* and can be topographically diagrammed and understood to extend at least from *Kuhnin A´l´akk´wa*, Grand Canyon, in Arizona to the west to *Shiba:bulim´a*, Bandelier National Monument, in New Mexico to the east. The historic district's northern reach extends at a minimum to the areas of Abajo (Blue) Mountains and Montezuma Canyon in southeast Utah and Alkali Canyon in southwest Colorado, and its southern reach to the area of *K'yak'yali an Yalanne*, or Eagle Peak, in the central western region of New Mexico. Each of these intensive center or middle spatial zones that help

> diagram the outlines of the greater *A:shiwi* Chaco traditional cultural land/waterscape and historic district connect and convey three delineable "time periods" that are simultaneously layered and intersecting in their discernability (Curti and others 2023: Executive Summary).

Thus, the Zuni have a deep and personal interest in the Colorado River and its tributaries since their emergence in this world. In addition to the emergence place, Chimik'yana'kya dey'a, (Ribbon Falls) on Bright Angel Creek, K'yawan' A:honanne (Colorado River), and Ku'nin A'l'akkwe'a (Grand Canyon) are considered to be Zuni TCPs. The Zuni also recognize Gold Strike Canyon-Sugarloaf Mountain near Boulder City, Nevada as an important ceremonial location that has been listed on the NRHP as a TCP. The Colorado River is important to modern tribal communities as the Zuni continue to make pilgrimages to the Grand Canyon for religious purposes and to gather willow, herbs, sands, clays, and minerals including salt and pigments.

TA 13.1.2 Cocopah

The Cocopah are the southernmost Yuman Tribe along the lower Colorado River, living on both sides of the river from its delta to the Yuma area. They often aligned with Piipaash and Xalchidom, against the Quechan—their nearest neighbor to the north along the river. Cocopah creation stories tell of twin gods who began under the waters of the lower Colorado River and emerged to form the earth and its creations. The Ripley Intaglios near Blythe, California have been listed on the NRHP as a TCP.

TA 13.1.3 Diné (Navajo)

The Navajo Nation (Diné) views the Colorado River and the Grand Canyon as sacred, with the river considered a living being. Spanning from the Animas River to the Pacific Ocean, this landscape holds significant cultural and ceremonial importance, with the Colorado and Little Colorado Rivers playing key roles in Navajo practices. They perform prayers and rituals to honor these waters, which are integral to their spiritual practices and subsistence. Deities are believed to reside in the river canyons, and various ceremonies are associated with the Colorado River, highlighting the importance of preserving these resources and the Navajo's sovereignty.

Historical trails, such as the Salt Trail, Lees Ferry, and the Havasupai Trail, were used for hunting, gathering, and trading. The Salt Trail is particularly culturally significant due to Salt Woman's journey and offerings at a sacred rock. The Grand Canyon also provided refuge during conflicts, and the junction of the Colorado and Little Colorado Rivers is a sacred place in Diné culture.

The Diné people's activities and settlements in the Grand Canyon include cornfields, grazing areas, livestock corrals, former homesites, sweathouses, and ceremonial hunting landscapes. Numerous locations important to Navajo history and culture exist within the Grand Canyon. Significant sites along the river corridor include Big Sand Dune, hogans at Lees Ferry, and beaches formerly used as cornfields.

Navajo traditions underscore the profound connection between the Navajo people and their land, illustrating how their cultural heritage is deeply intertwined with the natural landscape. The Navajo have nominated several locations along the Colorado and Little Colorado Rivers at TCPs to the

NRHP. Additionally, ethnohistoric research conducted during the 1990s identified many locations and resources that would likely qualify.

TA 13.1.4 Havasupai

The Havasupai Tribe, also known as *Havasu 'Baaja* (People of the Blue Green Water), are from the region near Havasu Falls at the bottom of the Grand Canyon and are sometimes referred to as the guardians of the Grand Canyon. The Havasupai's historical territory extended from the southern bank of the Colorado River to the San Francisco Peaks, east to the Little Colorado River, and west to the Hualapai reservation. The San Francisco Peaks are central to Havasupai cosmology. In 1975, their reservation was expanded to include the Havasupai Traditional Use Lands, an area within Grand Canyon National Park acknowledged to be important to the Havasupai people. The Havasupai were regarded by the Hopis as guardians of the Grand Canyon and its sacred sites. Water holds immense cultural and religious significance, with sacred springs and the Colorado River being integral to their worldview. All springs are considered sacred, and offerings are made before using the water. Spirits are believed to inhabit various geographic locations in and around the Colorado River corridor, including Gray Mountain, the Great Thumb peninsula, the San Francisco Peaks, and Mount Sinyella. These sites play a significant role in their spiritual practices, particularly rain-making rituals. No TCPs associated with Havasupai cultural places have been formally documented.

TA 13.1.5 Hopi

The Hopi Tribe consists of clans from the Four Corners region, Southwest, Mexico, and possibly South America. They speak the Uto-Aztecan language of Hopi. The ancestral Hopi, known as the *Hisatsinom*, migrated extensively across the southwestern United States before settling at the Hopi Mesas. During their travels, many resided in the Canyons. The Hopi people believe they emerged into the present world from the *Sipapuni*, a spring located in the Little Colorado River gorge near its confluence with the Colorado River. The Hopi presence in the Grand Canyon region spans over a thousand years, with archaeological evidence dating their use of the Canyons to at least A.D. 700–800. By A.D. 1000, numerous small pueblo sites were established. These sites, which include kivas and shrines, are of profound religious and cultural importance. The Hopi consider these sites to be active and sacred, with a spiritual responsibility to protect them. Currently, the Hopi live in pueblos on and below the Hopi Mesas, growing crops like corn, beans, squash, and peaches. Water is central to their ceremonies, symbolizing the most precious resource, the source of all life, and their connection to ancestors. TCPs identified by the Hopi include *Öngtupqa* (Grand Canyon), *Palavayu* (Little Colorado River), and *Pisisvayu* (Colorado River). Additional locales include: Hopi origin location *Sipapuni*; Hopi Salt Mine *Öönga*; Lees Ferry; archaeological sites and shrines along the Colorado River within the Grand Canyon with canyon rim as boundary beginning at Colorado River confluence with Kanab Creek on west, downstream of Glen Canyon dam on east, and up Little Colorado River Gorge to Cameron area.

TA 13.1.6 Hualapai

The Hualapai, also known as *Hwal 'baia*, are an upland Yuman people related to the Havasupai Tribe. Their reservation is adjacent to the south bank of the Colorado River and the Grand Canyon. The tribe consists of 12 bands, each named after significant topographical features within their land. The Grand Canyon and Colorado River, from the Little Colorado River to the Bill Williams River confluence, are significant to the Hualapai. Additionally, the Hualapai have a rich origin story that

begins at Spirit Mountain and includes the Grand Canyon. Historically, the Hualapai were hunter-gatherers and agriculturalists, moving seasonally and cultivating crops like corn, beans, and squash. They were skilled hunters and traded with neighbors and have historically engaged in trade, social interactions, and conflicts with neighboring tribes and European-Americans. The Hualapai regard all archaeological and cultural resources within their traditional territory as sacred TCPs. These include plants, wildlife, rock writings, artifacts, and traditional use areas. The Hualapai have nominated several locations along the Colorado River for listing on the NRHP as TCPs.

TA 13.1.7 Ndee (Western Apache)

At the time of contact with Spanish and Euro-American people, the Ndee occupied much of central and northern Arizona and were loosely organized in three to five subtribes based on family lineages and slight differences in language. Oral histories tell of a place located north of the Little Colorado River where the Ndee lived near the Navajo and Hopi. This place is called place "camp beneath the water," "camp beside the water," or "dance camp" and many Ndee bands state that it is a place of emergence from beneath the Earth's surface into this world. From this place, bands crossed the Little Colorado River and split into different areas of central Arizona, below the Mogollon Rim. Ndee bands roamed broadly across this region including the Grand Canyon. The area surrounding the Grand Canyon provided pinyon nuts, sumac berries, and medicinal herbs, as well as hunting grounds for antelope and deer. Ndee refer to the Grand Canyon as *Che Da* or *Ge Da Cho* roughly translated as, the "Rock Cliff" or the "Big Edge." The Colorado River is *Tule'chee*, "Red River" describing the color of the water in its natural state. Ndee stories recount the creation of the Grand Canyon by a deity named *Naa Ye' Nas Ghane'*. Because of this association with a deity, the canyon is considered a sacred place. Although Western Apache use of the Grand Canyon and Colorado River are well documented by tribal oral tradition, they have not formally identified any TCPs to date.

TA 13.1.8 Núuchi (Ute)

Ute are the easternmost of the Numic-speaking peoples thought to have migrated from southeastern California/southern Nevada in a northeastern arc across the Great Basin. The Núuchi occupied what is now eastern Utah and western/central Colorado. Núuchi gathered roots (wild onion, Indian potato), seeds that were eaten raw or ground into meal, chokecherry and berries, the interior bark of ponderosa pine, prickly pear, and other plants for medicines and tools. They hunted game such as rabbits, elk, and deer, and traded with Puebloans and later, the Spanish for horses, cattle, and sheep. Ute use of the Colorado River is not well-documented, nor have they identified any TCPs to date.

TA 13.1.9 Nüümü (Southern Paiute)

The Southern Paiute inhabited the Colorado River Basin in northwestern Arizona, southern Nevada, and the north and west bank of the Colorado River. Their traditional territory extended north and west of the Colorado River. The nation was divided into the western *Paranayi* and the eastern *Yanawant*, each with different bands. Individuals with knowledge of water sources were highly regarded, and there was a belief in supernatural beings called Water Babies associated with springs and underground water. They practiced small-scale agriculture, gathered wild resources, and believed in supernatural forces, particularly near Charleston Peak in the Spring Mountains. They have a strong cultural and spiritual connection to the land and its resources, especially the Colorado River (*Piapaxa*). The Southern Paiute Tribes have a profound cultural connection to the Colorado River, viewing it as a powerful natural resource that must be respected and preserved. Paiute elders

documented important cultural practices and locations within the Grand Canyon and Colorado River, including the sacredness of agave roasting sites, the use of red pigment for protection and rituals, and the inherent power of rocks and burials. Artifacts are believed to belong to their original owners and should remain undisturbed. The San Juan Paiutes used specific crossing locations on the Colorado River, and the Kaibab Paiute had trails leading to their winter camps. The Southern Paiute Chemehuevi Salt Song Trail traveled from southern Nevada through the Mojave valley to the lower Colorado River valley. The Southern Paiute have declared the entire Colorado River region a TCP due to its cultural significance. Additionally, the Southern Paiute have identified Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location near Boulder City, Nevada, as a TCP.

TA 13.1.10 Piipaash (Maricopa) and Xalchidom (Halchidhoma)

The Piipaash and Xalchidom are Yuman-language speakers who migrated from the lower Colorado River area and ultimately joined the Akimel O'odham on the Salt and Gila Rivers near Phoenix. The Piipaash were located along the Lower Gila River when they encountered the Spanish in the late 1600s but likely had previously resided on the lower Colorado River. The Xalchidom occupied both sides of the lower Colorado River south of the Aha Macav and north of the Quechan; they may have been farther south on the river in earlier times, but they were pressured by their neighbors and frequently relocated their villages. Once they were driven from the Colorado River, their former territory was occupied by the Chemehuevi. Due to pressure from the Aha Macav and Quechan, both groups emigrated eastward up the Gila River, and by 1830, joined the Akimel O'odham. They were supported by the O'odham in a final victorious battle against the Quechan/Aha Macav at Pima Butte in 1857. Specific TCPs along the lower Colorado River have not been reported for either tribe. Piipaash and Xalchidom origin stories are similar to that of the Ahi Macav and they, too, consider Avi Kwa Ame to be their sacred origin place.

TA 13.1.11 Pipa Aha Macav (Mojave)

The Pipa Aha Macav (people by the river) are the northernmost Yuman Tribe. Their tribal territory is found along both sides of the Colorado River in the Mojave Valley, and at times, in portions of the Mojave Desert to the northwest. Traditionally the Pipa Aha Macav lived in earth-covered houses in large seasonal settlements on the terraces above the Colorado River floodplain during the winter and spring. Once waters had receded, extended families established camps with small brush shelters near their crops on the floodplain where they dry-farmed corn, pumpkin, tepary beans, gourds, cotton, and sunflowers. They were renowned traders, carrying goods between the Pacific Ocean and the Pueblos via the Mojave Trail westward from the river through the western Mojave Desert, and eastward via the Moqui Trail through the Grand Canyon to the Hopi, trading with tribes along the way. Tribal origins center on Avi Kwa Ame (Spirit Mountain), which was designated a National Monument in March 2023, and oral tradition tells of *Mutavilya* who is said to have created the Colorado River, its plants and animals, and instructed the Pipa Aha Macav in the arts of civilization.

The Colorado River and Avi Kwa Ame, are sacred places to all Yuman Tribes, including the Pipa Aha Macav. Other locations considered sacred include springs, caves, sleeping circles, trails along the river that were traveled through dreaming or by walking them, offerings placed among rock cairns along trails, large geoglyphs created on the surface of the desert by removing stones from areas of desert pavement or by placing stones atop areas lacking desert pavement (e.g., the Ripley

Intaglios), and pictographs and petroglyphs. Many of these features have yet to be publicly identified by tribal members or formally recorded.

TA 13.1.12 Quechan

The Quechan originally lived near the river delta at the Gulf of California, later moving to the Gila and Colorado Rivers junction and expanding into the Palo Verde Valley. Their creation story, similar to the Pipa Aha Macav, involves the god *Kukumat* creating the Quechan and other tribes on the sacred mountain *Avikwame'*. After *Kukumat's* death, his body and house were burned. *Kumastamxo*, the divine son of the creator, is a central figure, credited with creating the keruk ceremony to commemorate *Kukumat's* death. The Colorado River region is vital to their cultural and ethnic identity, with various landmarks and natural features holding spiritual significance.

In addition to Avi Kwa Ame, other TCPs associated with the river include the trail taken by the Quechan from Avi Kwa Ame south toward the delta; it is called the *xam kwatcám* ("another going down") and is the inspiration for the tribal name. It is the major north-south trail along the west bank of the lower Colorado River and leads to Pilot Knob, another sacred landform, near the Gulf of California. The trail has also been identified as the Keruk Trail, which is the path taken by the dead as part of the cremation ceremony. As with the Pipa Aha Macav, many legendary figures are commemorated within Quechan territory as large geoglyphs on terraces along the banks of the lower Colorado River; smaller geoglyphs are located farther inland on either side of the river.

TA 13.1.13 Yavapai

The Yavapai people traditionally inhabited the area north of the Gila River, between the Colorado and Verde Rivers. They belong to the Pai branch of the Yuman language family and are divided into four subgroups: western Apache or Tolkapaya, northwestern Wipukpaya, northeastern Yavapai or Apache-Mojaves, and southeastern Yavapai or Kewevkapaya. The Yavapai intermarried with the Tonto Apaches and have various origin theories, including connections to Hakatayan patterns, Sinagua peoples, or a Yuman migration. They first encountered the Spanish in the Verde River Valley in the early 1580s.

Before their removal to reservations in the late 19th century, they lived west of the Verde River. Their origin story includes sacred sites such as San Francisco Peak and Montezuma's Well. Yavapai families traveled in bands, hunting and gathering seasonally available foods. They hunted deer, jackrabbits, rabbits, quail, and woodrats, and planted crops like corn, squash, and beans, which they harvested in the fall. The western Yavapai traded animal skins, baskets, and agave for agricultural products from the Pipa Aha Macav and Quechan. There are no specific Yavapai TCPs recorded within the Grand Canyon or Colorado River, but their use of the canyon is similar to that of the Western Apache.

TA 13.1.14 Ethnographic Resources and Traditional Cultural Places

Several known or documented TCPs within or adjacent to the study area have been listed or are eligible for listing in the NRHP (**Table TA 13-1**): one each is recorded for the A:shiwi and Hopi within Grand Canyon; Sugarloaf Mountain to the west of the lower Colorado River is claimed by the A:shiwi, Diné, Hopi, Hualapai, Nuwuvi, Pipa Aha Macav, and Yavapai; and the Ripley Intaglios are considered sacred by all of the Yuman Tribes. The Yuman Tribes consider their origin place, Avi Kwa Ame (Spirit Mountain), to be sacred; it is beyond the project study area, but within the newly created Avi Kwa Ame National Monument. All tribes revere the Colorado River. The Grand Canyon itself is an NRHP-eligible TCP for multiple tribes and plants and animals, among other entities, are considered contributing elements to the TCP. Some, like aquatic beings, are considered significant elements unto themselves, often representing the ancestors of the living people. Several important locations within the Grand Canyon TCP have been formally recorded in the canyon for the A:shiwi and Hopi and documented in ethnographic studies for the Diné and Hualapai.

Table TA 13-1
NRHP-Listed or Eligible TCPs

Tribe	TCP Description
A:shiwi (Zuni)	*Chimik'yana'kya dev'a* (Place of Emergence, Ribbon Falls on Bright Angel Creek; *K'yawan' A:honanne* (Colorado River); and *Ku'nin A'l'akkwe'a* (Grand Canyon) Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (near Boulder City, Nevada)
Hopi	*Öngtupqa* (Grand Canyon), *Palavayu* (Little Colorado River, and *Pisisvayu* (Colorado River). Additional locales include: origin location *Sipapuni* (NA 10536 MNA*); Hopi Salt Mine *Öönga* (NA 10537/AZ C:13:3[GCNP]);** Lees Ferry; archaeological sites and shrines; with canyon rim as boundary beginning at Colorado River confluence with Kanab Creek on west, downstream of Glen Canyon dam on east, and up Little Colorado River Gorge to Cameron area Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (near Boulder City, Nevada)
Diné (Navajo)	None formally recorded within Grand Canyon; ethnohistoric research in the 1990s identified many locations and resources that would likely qualify Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (near Boulder City, Nevada)
Ndee (Western Apache)	None formally recorded
Núuchi (Ute)	None formally recorded
Nüümü (Southern Paiute)	Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (near Boulder City, Nevada)
Havasupai (Yuman – Pai Branch)	None formally recorded

Tribe	TCP Description
Hualapai (Yuman – Pai Branch)	None formally recorded in Grand Canyon; archaeological and botanical surveys in 1990s identified traditional use areas, sacred places, and traditional resources of concern that would likely qualify Listed 2004: Gold Strike Canyon-Sugarloaf Mountain (near Boulder City, Nevada) ceremonial destination
Yavapai (Yuman – Pai Branch)	Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (near Boulder City, Nevada)
Cocopah, Piipaash, Pipa Aha Macav, Quechan, Xalchidom (Yuman – River Branch)	Listed 1975: Ripley Intaglios Listed 2004: Gold Strike Canyon-Sugarloaf Mountain, a ceremonial location (claimed by Pipa Aha Macav)
Fort Mojave Indian Tribe of Arizona, California, and Nevada	Determined eligible 2018: Amut Ahar TCP

* MNA = Museum of Northern Arizona, incorporated into the state-assigned site number
** GCNP = Grand Canyon National Park, incorporated into the state-assigned site number issued by the Arizona State Museum for the Hopi Salt Mine located on National Park Service-managed lands within the national park

Tribes consider places associated with origin stories, migrations, songs, and ceremonies to be sacred TCPs, as well as ancestral sites, trails, cairns, and rock writing/petroglyphs/pictographs/geoglyphs. All water sources, especially those that come from below ground, are sacred. Plants, animals, and minerals are considered traditional cultural resources, often associated with specific locations. Reclamation is in ongoing consultation with tribes to identify specific locations/resources important to each tribe.

TA 13.2 Environmental Consequences

TA 13.2.1 Methodology

Of primary concern is how the alternatives affect the integrity and sacredness of tribal resources. Because these resources attain significance through tribal cultural customs, and because many of these resources are sacred and their locations confidential, the tribes are best situated to understand how the alternatives might affect them. Accordingly, analysis of impacts is largely a qualitative analysis of issues that is driven by ongoing tribal consultation efforts.

There are many federally recognized tribes with entitlements to Colorado River water or who may be affected or have interests in the proposed federal action. There are 30 federally recognized tribes within the geographic Basin. Reclamation consults regularly with these tribes regarding Colorado River issues. Additionally, the Ten Tribes Partnership is a coalition of 10 federally recognized tribes with rights and unresolved claims to Colorado River water. The partnership was created in 1992 and has an ongoing consultation relationship with Reclamation. Of the 22 federally recognized tribes in Arizona, 4 have quantified water rights, or partially quantified rights to water from the mainstream Colorado River through the Consolidated Decree. Another 10 tribes in Arizona have entered water

rights settlements that include Central Arizona Project (CAP) water, one source of which is Priority 4 Arizona Colorado River water. Several more tribes hold CAP contracts. Reclamation has a long-standing and ongoing consultation relationship with CAP tribes. Reclamation consults not only with tribes who hold water rights or are located within the geographic boundary of the Basin, but also with a total of 43 tribes who may be affected or have interests in actions on the Colorado River (**Table TA 13-2**). Consultation and coordination with these tribes is ongoing.

Table TA 13-2
Tribes Invited to Consult on Colorado River Issues

• Ak-Chin Indian Community of the Maricopa Indian Reservation	• Pueblo of Pojoaque
• Chemehuevi Indian Tribe of the Chemehuevi Reservation	• Pueblo of San Felipe
• Cocopah Tribe of Arizona	• Pueblo of San Juan
• Colorado River Indian Tribes of the Colorado River Indian Reservation	• Pueblo of Sandia
• Fort McDowell Yavapai Nation	• Pueblo of Santa Ana
• Fort Mojave Indian Tribe of Arizona, California, and Nevada	• Pueblo of Santa Clara
• Gila River Indian Community	• Pueblo of Tesuque
• Havasupai Indian Tribe of the Havasupai Reservation	• Pueblo of Zia
• Hopi Tribe of Arizona	• Quechan Tribe of the Fort Yuma Indian Reservation
• Hualapai Indian Tribe of the Hualapai Indian Reservation	• Salt River Pima-Maricopa Indian Community of the Salt River Reservation
• Jicarilla Apache Nation	• San Carlos Apache Tribe of the San Carlos Reservation
• Kaibab Band of Paiute Indians of the Kaibab Indian Reservation	• San Juan Southern Paiute Tribe of Arizona
• Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony	• Southern Ute Indian Tribe of the Southern Ute Reservation
• Moapa Band of Paiute Indians of the Moapa River Indian Reservation	• Tohono O'odham Nation of Arizona
• Navajo Nation	• Tonto Apache Tribe of Arizona
• Paiute Indian Tribe of Utah	• Ute Indian Tribe of the Uintah and Ouray Reservation
• Pascua Yaqui Tribe of Arizona	• Ute Mountain Tribe of the Ute Mountain Reservation
• Pueblo of Acoma	• White Mountain Apache Tribe of the Fort Apache Reservation

• Pueblo of Cochiti	• Yavapai-Apache Nation of the Camp Verde Indian Reservation
• Pueblo of Jemez	• Yavapai-Prescott Tribe of the Yavapai Reservation
• Pueblo of Laguna	• Zuni Tribe of the Zuni Reservation
• Pueblo of Nambe	

Impact Analysis Area

The study area for tribal resources is identical to that discussed in **TA-11**, Cultural Resources. It includes the Colorado River corridor from the upper limits of Lake Powell in Utah, through the Grand Canyon in Arizona and Lake Mead in Arizona, and from Hoover Dam to the SIB.

Assumptions

Assumptions for the following analysis are:

- Information regarding specific tribal resources and potential impacts on those resources will be provided by the tribes during consultation.

Impact Indicators

Impact indicators for this analysis are:

- Qualitative assessment of potential impacts on TCPs informed by tribal consultation.
- Qualitative assessment of potential impacts on culturally important resources informed by tribal consultation and by reference to relevant quantitative analysis sections of this Draft EIS (e.g., **TA-9**, Vegetation Including Special Status Species, **TA-8**, Biological Resources – Fish and Other Aquatic Resources, etc.)

TA 13.2.2 Issue 1: How will any changes in dam operations affect Traditional Cultural Properties (TCPs)?

TCPs are historic properties that are eligible for listing on the NRHP principally for their association with culturally significant events as told through indigenous oral history or with individuals named by those traditions. Impacts on TCPs would consist primarily of changes to the natural environmental context resulting from continued active management of reservoir levels and water releases to downstream river segments. Impacts could also occur as reservoir elevations change and expose TCPs to increased visitation. Because TCPs are a specific category of historic property, adverse impacts on TCPs would be addressed though the project's Programmatic Agreement developed in compliance with Section 106 of the National Historic Preservation Act or through ongoing consultation with affected tribes.

Exposure of TCPs as lake levels fluctuate as a result of management actions described by the alternatives would facilitate access to these culturally important locations by tribal members but would also increase access for non-native visitation. End of year lake elevations for each alternative

are explored in detail in **TA-03**, Hydrologic Resources, and are summarized here in discussion of impacts on TCPs.

Across all alternatives and the Continued Current Strategies (CCS) Comparative Baseline, Lake Powell's median water year elevations are generally similar under wet hydrologic conditions, except for the Supply Driven Alternative (both Lower Basin Priority [LB Priority] and Lower Basin Pro Rata [LB Pro Rata] approaches), which show lower median elevations. As conditions become drier, Lake Powell's elevations decrease and differences among alternatives become more pronounced, with operations varying widely at lower water levels.

In the two driest flow categories, the Enhanced Coordination Alternative maintains the highest median reservoir elevations, followed by the Maximum Operational Flexibility Alternative. Both of these alternatives keep median reservoir elevations well above the critical threshold of 3,500 feet, even during dry periods exposing the fewest number of TCPs to increased visitation. In contrast, the No Action Alternative and the Basic Coordination Alternative have median elevations that fall below this critical threshold in dry conditions and these alternatives would facilitate greatest access to TCPs.

For Lake Mead, median calendar year elevations also decline as conditions become drier, but the relative performance of each alternative remains consistent. The Supply Driven Alternative (LB Pro Rata approach) consistently has the highest median reservoir elevations across all flow categories, followed by the LB Priority approach exposing the fewest number of TCPs to increased visitation. The No Action Alternative consistently has the lowest median elevations, with the CCS Comparative Baseline having the second lowest and these alternatives would facilitate greatest access to TCPs. Most action alternatives show wide variability in Lake Mead's elevations, except for the Maximum Operational Flexibility Alternative, which reliably remains above 975 feet.

TA 13.2.3 Issue 2: How will any changes in dam operations affect lake elevations and river flows downstream which may impact archaeological sites or sacred sites?

Sacred sites are specific locations that have been identified by a tribe as sacred because of its traditional religious significance or as a discrete location for ceremonial use. Sacred sites oftentimes overlap significantly with TCPs and with indigenous archaeological sites. Accordingly, impacts on sacred sites are qualitatively similar to impacts on archaeological sites. Here, of primary concern are direct impacts like wave action and wet-dry cycling that could occur from changes in lake levels or to river flows from annual releases. Impacts on archaeological sites are analyzed in detail in **TA-11**, Cultural Resources, and that discussion is summarized here.

At Lake Powell and Lake Mead, continuous inundation of sacred sites or indigenous archaeological sites helps preserve them better than cycles of flooding and exposure, which increase risks from wave action. The main concern is that dropping lake elevations could expose such sites that were previously underwater, making them vulnerable to wet/dry cycles and wave impacts. As water levels fall, more sites become exposed to these risks at lower elevations. Sites at higher elevations may be less affected by wet/dry cycling and wave action but could become more accessible depending on their location.

Hydrological models show that during wet conditions, Lake Powell's water levels are projected to remain above 3,660 feet in all scenarios. As conditions get drier, the Enhanced Coordination and Maximum Operational Flexibility Alternatives maintain the highest median water levels during the Average Flow Category, staying at or above 3,620 feet. These alternatives also perform best in the Critically Dry Flow Category, but projected medians are still below 3,580 feet, meaning sacred sites or archaeological sites—and any unknown sites—at these elevations would be exposed.

For Lake Mead, the Supply Driven Alternative maintains the highest water levels during both the Average and Critically Dry flow categories, followed by the Enhanced Coordination and Maximum Operational Flexibility Alternatives. The Supply Driven Alternative has projected median elevations up to 1,150 feet in the Average Flow Category, while the Enhanced Coordination and Maximum Operational Flexibility Alternatives have medians around 1,100 feet. In the Critically Dry Flow Category, all scenarios would expose sacred sites or archaeological sites and any unknown sites, but the Supply Driven Alternative could protect more sites, with upper interquartile ranges reaching about 1,120 feet.

This pattern is reflected in the Preservation Risk Model analysis. For Lake Powell, the Enhanced Coordination Alternative is most robust, with 58 percent of modeled futures meeting the preservation threshold, followed by the Maximum Operational Flexibility Alternative at 36 percent. For Lake Mead, the Supply Driven Alternative is the most robust, with 43 percent of modeled futures meeting the threshold, followed by the Maximum Operational Flexibility Alternative at 37 percent.

For the Colorado River stretches between Glen Canyon Dam and Lake Mead, and between Hoover Dam and Lake Mohave, water release volumes in Wet and Average flow categories generally remain within the range of past annual releases. However, in the Critically Dry Flow Category, median annual release volumes drop below 7 million acre-feet (maf) below Glen Canyon Dam, with the Enhanced Coordination Alternative reaching as low as 5.1 maf. Below Hoover Dam, median annual flows fall below 8.0 maf, with the Enhanced Coordination and Maximum Operational Flexibility Alternatives dropping to 6.6 maf. As a result, in critically dry conditions, lower water levels increase the likelihood of sacred sites or archaeological sites near the riverbanks being exposed.

Below Davis Dam, impacts are expected to be minimal or nonexistent in any flow category. This is because the dams below Lake Mohave are managed to maintain lake elevations or meet targeted water deliveries, and many sections have channelized banks that further reduce exposure risks.

TA 13.2.4 Issue 3: How will changes in dam operations impact natural resources important to Native Americans including riparian vegetation and wildlife?

Indigenous worldviews do not differentiate between cultural and natural environments as does western science. Under an indigenous perspective, resources considered separately as cultural or natural are all interconnected and interdependent (Berkes 2018). Human interventions that disrupt these interconnections are considered adverse impacts. This Draft EIS discusses many of these resources such as water quality, air quality, and terrestrial wildlife among others. Although all resources are considered interconnected, indigenous oral history and ongoing consultation with

Native American groups have identified riparian vegetation communities and aquatic wildlife as resource categories of particular concern along the Colorado River corridor. Accordingly, we consider riparian vegetation and aquatic wildlife (native and non-native fish) below. Adverse impacts on these resources important to Native Americans would be addressed though ongoing consultation with affected tribes.

Quantitative impacts on riparian vegetation communities and evaluations of which alternatives best support historic vegetation community conditions are presented in detail in **TA-9**, Vegetation Including Special Status Species. Those quantitative analyses are summarized here. Woody riparian vegetation is moderately tolerant of water fluctuations, but if variability increases over a five-year period, these areas tend to decrease. Conversely, if water level variability decreases annually or over five years, woody riparian vegetation may expand.

For Lake Powell, the Enhanced Coordination and Maximum Operational Flexibility Alternatives would maintain woody riparian vegetation most similar to historic conditions. For Lake Mead, the Maximum Operational Flexibility Alternative would best match historic vegetation patterns. However, in the stretch from Hoover Dam to the SIB reach, these two alternatives would cause vegetation to differ most from historic conditions, leading to greater changes in that area. The Basic Coordination Alternative would be least similar to historic conditions for Lake Powell but would be closest to historic vegetation patterns for Lake Mead and the Hoover Dam to SIB reach. This means no single alternative matches historic vegetation across all areas.

Most alternatives provide variability closer to historic conditions than the CCS Comparative Baseline in most reaches, except for Hoover Dam to SIB, where only the Basic Coordination Alternative does so. This suggests that changing current management strategies would benefit much of the analysis area, but not the Hoover Dam to SIB reach unless the Basic Coordination Alternative is chosen.

For the stretch between Glen Canyon Dam and Lake Mead, which alternative best maintains historic vegetation depends on whether starting conditions are wet or dry. Under dry and critically dry conditions, differences between alternatives become more noticeable, especially in the lowest, median, and peak flows. However, across all alternatives, sub-reaches, and evaluation criteria (habitat area, native species richness, proportion of native species cover, and total annual vegetation cover), the interquartile ranges often overlap, making it hard to identify a clear best or worst alternative for preserving historic vegetation.

In all alternatives for Lake Powell, Lake Mead, and Hoover Dam to SIB, the first decade is expected to have greater variability and reduced woody riparian habitats compared to historic conditions. Conditions improve in the second and third decades, allowing vegetation to recover and reestablish. If variability prevents woody riparian habitats from forming, the area may shift to another habitat type.

Quantitative impacts on aquatic wildlife are considered in detail in **TA-8**, Biological Resources – Fish and Other Aquatic Resources, and those quantitative analyses are summarized here. Decreased water levels at Lake Powell affect lake and river habitats for culturally important native and non-native fish. Among the alternatives, the No Action Alternative stands out because it increases the

amount of exposed river habitat for endangered Colorado pikeminnow and razorback sucker, which is beneficial for these species. However, this also means less lake habitat for sportfish, which could negatively affect recreational fishing.

All alternatives except the Enhanced Coordination and Maximum Operational Flexibility Alternatives keep Lake Powell below critical elevation thresholds (3,598 feet for the Colorado River and 3,600 feet for the San Juan River), thereby increasing river habitat. The Enhanced Coordination and Maximum Operational Flexibility Alternatives are less effective in this regard, as they tend to flood critical habitats and reduce the value of riverine habitat.

None of the alternatives are particularly successful at maintaining Piute Farms Waterfall as a barrier to prevent nonnative fish from moving upstream. On the other hand, all alternatives support native fish passage over the waterfall when it is inundated. The Supply Driven Alternative (both LB Priority and LB Pro Rata approaches) and the CCS Comparative Baseline are the most effective at maintaining the waterfall as a barrier, while the Enhanced Coordination and Maximum Operational Flexibility Alternatives are more likely to allow inundation and fish passage.

For Lake Mead, the alternatives would affect tributary inflow habitats of culturally important fish populations. The No Action Alternative and CCS Comparative Baseline are the most effective at keeping Lake Mead below 1,090 feet for at least 90 percent of months. This helps restrict nonnative fish and maintain the current species composition in the Grand Canyon. However, these lower elevations also hinder native species—such as razorback sucker, flannelmouth sucker, and humpback chub—from moving upstream into Grand Canyon habitats.

The Basic Coordination Alternative performs moderately well in balancing these outcomes. In contrast, the Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternatives (both LB Priority and LB Pro Rata approaches) are less effective, as they more often allow Lake Mead to rise above critical thresholds. This can make it easier for both native and nonnative fish to move upstream.

Among the alternatives, the Supply Driven Alternative (LB Pro Rata approach) is the most reliable for keeping Lake Mead above its historical minimum elevation, which supports greater habitat stability.

TA 13.2.5 Summary Comparison of Alternatives

TCPs are historic properties significant to indigenous communities, mainly due to their association with culturally important events or individuals as described in oral traditions. The main impacts to TCPs come from changes in the natural environment caused by managing reservoir levels and water releases, as well as increased exposure and visitation when water levels drop. Adverse impacts on TCPs are addressed through a Programmatic Agreement and ongoing consultation with tribes, in compliance with the National Historic Preservation Act. As lake levels fluctuate, TCPs may become more accessible to both tribal members and non-native visitors. Under wet conditions, most alternatives keep Lake Powell's water levels high and exposure of TCPs low, except for the Supply Driven Alternative, which has lower elevations. In dry conditions, the Enhanced Coordination and Maximum Operational Flexibility Alternatives maintain the highest water levels, limiting TCP

exposure, while the No Action and Basic Coordination Alternatives result in lower elevations and greater access to TCPs. For Lake Mead, water levels also drop as conditions get drier. The Supply Driven Alternative (LB Pro Rata approach) keeps the highest water levels and limits TCP exposure, while the No Action Alternative and CCS Comparative Baseline have the lowest levels, increasing access to TCPs.

Sacred sites are locations identified by tribes for their religious or ceremonial significance, often overlapping with TCPs and indigenous archaeological sites. Impacts on sacred sites are similar to those affecting archaeological sites, with the main concerns being damage from wave action and wet-dry cycling caused by fluctuating lake and river levels. Continuous inundation helps preserve these sites, while exposure due to falling water levels increases risks. During wet conditions, Lake Powell's water levels are expected to remain high, minimizing exposure. As conditions become drier, the Enhanced Coordination and Maximum Operational Flexibility Alternatives maintain higher water levels than others but still fall below critical thresholds in extremely dry scenarios, exposing more sites. For Lake Mead, the Supply Driven Alternative maintains the highest water levels and protect more sites, especially in dry conditions. For river stretches between Glen Canyon Dam and Lake Mead, and between Hoover Dam and Lake Mohave, annual water releases in wet and average years generally match historical volumes. In critically dry years, releases drop significantly, increasing the risk of exposing sacred and archaeological sites near riverbanks. Below Davis Dam, impacts are minimal due to managed lake elevations and channelized banks.

Indigenous perspectives view cultural and natural resources as interconnected, so any disruption to these links is a potential impact. Along the Colorado River, riparian vegetation and aquatic wildlife are especially important to Native Americans. Woody riparian vegetation is moderately resilient to water fluctuations, but increased variability over several years can reduce these habitats. For Lake Powell, the Enhanced Coordination and Maximum Operational Flexibility Alternatives best maintain vegetation similar to historic conditions. For Lake Mead, the Maximum Operational Flexibility Alternative performs best, while the Basic Coordination Alternative is closest to historic conditions for Lake Mead and the Hoover Dam to SIB reach. No single alternative matches historic vegetation patterns across all areas, but most alternatives perform better than the CCS Comparative Baseline in most reaches.

Lower water levels at Lake Powell benefit endangered river species (Colorado pikeminnow and razorback sucker) by increasing their habitat, especially under the No Action Alternative, but this reduces lake habitat for sportfish. Most alternatives (except Enhanced Coordination and Maximum Operational Flexibility) keep Lake Powell below critical thresholds, favoring river habitats. The Enhanced Coordination and Maximum Operational Flexibility Alternatives tend to flood critical habitats, reducing river habitat value. For Lake Mead, the No Action Alternative and CCS Comparative Baseline maintain lower water levels, helping restrict nonnative fish but also limiting upstream movement of native fish. The Basic Coordination Alternative offers a moderate balance. Enhanced Coordination, Maximum Operational Flexibility, and Supply Driven Alternatives more often allow Lake Mead to rise above critical thresholds, which can facilitate movement for both native and nonnative fish. The Supply Driven Alternative (LB Pro Rata approach) is most reliable for maintaining Lake Mead above its historic minimum, supporting habitat stability.

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