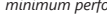
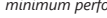
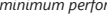
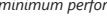
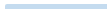
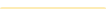
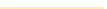


Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Water Temperature	Percent of modeled futures in which water temperature at Lees Ferry (river mile [RM] 0) never exceeds 20°C.	 19% of modeled futures meet the preferred minimum performance.	 32% of modeled futures meet the preferred minimum performance.	 62% of modeled futures meet the preferred minimum performance.	 60% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at the Little Colorado River Confluence (RM 62) exceeds 12°C ≥ 110 days in 90% of years.	 52% of modeled futures meet the preferred minimum performance.	 50% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.	 31% of modeled futures meet the preferred minimum performance.	 58% of modeled futures meet the preferred minimum performance.	 58% of modeled futures meet the preferred minimum performance.	 44% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at the Little Colorado River Confluence (RM 62) exceeds 16°C ≥ 110 days in 90% of years.	 1% of modeled futures meet the preferred minimum performance.	 2% of modeled futures meet the preferred minimum performance.	 4% of modeled futures meet the preferred minimum performance.	 4% of modeled futures meet the preferred minimum performance.	 5% of modeled futures meet the preferred minimum performance.	 5% of modeled futures meet the preferred minimum performance.	 6% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at the Havasu Creek Confluence (RM 157.2) exceeds 12°C ≥ 110 days in 90% of years.	 91% of modeled futures meet the preferred minimum performance.	 92% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at the Havasu Creek Confluence (RM 157.2) exceeds 16°C ≥ 110 days in 90% of years.	 43% of modeled futures meet the preferred minimum performance.	 35% of modeled futures meet the preferred minimum performance.	 16% of modeled futures meet the preferred minimum performance.	 16% of modeled futures meet the preferred minimum performance.	 38% of modeled futures meet the preferred minimum performance.	 38% of modeled futures meet the preferred minimum performance.	 25% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at Pearce Ferry (RM 281) exceeds 12°C ≥ 110 days in 90% of years.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at Pearce Ferry (RM 281) exceeds 16°C ≥ 110 days in 90% of years.	 73% of modeled futures meet the preferred minimum performance.	 72% of modeled futures meet the preferred minimum performance.	 51% of modeled futures meet the preferred minimum performance.	 56% of modeled futures meet the preferred minimum performance.	 66% of modeled futures meet the preferred minimum performance.	 66% of modeled futures meet the preferred minimum performance.	 58% of modeled futures meet the preferred minimum performance.
Smallmouth population growth	Percent of modeled futures in which the 5-year Smallmouth Bass growth rate (lambda) at Lees Ferry is always less than 1.	 6% of modeled futures meet the preferred minimum performance.	 21% of modeled futures meet the preferred minimum performance.	 47% of modeled futures meet the preferred minimum performance.	 44% of modeled futures meet the preferred minimum performance.	 25% of modeled futures meet the preferred minimum performance.	 25% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Smallmouth bass entrainment	Percent of modeled futures in which the annual count of adult smallmouth bass that are entrained and survive is always less than 50 individuals.	 0% of modeled futures meet the preferred minimum performance.	 2% of modeled futures meet the preferred minimum performance.	 26% of modeled futures meet the preferred minimum performance.	 24% of modeled futures meet the preferred minimum performance.	 4% of modeled futures meet the preferred minimum performance.	 4% of modeled futures meet the preferred minimum performance.	 6% of modeled futures meet the preferred minimum performance.
Lake Mead elevation	Percent of modeled futures in which Lake Mead elevation is above the historical minimum elevation of 1,040.92 feet ≥90% of months.	 4% of modeled futures meet the preferred minimum performance.	 11% of modeled futures meet the preferred minimum performance.	 14% of modeled futures meet the preferred minimum performance.	 17% of modeled futures meet the preferred minimum performance.	 21% of modeled futures meet the preferred minimum performance.	 27% of modeled futures meet the preferred minimum performance.	 17% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which Colorado River water levels at Pearce Ferry Rapid are below 1,090 Feet ≥90% of months.	 78% of modeled futures meet the preferred minimum performance.	 59% of modeled futures meet the preferred minimum performance.	 31% of modeled futures meet the preferred minimum performance.	 38% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 20% of modeled futures meet the preferred minimum performance.	 39% of modeled futures meet the preferred minimum performance.
Hoover Dam releases	Percent of modeled futures in which monthly releases from Hoover Dam are within the range observed during 2008–2025, in 100% of months.	 88% of modeled futures meet the preferred minimum performance.	 82% of modeled futures meet the preferred minimum performance.	 47% of modeled futures meet the preferred minimum performance.	 32% of modeled futures meet the preferred minimum performance.	 64% of modeled futures meet the preferred minimum performance.	 61% of modeled futures meet the preferred minimum performance.	 41% of modeled futures meet the preferred minimum performance.

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Vegetation Including Special Status Species (See Section 3.9)

Impact Category	Performance Indicator ¹	Impacts Summary						Representative Preferred Alternative
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	
Vegetation, including special status plant species	Marsh habitat (Lake Powell, Lake Mead, and Hoover Dam to SIB Reaches) – Changes in water fluctuations within a single year compared to historical conditions.	The No Action Alternative is among the middle performing alternative for the Lake Powell reach because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The No Action Alternative is among the best performing alternatives for the Hoover Dam to SIB reaches because it has annual variability similar to historic conditions. The No Action Alternative is among the least performing alternatives for the Lake Mead reach because its annual variability is least like historic conditions.	The Basic Coordination Alternative is among the middle performing alternatives for the Lake Powell reach because is neither the most similar nor the least similar to historic conditions for these reaches. The Basic Coordination Alternative is among the best performing alternatives for the Lake Mead and Hoover Dam to SIB reaches because it has annual variability similar to historic conditions.	The Enhanced Coordination Alternative is among the best performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Enhanced Coordination Alternative is among the least performing alternatives for the Lake Mead and Hoover Dam to SIB reach because its annual variability is least like historic conditions.	The Maximum Operational Flexibility Alternative is among the best performing alternatives for the Lake Powell, Lake Mead, and Hoover Dam to the SIB reaches because it has annual variability similar to historic conditions.	The Supply Driven Alternative is among the best performing alternative for the Hoover Dam to SIB reach because it has annual variability similar to historic conditions. The Supply Driven Alternative is among the middle performing alternative for the Lake Mead reach because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The Supply Driven Alternative is among the least performing alternatives for Lake Powell because its annual variability is least like historic conditions.		The Representative Preferred Alternative is among the middle performing alternatives for the Lake Powell and Lake Mead reaches because is neither the most similar nor the least similar to historic conditions for these reaches in the first decade. The Representative Preferred Alternative is among the least performing alternatives for the Hoover Dam to the SIB because its annual variability is least like historic conditions in the first decade. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.
	Woody riparian habitat (Lake Powell, Lake Mead, and Hoover Dam to SIB Reaches) – Changes in water fluctuations in the preceding 5 years compared to historical conditions.	The No Action Alternative is among the middle performing alternative for the Lake Powell, Lake Mead, and Hoover Dam to SIB reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches.	The Basic Coordination Alternative is among the middle performing alternative for the Lake Powell because the annual variability is neither the most similar nor the least similar to historic conditions for this reach. The Basic Coordination Alternative is among the best performing alternatives for the Lake Mead and Hoover Dam to SIB reaches because it has annual variability similar to historic conditions.	The Enhanced Coordination Alternative is among the best performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Enhanced Coordination Alternative is among the least performing alternatives for Lake Mead and the Hoover Dam to SIB reach because its annual variability is least like historic conditions.	The Maximum Operational Flexibility Alternative is among the middle performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Maximum Operational Flexibility Alternative is among the best performing alternatives for the Lake Mead reach because it has annual variability similar to historic conditions. The Maximum Operational Flexibility Alternative is among the least performing alternatives for the Hoover Dam to SIB reach because its annual variability is least like historic conditions.	The Supply Driven Alternative is never the best performing alternative because it never has variability most similar to historic conditions. The Supply Driven Alternative is among the middle performing alternative for the Lake Mead and Hoover Dam to SIB reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The Supply Driven Alternative is among the least performing alternatives for the Lake Powell reach because its annual variability is least like historic conditions.		The Representative Preferred Alternative is among the middle performing alternatives for all reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.

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Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Vegetation, including special status plant species (continued)	Upland habitat (Lake Powell, Lake Mead, and Hoover Dam to SIB Reaches) – Changes in water fluctuations in either the preceding single year or preceding 5 years compared to historical conditions.	Upland habitat would be gained or lost depending on whether conditions are suitable for marsh or woody riparian habitat (see above).						
	Marsh habitat suitable area (Glen Canyon Dam to Lake Mead Reach) - A change from the median and interquartile ranges from modeled historic conditions	Considering all modeled natural flow conditions, no alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach. Across all sub-reaches, there is a general trend of less suitable habitat area for marsh vegetation under wetter conditions and more suitable habitat area under drier conditions compared to modeled historic conditions.						
	Woody Riparian habitat suitable area (Glen Canyon Dam to Lake Mead Reach) - A change from the median and interquartile ranges from modeled historic conditions.	Considering all modeled natural flow conditions, no alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach. Across all sub-reaches, there is a general trend of less suitable habitat area for woody riparian vegetation under wetter conditions and more suitable habitat area under drier conditions compared to modeled historic conditions.						
	Upland habitat suitable area	Upland habitat would be gained or lost depending on whether conditions are suitable for marsh or woody riparian habitat (see above).						
	Native Species Richness (Glen Canyon Dam to Lake Mead Reach) - A change from the median and interquartile ranges from modeled historic conditions.	Considering all modeled natural flow conditions and sub-reaches, no alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach. All alternatives show decreased native species richness compared to modeled historic conditions under all flow conditions.						
	Proportion Native Species Cover (Glen Canyon Dam to Lake Mead Reach) - A change from the median and interquartile ranges from modeled historic conditions.	Considering all modeled natural flow conditions, no alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach. Across all sub-reaches, there is a general trend of less proportion of native species cover under wetter conditions and more proportion of native species cover under drier conditions compared to modeled historic conditions.						

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Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Vegetation, including special status plant species (<i>continued</i>)	Annual Total Vegetation Cover (Glen Canyon Dam to Lake Mead Reach) – A change from the median and interquartile ranges from modeled historic conditions.	Considering all modeled natural flow conditions, no alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach. Across all sub-reaches, there is a general trend of less annual total vegetation cover under wetter conditions and more annual total vegetation cover under drier conditions compared to modeled historic conditions.						

Terrestrial Wildlife Including Special Status Species (See Section 3.10)

Terrestrial Wildlife Including Special Status Species (See Section 3.7.7)								
Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Terrestrial wildlife species using marsh habitat – Changes in water fluctuations within a single year compared to historical conditions	Terrestrial wildlife species habitat availability, including for special status species	The No Action Alternative is among the middle performing alternative for the Lake Powell reach because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The No Action Alternative is among the best performing alternatives for the Hoover Dam to SIB reaches because it has annual variability similar to historic conditions. The No Action Alternative is among the least performing alternatives for the Lake Mead reach because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Basic Coordination Alternative is among the middle performing alternatives for the Lake Powell reach because is neither the most similar nor the least similar to historic conditions for these reaches. The Basic Coordination Alternative is among the best performing alternatives for the Lake Mead and Hoover Dam to SIB reaches because it has annual variability similar to historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Enhanced Coordination Alternative is among the best performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Enhanced Coordination Alternative is among the least performing alternatives for the Lake Mead and Hoover Dam to SIB reach because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Maximum Operational Flexibility Alternative is among the best performing alternatives for the Lake Powell, Lake Mead, and Hoover Dam to the SIB reaches because it has annual variability similar to historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Supply Driven Alternative is among the best performing alternative for the Hoover Dam to SIB reach because it has annual variability similar to historic conditions. The Supply Driven Alternative is among the middle performing alternative for the Lake Mead reach because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The Supply Driven Alternative is among the least performing alternatives for Lake Powell because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Supply Driven Alternative (LB Pro Rata)	The Representative Preferred Alternative is among the middle performing alternatives for the Lake Powell and Lake Mead reaches because is neither the most similar nor the least similar to historic conditions for these reaches in the first decade. The Representative Preferred Alternative is among the least performing alternatives for the Hoover Dam to the SIB because its annual variability is least like historic conditions in the first decade. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.

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Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Terrestrial wildlife species habitat availability, including for special status species <i>(continued)</i>	Terrestrial wildlife species using woody riparian habitat – Changes in water fluctuations in the preceding 5 years compared to historical conditions.	The No Action Alternative is among the middle performing alternative for the Lake Powell, Lake Mead, and Hoover Dam to SIB reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Basic Coordination Alternative is among the middle performing alternative for the Lake Powell because the annual variability is neither the most similar nor the least similar to historic conditions for this reach. The Basic Coordination Alternative is among the best performing alternatives for the Lake Mead and Hoover Dam to SIB reaches because it has annual variability similar to historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Enhanced Coordination Alternative is among the best performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Enhanced Coordination Alternative is among the least performing alternatives for Lake Mead and the Hoover Dam to SIB reach because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Maximum Operational Flexibility Alternative is among the middle performing alternatives for the Lake Powell reach because it has annual variability similar to historic conditions. The Maximum Operational Flexibility Alternative is among the best performing alternatives for the Lake Mead reach because it has annual variability similar to historic conditions. The Maximum Operational Flexibility Alternative is among the least performing alternatives for the Hoover Dam to SIB reach because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.	The Supply Driven Alternative is never the best performing alternative because it never has variability most similar to historic conditions. The Supply Driven Alternative is among the middle performing alternative for the Lake Mead and Hoover Dam to SIB reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. The Supply Driven Alternative is among the least performing alternatives for the Lake Powell reach because its annual variability is least like historic conditions. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.		The Representative Preferred Alternative is among the middle performing alternatives for all reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.
	Terrestrial wildlife species using upland habitat – Changes in water fluctuations in either the preceding single year or preceding 5 years compared to historical conditions.	Upland habitat would be gained or lost depending on whether conditions are suitable for marsh or woody riparian habitat (see above).						

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Cultural Resources (See Section 3.11)

Impact Category	Performance Indicator ¹	Impacts Summary						Representative Preferred Alternative
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	
Projected end-of-year lake elevations that may expose cultural resources to damage from wave action, wet/dry cycling, or increased ease of access	Projected end-of-year lake elevations for Lake Powell (EOWY) and Lake Mead (EOCY) and number of cultural resources potentially impacted	Lake Powell: Under average conditions, median water levels fall below 3,550 feet exposing at least 316 archaeological sites. Under critically dry conditions, median water levels drop below 3,440 feet, potentially leaving the most sites exposed with at least 415 sites exposed. Lake Mead: During average hydrologic conditions, median elevations are around 990below 980 feet potentially exposing at least 301 known sites. In critically dry conditions, all 310 sites would likely be exposed due to low reservoir elevations.	Lake Powell: Under average conditions, median water levels fall below 3,570 feet exposing at least 316 archaeological sites. Under critically dry conditions, median water levels drop below 3,490 feet with at least 415 sites exposed. Lake Mead: During average hydrological conditions, median elevations are around or below 1,060 feet exposing at least 280 sites. In critically dry conditions, median elevations drop below 980 feet, exposing at least 296 sites would likely be exposed.	Lake Powell: Under average conditions, median water levels drop to around 3,610 feet, leaving at more than 138 sites exposed. Under critically dry conditions, median water levels drop below 3,560 feet, potentially leaving at least 316 sites exposed. Lake Mead: Under average conditions, median elevations are around 1,110 feet exposing up to at least 265 sites. In critically dry conditions, all 310 sites could be exposed due to low reservoir elevations.	Lake Powell: Under average conditions, median water levels drop to around 3,600 feet, leaving at least 197 sites exposed. Under critically dry conditions, median water levels drop below 3,550 feet, potentially leaving at least 316 site exposed. Lake Mead: Under average conditions, median elevations are around or below 1,130 feet exposing up to at least 245 sites. Under critically dry conditions, median elevations are around 1,000 feet leaving at least 296 sites exposed.	Lake Powell: Under average conditions, median elevations are around 3,580 feet leaving at least 280 sites exposed. Under critically dry conditions, median water levels drop below 3,490 feet, potentially leaving the most sites exposed with at least 415 sites exposed. Lake Mead: During average conditions, median elevations are around or below 1,150 feet exposing at least 227 known sites. Under critically dry conditions, minimum elevations are below 1,030 feet and could potentially expose at least 291 sites. .	Lake Powell: Under average conditions, median elevations are just below 3,600 feet leaving at least 249 sites exposed. Under critically dry conditions, median water levels drop below 3,510 feet, potentially leaving the most sites exposed with at least 316 sites exposed. Lake Mead: During average conditions, median elevations are around or below 1,100 feet exposing at least 265 known sites. Under critically dry conditions, minimum elevations are below 990 feet and could potentially expose at least 296 sites.	
	Lake Powell: Percent of modeled futures for the first decadal period (2027–2039) in which the preservation risk at Lake Powell is below 2.72 in at least 90% of months Lake Mead: Percent of modeled futures for the first decadal period (2027–2039) in which the preservation risk at Lake Mead is below 2.24 in at least 90% of months	Lake Powell: 12% of modeled futures meet the preferred minimum performance. Lake Mead: 1% of modeled futures meet the preferred minimum performance.	Lake Powell: 14% of modeled futures meet the preferred minimum performance. Lake Mead: 2% of modeled futures meet the preferred minimum performance.	Lake Powell: 30% of modeled futures meet the preferred minimum performance. Lake Mead: 2% of modeled futures meet the preferred minimum performance.	Lake Powell: 25% of modeled futures meet the preferred minimum performance. Lake Mead: 3% of modeled futures meet the preferred minimum performance.	Lake Powell: 12% of modeled futures meet the preferred minimum performance. Lake Mead: 5% of modeled futures meet the preferred minimum performance.	Lake Powell: 16% of modeled futures meet the preferred minimum performance. Lake Mead: 3% of modeled futures meet the preferred minimum performance.	

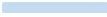
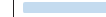
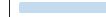
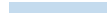
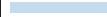
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Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Projected changes in river flows that may contribute to erosion and exposure of cultural resources that may expose sites to damage from erosion, wet/dry cycling, or increased ease of access	Projected releases from dams and forecasted river flow volumes that are outside past releases or flows	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.		Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.
Projected availability of sediments along the river which may be transported by wind and deposited on archaeological sites	Percent of modeled futures for the first decadal period (2027-2039) in which <i>annual sand area >50th percentile or sandbar volume > 1.5 initial condition at least one out of every 3 years</i>	38% of modeled futures meet <i>the preferred minimum performance.</i>	19% of modeled futures meet <i>the preferred minimum performance.</i>	35% of modeled futures meet <i>the preferred minimum performance.</i>	30% of modeled futures meet <i>the preferred minimum performance.</i>	9% of modeled futures meet <i>the preferred minimum performance.</i>	9% of modeled futures meet <i>the preferred minimum performance.</i>	17% of modeled futures meet <i>the preferred minimum performance.</i>

Paleontological Resources (See Section 3.12)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Paleontological preservation risk due to dam operations	Percent of modeled futures for the first decadal period (2027-2039) in which <i>monthly preservation risk rank at Lake Powell stays below 2.9 at least 90% of months</i>	10% of modeled futures meet <i>the preferred minimum performance.</i>	11% of modeled futures meet <i>the preferred minimum performance.</i>	24% of modeled futures meet <i>the preferred minimum performance.</i>	21% of modeled futures meet <i>the preferred minimum performance.</i>	10% of modeled futures meet <i>the preferred minimum performance.</i>		13% of modeled futures meet <i>the preferred minimum performance.</i>
	Percent of modeled futures for the first decadal period (2027-2039) in which <i>monthly preservation risk rank at Lake Mead stays below 2.3 at least 90% of months</i>	1% of modeled futures meet <i>the preferred minimum performance.</i>	1% of modeled futures meet <i>the preferred minimum performance.</i>	2% of modeled futures meet <i>the preferred minimum performance.</i>	2% of modeled futures meet <i>the preferred minimum performance.</i>	4% of modeled futures meet <i>the preferred minimum performance.</i>		3% of modeled futures meet <i>the preferred minimum performance.</i>

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Paleontological resource preservation and stability due to altered sediment transport	Percent of modeled futures for the first decadal period (2027-2039) in which <i>annual sand area >50th and vegetation cover <50th percentile or sandbar volume >1.5 initial condition at least one out of every 3 years</i>	 38% of modeled futures meet the preferred minimum performance.	 19% of modeled futures meet the preferred minimum performance.	 35% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 9% of modeled futures meet the preferred minimum performance.		 9% of modeled futures meet the preferred minimum performance.
Paleontological resource preservation and stability due to altered sediment transport (continued)	Percent of modeled futures in which <i>the fraction of sand mass transported by sandbar-forming flow rates (above 37,000 cfs) is at least 0.4 over 34 years (40% of the sand transport)</i>	 44% of modeled futures meet the preferred minimum performance.	 75% of modeled futures meet the preferred minimum performance.	 83% of modeled futures meet the preferred minimum performance.	 85% of modeled futures meet the preferred minimum performance.	 78% of modeled futures meet the preferred minimum performance.		 76% of modeled futures meet the preferred minimum performance.
Impacts of increased disturbance, unauthorized collection, and recreational impacts on paleontological resources due to dam operations and altered water levels	Percent of modeled futures for the first decadal period (2027-2039) in which <i>Lake Powell elevation stays above 3,500 feet in 100% of months</i>	 4% of modeled futures meet the preferred minimum performance	 19% of modeled futures meet the preferred minimum performance	 81% of modeled futures meet the preferred minimum performance	 94% of modeled futures meet the preferred minimum performance	 35% of modeled futures meet the preferred minimum performance		 49% of modeled futures meet the preferred minimum performance during the 2027-2039 modeling period.
	Percent of modeled futures for the first decadal period (2027-2039) in which <i>Lake Mead elevation stays above 975 feet in 100% of months</i>	 32% of modeled futures meet the preferred minimum performance	 62% of modeled futures meet the preferred minimum performance	 74% of modeled futures meet the preferred minimum performance	 77% of modeled futures meet the preferred minimum performance	 69% of modeled futures meet the preferred minimum performance	 81% of modeled futures meet the preferred minimum performance	 66% of modeled futures meet the preferred minimum performance

Tribal Resources (See Section 3.13)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Reservoir Elevations that may expose traditional cultural properties, archaeological sites, or sacred sites to increased access and visitation	Lake Powell EOWY elevations	Lowest elevations in the critically dry flow category exposing the greatest number of sites to visitation	Second lowest elevations in the critically dry flow category	Highest elevations in the critically dry flow category exposing the fewest number of sites to visitation	Second highest elevations in the critically dry flow category	Tied in the middle performing for elevations in the critically dry flow category	Tied in the middle performing for elevations in the critically dry flow category	Third highest median elevations in the critically dry flow category.
	Lake Mead EOCY elevations in feet	Lowest elevations in all flow categories exposing the greatest number of sites to visitation	Second lowest elevations in all flow categories	Third lowest elevations in all flow categories	Third highest elevations in all flow categories	Second highest elevations in all flow categories	Highest elevations in all flow categories exposing the fewest number of sites to visitation	Third lowest median elevations in the critically dry flow category.

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Projected changes in river flows that may contribute to erosion and exposure of archaeological sites or sacred sites	Projected releases from dams and forecasted river flow volumes that are outside past releases or flows	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.	Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.		Under average hydrologic conditions, releases fall within past volumes for the Glen Canyon Dam to Lake Mead reach and Hoover Dam to Lake Mohave. During critically dry conditions, release volumes may drop below past releases; however, impacts would only be for sites close to riverbank. No impacts below Lake Mohave.
Projected changes in natural resources important to Native Americans including riparian vegetation and wildlife	Woody riparian habitat most similar to historic conditions	The No Action Alternative is among the middle performing alternative for the Lake Powell, Lake Mead, and Hoover Dam to SIB reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches.	The Basic Coordination Alternative is among the middle performing alternative for the Lake Powell because the annual variability is neither the most similar nor the least similar to historic conditions for this reach. The Basic Coordination Alternative is among the best performing alternatives for the Lake Mead and Hoover Dam to SIB reaches because it has annual variability similar to historic conditions.	Among the best performing alternatives for the Lake Powell reach and among the least performing alternatives for Lake Mead and the Hoover Dam to SIB reach.	Among the middle performing alternatives for the Lake Powell reach and among the best performing alternatives for the Lake Mead reach. Among the least performing alternatives for the Hoover Dam to SIB reach.	Never the best performing alternative but among the middle performing alternatives for the Lake Mead reach because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. Alternative is among the middle performing alternative for the Lake Mead and Hoover Dam to SIB reaches. Among the least performing alternatives for the Lake Powell reach.		The Representative Preferred Alternative is among the middle performing alternatives for all reaches because the annual variability is neither the most similar nor the least similar to historic conditions for these reaches. Considering all modeled natural flow conditions, no Alternative is better performing compared to the modeled historic conditions in the Glen Canyon Dam to Lake Mead reach.
	Critical fish habitat (Colorado River)	Modeling presented for aquatic species suggests that 52% of futures would meet acceptable critical habitat performance standards	Modeling suggests 49% of futures would meet acceptable critical habitat performance standards	Modeling suggests that 28% of futures would meet acceptable critical habitat performance standards	Modeling suggests that 27% of futures would meet acceptable critical habitat performance standards	Modeling suggests that 53% of futures would meet acceptable critical habitat performance standards		Modeling suggests that 40% of futures would meet acceptable critical habitat performance standards

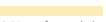
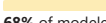
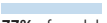
¹ Some performance indicator descriptions include italics to denote a definition of the “*preferred minimum performance*” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Recreation (See Section 3.14)

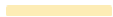
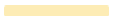
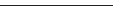
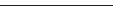
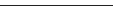
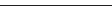
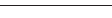
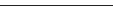
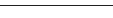
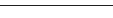
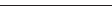
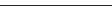
Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Reservoir elevation impacts on shoreline recreational facilities, reservoir boating, and sport fishing opportunities	Percent of modeled futures for the first decadal period (2027-2039) in which the proportion of Lake Powell recreation sites open stays above 0.6 (historical benchmark) for all summer months (May 31 – August 31) each year	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.	 0% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which the proportion of Lake Mead recreation sites open stays above 0.8 (historical benchmark) for all summer months (May 31 – August 31) each year	 3% of modeled futures meet the preferred minimum performance.	 6% of modeled futures meet the preferred minimum performance.	 5% of modeled futures meet the preferred minimum performance.	 8% of modeled futures meet the preferred minimum performance.	 13% of modeled futures meet the preferred minimum performance.	 16% of modeled futures meet the preferred minimum performance.	 7% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which Lake Powell elevation is above the identified boating hazard minimum (3,620 feet) for at least 20% of months	 47% of modeled futures meet the preferred minimum performance.	 50% of modeled futures meet the preferred minimum performance.	 64% of modeled futures meet the preferred minimum performance.	 69% of modeled futures meet the preferred minimum performance.	 43% of modeled futures meet the preferred minimum performance.	 43% of modeled futures meet the preferred minimum performance.	 55% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which Lake Powell elevation is above the critical threshold for most boat launch facilities (3,590 feet) for at least 60% of months	 32% of modeled futures in first 10 years meet the preferred minimum performance.	 34% of modeled futures in first 10 years meet the preferred minimum performance.	 56% of modeled futures in first 10 years meet the preferred minimum performance.	 55% of modeled futures in first 10 years meet the preferred minimum performance.	 31% of modeled futures in first 10 years meet the preferred minimum performance.	 31% of modeled futures in first 10 years meet the preferred minimum performance.	 38% of modeled futures in first 10 years meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which Lake Mead elevation is above the identified boating hazard minimum (1,170 feet) for at least 10% of months	 12% of modeled futures meet the preferred minimum performance.	 19% of modeled futures meet the preferred minimum performance.	 32% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.	 44% of modeled futures meet the preferred minimum performance.	 49% of modeled futures meet the preferred minimum performance.	 31% of modeled futures in first 10 years meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which Lake Mead elevation is 1,040 feet or greater for at least 90% of months	 5% of modeled futures meet the preferred minimum performance.	 12% of modeled futures meet the preferred minimum performance.	 16% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.	 22% of modeled futures meet the preferred minimum performance.	 28% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which Lake Mead elevation is 1,040 feet or greater for at least 90% of months	 5% of modeled futures meet the preferred minimum performance.	 12% of modeled futures meet the preferred minimum performance.	 16% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.	 22% of modeled futures meet the preferred minimum performance.	 28% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.
Glen Canyon Dam releases impacts on whitewater boating and sport fishing	Percent of modeled futures for the first decadal period (2027-2039) in which daytime flows (7am – 7pm) below Glen Canyon Dam are at least 5,000 cfs every day	 92% of modeled futures meet the preferred minimum performance.	 94% of modeled futures meet the preferred minimum performance.	 99% of modeled futures meet the preferred minimum performance.	 40% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 100% of modeled futures meet the preferred minimum performance.	 98% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures for the first decadal period (2027-2039) in which daytime flows (7am – 7pm) below Glen Canyon Dam are at least 8,000 cfs at least 95% of days	 75% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 1% of modeled futures meet the preferred minimum performance.	 22% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 60% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which water temperature at Lees Ferry (river mile [RM] 0) never exceeds 20°C.	 19% of modeled futures meet the preferred minimum performance.	 32% of modeled futures meet the preferred minimum performance.	 62% of modeled futures meet the preferred minimum performance.	 60% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 30% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Dams and Electrical Power Resources (See Section 3.15)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Reservoir Elevations and Power Pool Robustness	Percent of modeled futures in which <i>Lake Powell elevation is always above minimum power pool (3,490 feet).</i>	 25% of modeled futures meet the preferred minimum performance.	 45% of modeled futures meet the preferred minimum performance.	 87% of modeled futures meet the preferred minimum performance.	 98% of modeled futures meet the preferred minimum performance.	 46% of modeled futures meet the preferred minimum performance.	 46% of modeled futures meet the preferred minimum performance.	 66% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead elevation is always above minimum power pool (950 feet).</i>	 43% of modeled futures meet the preferred minimum performance.	 68% of modeled futures meet the preferred minimum performance.	 86% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 77% of modeled futures meet the preferred minimum performance.	 88% of modeled futures meet the preferred minimum performance.	 84% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead elevation is always above the high-head turbines (1,035 feet)</i>	 7% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.	 23% of modeled futures meet the preferred minimum performance.	 22% of modeled futures meet the preferred minimum performance.	 26% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.	 25% of modeled futures meet the preferred minimum performance.
Energy Capacity of the Glen Canyon Dam and Hoover Dam Powerplants	August power capacity (megawatt [MW]) under average hydrology conditions	Glen Canyon Dam: 500-635 MW Hoover Dam: 125-1,240 MW	Glen Canyon Dam: 580-750 MW Hoover Dam: 400-1,550 MW	Glen Canyon Dam: 590-790 MW Hoover Dam: 1,300-1,600 MW	Glen Canyon Dam: 600-650 MW Hoover Dam: 1,200-1,700 MW	Glen Canyon Dam: 620 -740 MW Hoover Dam: 1,380-1,700 MW	Glen Canyon Dam: 620 -740 MW Hoover Dam: 1,490 -1,725 MW	Glen Canyon Dam: 600 -740 MW Hoover Dam: 1,190 -1,650 MW
	August power capacity (MW) under critically dry hydrology conditions	Glen Canyon Dam: 0-520 MW Hoover Dam: 0-250 MW	Glen Canyon Dam: 0-525 MW Hoover Dam: 0-1,260 MW	Glen Canyon Dam: 250-625 MW Hoover Dam: 200 -1,270 MW	Glen Canyon Dam: 225-380 MW Hoover Dam: 249 – 1,425 MW	Glen Canyon Dam: 0-390 MW Hoover Dam: 0-1,500 MW	Glen Canyon Dam: 0-390 MW Hoover Dam: 240-1,550 MW	Glen Canyon Dam: 225 -510 MW Hoover Dam: 100 -450 MW
	Water year generation (Megawatt Hours [MWhs] under average hydrology conditions	Glen Canyon Dam: 3-4 MWhs Hoover Dam: 1.3-3.3 MWhs	Glen Canyon Dam: 3.1-3.7 MWhs Hoover Dam: 2.8-3.6 MWhs	Glen Canyon Dam: 3-4.1 MWhs Hoover Dam: 2.7-3.8 MWhs	Glen Canyon Dam: 3.3-4 MWhs Hoover Dam: 2.9-3.8 MWhs	Glen Canyon Dam: 3.1-3.6 MWhs Hoover Dam: 2.9-3.9 MWhs	Glen Canyon Dam: 3.1-3.6 MWhs Hoover Dam: 2.9-4 MWhs	Glen Canyon Dam: 3.3-3.6 MWhs Hoover Dam: 2.7—3.8 MWhs
	Water year generation (MWhs) under critically dry hydrology conditions	Glen Canyon Dam: 0-2 MWhs Hoover Dam: 0-2.2 MWhs	Glen Canyon Dam: 0-2.3 MWhs Hoover Dam: 0-3 MWhs	Glen Canyon Dam: 1.8-2.7 MWhs Hoover Dam: 1.7-2.7 MWhs	Glen Canyon Dam: 1.9-2.4 MWhs Hoover Dam: 1.9-3 MWhs	Glen Canyon Dam: 0-2 MWhs Hoover Dam: 0.4-3.2 MWhs	Glen Canyon Dam: 0-2 MWhs Hoover Dam: 2-3.1 MWh s	Glen Canyon Dam: 0.7-2.1 MWhs Hoover Dam: 1.0-3.4 MWhs

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Glen Canyon Dam and Hoover Dam spillway infrastructure	Percent of modeled futures in which the <i>January 1 Lake Powell</i> elevation does not exceed 3,684 feet, the target elevation to preserve flood control storage, in at least 90% of years.	 80% of modeled futures meet the preferred minimum performance.	 84% of modeled futures meet the preferred minimum performance.	 75% of modeled futures meet the preferred minimum performance.	 72% of modeled futures meet the preferred minimum performance.	 87% of modeled futures meet the preferred minimum performance.	 87% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Powell</i> elevation is below 3,700 feet in 100% of months. The higher the percentage, the more likely Lake Powell will remain below the spillway crest.	 75% of modeled futures meet the preferred minimum performance.	 76% of modeled futures meet the preferred minimum performance.	 69% of modeled futures meet the preferred minimum performance.	 66% of modeled futures meet the preferred minimum performance.	 82% of modeled futures meet the preferred minimum performance.	 82% of modeled futures meet the preferred minimum performance.	 78% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which the <i>Glen Canyon Dam</i> spillway is not utilized.	 87% of modeled futures meet the preferred minimum performance.	 87% of modeled futures meet the preferred minimum performance.	 84% of modeled futures meet the preferred minimum performance.	 81% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead</i> stays below 1,205.4 feet, the elevation of the Hoover Dam spillway crest, in at least 90% of months	 93% of modeled futures meet the preferred minimum performance.	 90% of modeled futures meet the preferred minimum performance.	 80% of modeled futures meet the preferred minimum performance.	 78% of modeled futures meet the preferred minimum performance.	 72% of modeled futures meet the preferred minimum performance.	 68% of modeled futures meet the preferred minimum performance.	 81% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead</i> elevation stays below 1,219 feet in at least 90% of months. The higher the percentage, the more likely Lake Mead will have reserve flood control storage.	 99% of modeled futures meet the preferred minimum performance.	 98% of modeled futures meet the preferred minimum performance.	 95% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.	 86% of modeled futures meet the preferred minimum performance.	 84% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead</i> elevation never exceeds 1,226.9 feet. At this elevation the volume of spillway discharge triggers a "Imminent Life-Threatening Emergency" response.	 98% of modeled futures meet the preferred minimum performance.	 97% of modeled futures meet the preferred minimum performance.	 94% of modeled futures meet the preferred minimum performance.	 94% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.	 88% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.
	Percent of modeled futures in which <i>Lake Mead</i> elevation stays below 1,226.9 feet. At this elevation the volume of spillway discharge triggers a "Imminent Life-Threatening Emergency" response.	 98% of modeled futures meet the preferred minimum performance.	 97% of modeled futures meet the preferred minimum performance.	 94% of modeled futures meet the preferred minimum performance.	 94% of modeled futures meet the preferred minimum performance.	 89% of modeled futures meet the preferred minimum performance.	 88% of modeled futures meet the preferred minimum performance.	 93% of modeled futures meet the preferred minimum performance.
Glen Canyon Dam electricity rates	Glen Canyon Dam number of rate changes	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 33% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 36% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 44% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 44% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 32% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 32% of futures meet the minimum performance level.	 Results indicate one or fewer major rate increases during the 2027–2039 modeling period. For maintaining zero rate increases, 37% of futures meet the minimum performance level.

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Annual Market Value of the Glen Canyon Dam and Hoover Dam Powerplants	Annual Market Value (million dollars) of Glen Canyon Dam Generation under average hydrology conditions	Glen Canyon Dam: \$160 million - \$230 million	Glen Canyon Dam: \$190 million - \$210 million	Glen Canyon Dam: \$190 million - \$250 million	Glen Canyon Dam: \$200 million - \$250 million	Glen Canyon Dam: \$190 million - \$210 million	Glen Canyon Dam: \$190 million - \$210 million	Glen Canyon Dam: \$200 million - \$210 million
		Hoover Dam: \$50 million - \$125 million	Hoover Dam: \$100 million - \$190 million	Hoover Dam: \$145 million - \$190 million	Hoover Dam: \$140 million - \$200 million	Hoover Dam: \$150 million - \$210 million	Hoover Dam: \$150 million - \$215M	Hoover Dam: \$140 million - \$200 million
	Annual Market Value (million dollars) of Hoover Dam Generation under critically dry hydrology conditions	Glen Canyon Dam: \$0 - \$100 million	Glen Canyon Dam: \$0 - \$100 million	Glen Canyon Dam: \$100 million - \$160million	Glen Canyon Dam: \$100 million - \$150 million	Glen Canyon Dam: \$0 million - \$100 million	Glen Canyon Dam: \$0 million - \$100 million	Glen Canyon Dam: \$40 million - \$130 million
		Hoover Dam: \$0 - \$100 million	Hoover Dam: \$0 - \$110 million	Hoover Dam: \$75 million - \$125 million	Hoover Dam: \$80 million - \$145 million	Hoover Dam: \$0 - \$155 million	Hoover Dam: \$90 million - \$160 million	Hoover Dam: \$40 million - \$160 million

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Socioeconomics (See Section 3.16)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and social conditions associated with changes in agriculture due to water shortages	Level of annual impacts on acres of fallowed agricultural lands during a maximum shortage	For Arizona non-tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on acres of fallowed lands during a maximum shortage of 0.6 maf, with an increase of about 1,000 fallowed acres. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the No Action Alternative is among the alternatives with the lowest level of impact on acres of fallowed lands during a maximum shortage of 0.6 maf, with no change in fallowed acres. For Arizona tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on acres of fallowed lands during a maximum shortage of 0.6 maf, with an increase of about 12,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a low level of impact on acres of fallowed lands during a maximum shortage of 1.5 maf, with an increase of about 7,000 fallowed acres. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with the lowest level of impact on acres of fallowed lands during a maximum shortage of 1.5 maf, with no change in fallowed acres. For Arizona tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a medium level of impact on acres of fallowed lands during a maximum shortage of 1.5 maf, with an increase of about 50,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a medium level of impact on acres of fallowed lands during a maximum shortage of 3.0 maf, with an increase of about 62,000 fallowed acres. For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Enhanced Coordination Alternative has the highest level of impact on acres of fallowed lands during a maximum shortage of 3.0 maf, with an increase of about 283,000, 5,000, and 700 fallowed acres for California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, respectively. For Arizona tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a medium level of impact on acres of fallowed lands during a maximum shortage of 3.0 maf, with an increase of about 39,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on acres of fallowed lands during a maximum shortage of 4.0 maf, with an increase of about 103,000 fallowed acres. For California non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 4.0 maf, with an increase of about 227,000 fallowed acres. For California tribal and Nevada tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with the lowest level of impact on acres of fallowed lands during a maximum shortage of 4.0 maf, with no change in fallowed acres. For Arizona tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on acres of fallowed lands during a maximum shortage of 4.0 maf, with an increase of about 68,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 8,000 fallowed acres. For California non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 12,000 fallowed acres. For California tribal and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with the lowest level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with no change in fallowed acres. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 54,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a medium level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 61,000 fallowed acres. For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 153,000, 3,000, and 500 fallowed acres for California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, respectively. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a medium level of impact on acres of fallowed lands during a maximum shortage of 2.1 maf, with an increase of about 39,000 fallowed acres.	For Arizona non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 3.6 maf, with an increase of about 91,000 fallowed acres. For California non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 3.6 maf, with an increase of about 151,000 fallowed acres. For California tribal and Nevada tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with the lowest level of impact on acres of fallowed lands during a maximum shortage of 3.6 maf, with no change in fallowed acres. For Arizona tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on acres of fallowed lands during a maximum shortage of 3.6 maf, with an increase of about 67,000 fallowed acres.

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⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and social conditions associated with changes in agriculture due to water shortages <i>(continued)</i>	Level of annual impacts on market value of crop production from a maximum shortage	For Arizona non-tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on market value of crops during a maximum shortage of 0.6 maf, with a loss in market value of about \$1.8 million. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the No Action Alternative is among the alternatives with the lowest level of impact on market value of crops during a maximum shortage of 0.6 maf, with no loss in market value. For Arizona tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on market value of crops during a maximum shortage of 0.6 maf, with a loss in market value of about \$17.4 million.	For Arizona non-tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a low level of impact on market value of crops during a maximum shortage of 1.5 maf, with a loss in market value of about \$17.6 million. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with the lowest level of impact on market value of crops during a maximum shortage of 1.5 maf, with no change in market value. For Arizona tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 1.5 maf, with a loss in market value of about \$82.3 million.	For Arizona non-tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a medium level of impact on market value of crops during a maximum shortage of 3.0 maf, with a loss in market value of about \$79.6 million. For California non-tribal, agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 3.0 maf, with a loss in market value of about \$691.8 million. For California tribal and Nevada tribal agriculture entitlement holders, the Enhanced Coordination Alternative has the highest level of impact on market value of crops during a maximum shortage of 3.0 maf, with a loss in market value of about \$10.9 million and \$0.6 million, for California tribal and Nevada tribal agriculture entitlement holders, respectively. For Arizona tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a medium level of impact on market value of crops during a maximum shortage of 3.0 maf, with a loss in market value of about \$52.5 million.	For Arizona non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on market value of crops during a maximum shortage of 4.0 maf, with a loss in market value of about \$150.8 million. For California non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on market value of crops during a maximum shortage of 4.0 maf, with a loss in market value of about \$1,094.3 million. For California tribal and Nevada tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with the lowest level of impact on market value of crops during a maximum shortage of 4.0 maf, with no change in market value. For Arizona tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on market value of crops during a maximum shortage of 4.0 maf, with a loss in market value of about \$113.2 million.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on market value of crops during a maximum shortage of 2.1 maf, with a loss in market value of about \$21.0 million. For California non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on market value of crops during a maximum shortage of 2.1 maf, with a loss in market value of about \$25.4 million. For California tribal and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with the lowest level of impact on market value of crops during a maximum shortage of 2.1 maf, with no change in market value. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 2.1 maf with a loss in market value of about \$88.7 million.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a medium level of impact on market value of crops during a maximum shortage of 2.1 maf, with a loss in market value of about \$78.2 million. For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 2.1 maf, with a loss in market value of about \$473.8 million, \$7.7 million, and \$0.5 million, for California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, respectively. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a medium level of impact on market value of crops during a maximum shortage of 2.1 maf with a loss in market value of about \$51.7 million.	For Arizona non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 3.6 maf, with a loss in market value of about \$133.1 million. For California non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 3.6 maf, with a loss in market value of about \$812.7 million. For California tribal and Nevada tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with the lowest level of impact on market value of crops during a maximum shortage of 3.6 maf, with no change in market value. For Arizona tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on market value of crops during a maximum shortage of 3.6 maf, with a loss in market value of about \$111.9 million.

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⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and social conditions associated with changes in agriculture due to water shortages <i>(continued)</i>	Level of annual impacts on economic contributions, including jobs, labor income, and total economic output from a maximum shortage	For Arizona non-tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on economic contributions during a maximum shortage of 0.6 maf, with a loss of over 10 jobs, about \$0.6 million in labor income, and \$2.8 million in economic output. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the No Action Alternative is among the alternatives with the lowest level of impact on economic contributions during a maximum shortage of 0.6 maf, with no loss in jobs, labor income, or economic output. For Arizona tribal agriculture entitlement holders, the No Action Alternative has the lowest level of impact on economic contributions during a maximum shortage of 0.6 maf, with a loss of about 135 jobs, \$10.7 million in labor income, and \$34.8 million in economic output.	For Arizona non-tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a medium level of impact on economic contributions during a maximum shortage of 1.5 maf, with a loss of about 135 jobs, \$8.1 million in labor income, and \$27.4 million in economic output. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with the lowest level of impact on economic contributions during a maximum shortage of 1.5 maf, with no change in jobs, labor income, or economic output. For Arizona tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 1.5 maf, with a loss of about 900 jobs, \$48.1 million in labor income, and \$162.2 million in economic output. ⁴	For Arizona non-tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 3.0 maf, with a loss of about 500 jobs, \$29.0 million in labor income, and \$126.8 million in economic output. ⁴ For California non-tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 3.0 maf, with a loss of about 4,000 jobs, \$246.5 million in labor income, and \$1.0 billion in economic output. For California tribal and Nevada tribal agriculture entitlement holders, the Enhanced Coordination Alternative has the highest level of impact on economic contributions during a maximum shortage of 3.0 maf, with a loss of about 63 jobs, \$3.9 million in labor income, and \$15.9 million in economic output for California tribal entitlement holders, and a loss of about 13 jobs, \$0.1 million in labor income, and \$0.9 million in economic output for Nevada tribal agriculture entitlement holders. For Arizona tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 1.5 maf,	For Arizona non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on economic contributions during a maximum shortage of 4.0 maf, with a loss of about 1,000 jobs, \$56.5 million in labor income, and \$237.7 million in economic output. ⁴ For California non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on economic contributions during a maximum shortage of 4.0 maf, with a loss of about 11,000 jobs, \$824.7 million in labor income, and \$1.8 billion in economic output. For California tribal and Nevada tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with the lowest level of impact on economic contributions during a maximum shortage of 4.0 maf, with no change in jobs, labor income, or economic output. For Arizona tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative has the highest level of impact on economic contributions during a maximum shortage of 1.5 maf, with a loss of about 1,000 jobs, \$64.7 million in labor income, and \$222.6 million in economic output.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a medium level of impact on economic contributions during a maximum shortage of 2.1 maf, with a loss of about 160 jobs, \$9.5 million in labor income, and \$32.6 million in economic output. ⁴ For California non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on economic contributions during a maximum shortage of 2.1 maf, with a loss of over 140 jobs, about \$8.5 million in labor income, and \$36.9 million in economic output. For California tribal and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with the lowest level of impact on economic contributions during a maximum shortage of 2.1 maf, with no change in jobs, labor income, or economic output. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 1.5 maf, with a loss of about 900 jobs, \$51.3 million in labor income, and \$174.6 million in economic output.	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 2.1 maf, with a loss of 500 jobs, about \$28.4 million in labor income, and \$124.3 million in economic output. ⁴ For California non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 2.1 maf, with a loss of about 3,000 jobs, \$173.4 million in labor income, and \$689.2 million in economic output. For California tribal and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a low level of impact on economic contributions during a maximum shortage of 2.1 maf, with a loss of about 45 jobs, \$2.8 million in labor income, and \$11.2 million in economic output for California tribal entitlement holders, and a loss of about 9 jobs, \$0.1 million in labor income, and \$0.6 million in economic output for Nevada tribal agriculture entitlement holders. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on economic contributions during a	For Arizona non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 3.6 maf, with a loss of 900 jobs, about \$50.5 million in labor income, and \$210.7 million in economic output. ⁴ For California non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 3.6 maf, with a loss of 9,000 jobs, about \$718.1 million in labor income, and \$1.3 billion in economic output. ⁴ For California tribal and Nevada tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with the lowest level of impact on economic contributions during a maximum shortage of 3.6 maf, with no change in jobs, labor income, or economic output. For Arizona tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on economic contributions during a maximum shortage of 3.6 maf, with a loss of 1,000 jobs, about \$64.0 million in labor income, and \$220.0 million in economic output.

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⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and social conditions associated with changes in agriculture due to water shortages (continued)	(see above)	(see above)	(see above)	with a loss of about 500 jobs, \$31.2 million in labor income, and \$104.7 million in economic output.	(see above)	(see above)	maximum shortage of 1.5 maf, with a loss of about 400 jobs, \$30.7 million in labor income, and \$103.0 million in economic output.	(see above)
	Impacts on nonmarket values and social conditions from changes in agriculture	For non-tribal and tribal agriculture entitlement holders in Arizona, California, and Nevada, the No Action Alternative is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of fallowed agriculture lands expected from shortages, under this alternative. ⁴	For Arizona non-tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a low level of impact on access and quality of nonmarket values and social conditions due to the low level of impact on acreages of fallowed agriculture lands from shortages. ⁴ For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of fallowed agriculture lands expected from shortages, under this alternative. For Arizona tribal agriculture entitlement holders, the Basic Coordination Alternative is among the alternatives with a medium level of impact on access and quality of nonmarket values and social conditions due to the medium level of impact on acreages of fallowed agriculture lands from shortages.	For Arizona non-tribal and tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a medium level of impact on access and quality of nonmarket values and social conditions due to the medium level of impact on acreages of fallowed agriculture lands from shortages. For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Enhanced Coordination Alternative is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages.	For Arizona non-tribal and tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages. For California non-tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages. For California tribal and Nevada tribal agriculture entitlement holders, the Maximum Operational Flexibility Alternative is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of	For Arizona non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on access and quality of nonmarket values and social conditions due to the low level of impact on acreages of fallowed agriculture lands from shortages. For California non-tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a low level of impact on access and quality of nonmarket values and social conditions due to the low level of impact on acreages of fallowed agriculture lands from shortages. For California tribal and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of	For Arizona non-tribal and tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a medium level of impact on access and quality of nonmarket values and social conditions due to the medium level of impact on acreages of fallowed agriculture lands from shortages. For California non-tribal, California tribal, and Nevada tribal agriculture entitlement holders, the Supply Driven Alternative (LB Pro Rata approach) is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages. For California tribal and Nevada tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of fallowed agriculture lands expected from shortages, under this alternative.	For Arizona non-tribal and tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages. For California non-tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages. For California tribal and Nevada tribal agriculture entitlement holders, the Representative Preferred Alternative is among the alternatives with the lowest level of impact on access and quality of nonmarket values and social conditions due to the little to no increases in acreages of fallowed agriculture lands expected from shortages, under this alternative.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and social conditions associated with changes in agriculture due to water shortages <i>(continued)</i>	<i>(see above)</i>	<i>(see above)</i>	<i>(see above)</i>	<i>(see above)</i>	fallowed agriculture lands expected from shortages, under this alternative.	fallowed agriculture lands expected from shortages, under this alternative. For Arizona tribal agriculture entitlement holders, the Supply Driven Alternative (LB Priority approach) is among the alternatives with a high level of impact on access and quality of nonmarket values and social conditions due to the high level of impact on acreages of fallowed agriculture lands from shortages.	<i>(see above)</i>	<i>(see above)</i>

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred
Economic contributions and value associated with Lake-Based Recreation	Changes in recreation visitor spending and associated regional employment, labor income, and total economic output from lake-based recreation-related activities	Under No Action and all Action Alternatives, declining reservoir elevations at Lake Powell and Lake Mead reduce access to boating, marina operations, and shoreline recreation in dry conditions. This is expected to lead to a decrease in visitation and associated spending on lodging, food services, and transportation-related spending in nearby gateway communities. Businesses that rely on water-based visitation, including marinas, guide services, motels, and equipment rentals, are expected to experience losses in jobs and labor income. Downstream economic effects also weaken, reducing Potential for overall economic output.	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. For Lake Powell, economic contributions associated with recreational use are likely to be similar to existing conditions. For Lake Mead, there is more robust performance related to recreation site access and navigation thresholds, therefore visitation and spending associated with this reservoir are anticipated to be maintained at levels at or above that of the No Action Alternative.	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. This alternative is among the most robust in terms of meeting thresholds for navigation in Lake Powell, and recreation access and Lake Mead. Consequently, Employment and income losses remain but occur at lower levels relative to No Action and Basic Coordination Alternatives. Gateway communities experience more consistent seasonal activity.	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. As discussed under the Maximum Operational Flexibility Alternative, consequently, economic contributions from lake-based recreation would likely be higher than the CCS Comparative Baseline and No Action Alternative due to more robust maintenance of access for recreation sites and navigation. Consequently Employment and income losses remain but occur at lower levels relative to No Action and Basic Coordination Alternatives. Gateway communities experience more consistent seasonal activity.	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. For Lake Powell recreation site and navigation access would be less robust than the No Action Alternative which could further impact recreational spending and gateway businesses and concessionaire associated with Lake Powell. In contrast, for Lake Mead, the Supply Driven Alternative (LB Priority approach) modeling represents the most robust outcomes for recreation site access and navigation, supporting continued or increased spending associated with recreation activities for this reservoir.	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. Impacts would be the same as described for the Supply Driven Alternative (LB Priority approach).	Decreases in visitation and associated spending would occur under dry conditions as described under the No Action Alternative. On Lake Powell, the Representative Preferred would be slightly more robust in terms of maintenance of critical thresholds for navigation than the No Action Alternative and CCS Comparative Baseline. Compared to other action alternatives, this is better than the Supply Driven Alternative (both LB Priority and LB Pro Rata approaches), but less robust than the Enhanced Coordination and Maximum Operational Flexibility Alternatives in terms of support for recreational spending. For reservoir-based recreation on Lake Mead, the Representative Preferred modeling represents less robust outcomes for recreational site access as compared to the CCS Comparative Baseline but slightly more robust outcomes than the No Action Alternative. This is a similar level of performance to the other action alternatives. For navigation, the Representative Preferred Alternative is more robust at meeting defined thresholds than both the No Action and CCS Comparative Baseline.

¹ Some performance indicator descriptions include italics to denote a definition of the “*preferred minimum performance*” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred
Economic contributions and value associated with Lake-Based Recreation (continued)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	(see above)	Overall, recreational spending and gateway businesses and concessionaire associated with Lake Mead would be similar to other action alternatives.
	Percent of modeled futures in which the annual recreational value ⁵ of whitewater boating exceeds 32 million dollars at least 90% of years over the first decadal period. This threshold indicates when modeled futures achieve recreation values at least as high as the lowest 10% of outcomes for recreation value based on recent historic hydrologic data (2020-2023).	 60% of modeled futures meet the preferred minimum performance.	 78% of modeled futures meet the preferred minimum performance.	 18% of modeled futures meet the preferred minimum performance.	 36% of modeled futures meet the preferred minimum performance.	 38% of modeled futures meet the preferred minimum performance.	 38% of modeled futures meet the preferred minimum performance.	 37% of modeled futures meet the preferred minimum performance.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁵ Recreational value of whitewater boating is calculated based on net economic value changes for whitewater rafting in Grand Canyon. This approach follows the methods used in the Glen Canyon Dam Long-Term Experimental and Management Plan Final Supplemental Environmental Impact Statement, where past survey research (Neher et al. 2017, Bishop et al. 1987) informed models to project the change in net economic value under different river flow scenarios. These models link willingness-to-pay estimates for boaters to hydrologic conditions, providing a measure of recreation benefits that extends beyond market spending. Reclamation used similar methods for the analysis of potential impacts on recreation as were used in the 2007 Final EIS and 2024 Near-term Colorado River Operations Final Supplemental Environmental Impact Statement (2024 Final SEIS) to assess the effects on recreation value associated with white-water boating.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Economic contributions and value associated with Lake-Based and River-based Recreation (continued)	Percent of modeled futures in which <i>the annual recreational value⁶ of angling exceeds 1.75 million dollars in at least 90% of years</i> over the first decadal period. This value indicates when modeled futures achieve recreation values at least as high as the lowest 10% of outcomes for recreation value based on recent historic hydrologic data (2020-2023).	40% of modeled futures meet <i>the preferred minimum performance</i> .	63% of modeled futures meet <i>the preferred minimum performance</i> .	2% of modeled futures meet <i>the preferred minimum performance</i> .	19% of modeled futures meet <i>the preferred minimum performance</i> .	34% of modeled futures meet <i>the preferred minimum performance</i> .	34% of modeled futures meet <i>the preferred minimum performance</i> .	9% of modeled futures meet <i>the preferred minimum performance</i> .

¹ Some performance indicator descriptions include italics to denote a definition of the “*preferred minimum performance*” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁶ Recreational value of angling is calculated based on net economic value changes for angling in Glen Canyon. This approach follows the methods used in the Glen Canyon Dam Long-Term Experimental and Management Plan Final Supplemental Environmental Impact Statement, where past survey research (Neher et al. 2017, Bishop et al. 1987) informed models to project the change in net economic value under different river flow scenarios. These models link willingness-to-pay estimates for boaters to hydrologic conditions, providing a measure of recreation benefits that extends beyond market spending. Reclamation used similar methods for the analysis of potential impacts on recreation as were used in the 2007 Final EIS and 2024 Final SEIS to assess the effects on recreation value associated with angling.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
How would anticipated water shortages and changes in water levels in reservoirs and river segments affect access and quality of nonmarket values?	Changes in existence and symbolic values of the river due to shifts in scenic character or ecological conditions.	Lower reservoir elevations and increased shoreline exposure reduce opportunities for solitude, as well as access to quiet coves, beaches, and natural shorelines. These conditions diminish the experiential qualities that many users value. Extended low-flow periods could also impact river-based experiences in Grand Canyon due to changes in setting which could impact perceived naturalness (see TA 14, Recreation). Cultural and spiritual values tied to iconic landscapes and cultural artifacts could also be impacted in low-hydrologic flow periods (see TA 11, Cultural Resources). Ecological services such as riparian habitat stability may decline, influencing non-use values related to wildlife and vegetation communities (see TA 8, Biological Resources – Fish and Other Aquatic Resources).	Under dry conditions nonmarket values could be impacted as discussed under the no action alternative. More frequent low-elevation conditions could occur in the Basic Coordination Alternative, which could noticeably affect nonmarket values tied to lake-based recreation and scenic quality (see TA 14, Recreation) although at a reduced level compared to the No Action Alternative. Reduced reservoir levels may expose previously submerged areas, altering visual character and diminishing opportunities for solitude. Overall impacts are similar to the No Action.	Under dry conditions nonmarket values could be impacted as discussed under the no action alternative. The Enhanced Coordination Alternative is more robust in terms of the support for nonmarket values, particularly for values associated with Lake Powell, as reservoir levels would be maintained at thresholds supporting access for boating and camping in more modeled futures, supporting experiential benefits and cultural connections (see TA 11, Cultural Resources). River-based recreation quality is expected to remain high, due to increased stability with flow-dependent activities (see TA 14, Recreation). Non-use values tied to ecosystem services, such as wildlife habitat and riparian vegetation, would also be supported (see TA 8, Biological Resources – Fish and Other Aquatic Resources).	Under dry conditions nonmarket values could be impacted as discussed under the no action alternative. Similar to the Enhanced Coordination Alternative, this alternative is more robust in terms of the support for nonmarket values, particularly for values associated with Lake Powell, and for river Based recreation, due to increased stability with flow-dependent activities (see TA 14, Recreation).	Outcomes produced by the Supply Driven Alternative (LB Priority approach) vary depending on hydrology and location. In wet years, nonmarket values remain similar to the No Action Alternative but in dry sequences, reduced reservoir elevations and altered flow regimes diminish scenic quality and access for boating and angling (see TA 14, Recreation), for Lake Powell. For Lake Mead, the Supply Driven Alternatives (both LB Priority and LB Pro Rata approaches) are the most robust for supporting reservoir levels at Lake Mead which support non-market values. River-based recreation experiences moderate variability in trip quality, while ecosystem services and associated non-use values fluctuate with water availability (see TA 8, Biological Resources – Fish and Other Aquatic Resources). Cultural and spiritual values tied to river corridors may also be affected during extended drought periods (see TA 11, Cultural Resources).	Impacts would be as described for the Supply Driven Alternative (LB Priority approach).	Under dry conditions nonmarket values could be impacted as discussed under the no action alternative. For values associated with lake-based recreation, modeled results show reduced low-elevation outcomes in Lake Powell and Mead compared to more vulnerable alternatives, but vulnerability remains under drier future hydrologic conditions (TA 3, Hydrology). The Representative Preferred Alternative generally performs in the middle of the range of alternatives for both Lake Powell and Lake Mead elevations as well as river flow, showing moderate robustness in terms of overall support for recreation associated benefits (TA 14, Recreation). Overall, this alternative would provide moderate protection for riverine habitat to support cultural values (see TA 13, Tribal). The preferred alternative provides a framework that allows for shortage distributions to be negotiated in different ways, consistent with sideboards described in Chapter 2, as a result, impacts for any given sub-period in the planning period may differ from those described.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Population and Land Use (See Section 3.17)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Priority Group: Arizona Central Arizona Project (CAP) non-Indian agriculture (NIA)-A and NIA-B	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	0% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.
	Percent of modeled futures in which greater than 60% of normal delivery occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	0% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition. ⁴	100% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	100% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.
Priority Group: Arizona CAP Indian, municipal and industrial (M&I), and 4(i)	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	13% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	100% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition. ⁴	100% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	100% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.
Priority Group: Arizona Priorities 2 and 3	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	100% of modeled futures meet the performance definition. ⁴	100% of modeled futures meet the performance definition. ⁴	0% of modeled futures meet the performance definition.	26% of modeled futures meet the performance definition.	100% of modeled futures meet the performance definition.	0% of modeled futures meet the performance definition.	54% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	100% of modeled futures meet the performance definition. ⁴	100% of modeled futures meet the performance definition. ⁴	100% of modeled futures meet the performance definition.	35% of modeled futures meet the performance definition.	100% of modeled futures meet the performance definition.	100% of modeled futures meet the performance definition.	58% of modeled futures meet the performance definition.

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⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see Figure TA 4-12), which could result in significant but highly uncertain impacts.

⁷ Normal delivery refers to a full supply of domestic water delivery throughout this table.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Priority Group: Arizona present perfected right (PPR)	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.
Priority Group: California Priority 4	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

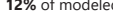
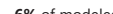
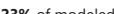
⁷ Normal delivery refers to a full supply of domestic water delivery throughout this table.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Priority Group: California PPR	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.
Priority Group: Nevada Priorities 1-7	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 18% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

⁷ Normal delivery refers to a full supply of domestic water delivery throughout this table.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Priority Group: Nevada Priority 8	Percent of modeled futures in which greater than 80% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition. ⁴	 0% of modeled futures meet the performance definition.	 1% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.	 18% of modeled futures meet the performance definition.	 0% of modeled futures meet the performance definition.
	Percent of modeled futures, in which greater than 60% of normal domestic delivery ⁷ occurs at least 90% of years, across the first decade of the modeling period. The higher the percentage, the more robust an alternative is with respect to achieving normal domestic deliveries.	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition. ⁴	 100% of modeled futures meet the performance definition.	 22% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 100% of modeled futures meet the performance definition.	 54% of modeled futures meet the performance definition.
Lower Basin Domestic Water Deliveries	Percent of modeled futures in which dead pool-related delivery reductions occur, across the first decade of the modeling period (2027 – 2039)	 59% of modeled futures with dead pool-related reductions	 32% of modeled futures with dead pool-related reductions	 12% of modeled futures with dead pool-related reductions	 6% of modeled futures with dead pool-related reductions	 23% of modeled futures with dead pool-related reductions	 12% of modeled futures with dead pool-related reductions	 8% of modeled futures with dead pool-related reductions

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⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

⁷ Normal delivery refers to a full supply of domestic water delivery throughout this table.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Comparison of impacts on senior and junior entitlements	Shortage to domestic water users, across the first decade of the modeling period	>80% of normal domestic water delivery to senior entitlements (Arizona (AZ) P2 & P3; AZ PPR; California (CA) PPR; and Nevada (NV) P1-7 priority groups) and some junior entitlements (CA P4 and NV P8 priority groups) occurs in all potential futures. In contrast, for Arizona junior entitlements (AZ CAP NIA-A and NIA-B; AZ CAP Indian, M&I, and 4(i) priority groups) there are no potential futures in which >80% normal domestic water delivery occurs. ⁴	>80% of normal domestic water delivery to senior entitlements (AZ P2 & P3; AZ PPR; CA PPR; and NV P1-7 priority groups) and some junior entitlements (CA P4 priority group) occurs in all potential futures. In contrast, for Arizona and Nevada junior entitlements (AZ CAP NIA-A and NIA-B; AZ CAP Indian, M&I, and 4(i); and NV P8 priority groups) there are no potential futures in which >80% normal domestic water delivery occurs. ⁴	>60% of normal domestic water delivery to all Arizona, California, and Nevada priority groups occurs in all potential futures. While this alternative results in more priority groups receiving domestic water delivery closer to normal conditions, it results in domestic shortage impacts on Arizona, California, and Nevada senior entitlements that would otherwise receive domestic water deliveries consistent with normal conditions.	>80% of normal domestic water delivery to some senior priority groups (AZ PPR; CA PPR; and NV P1-7 priority groups) occurs in all potential futures. In contrast, for all Arizona, California, and Nevada junior entitlements (AZ CAP NIA-A and NIA-B; AZ CAP Indian, M&I, and 4(i); CA P4; and NV P8 priority groups) there are no potential futures, in which >80% of normal domestic water delivery occurs. AZ P2 & P3 receives >60% and >80% of normal delivery in 26% and 35% of potential futures, respectively. NV P8 receives >60% and >80% of normal domestic water delivery in 1% and 22% of potential futures, respectively. There are no potential futures in which Arizona and California junior entitlements receive any percentage of normal domestic water delivery. While this alternative results in Arizona and California PPR and Nevada senior priority groups receiving domestic water delivery closest to normal conditions, it results in severe domestic shortage impacts to all Arizona and California junior priority groups.	>80% of normal domestic delivery to some senior entitlements (AZ P2 & P3; AZ PPR; CA PPR; and NV P1-7 priority groups) occurs in all potential futures. In contrast, for junior entitlements (AZ CAP NIA-A and NIA-B; AZ CAP Indian, M&I, and 4(i); CA P4; and NV P8 priority groups), there are no potential futures, in which >80% of normal domestic water delivery occurs. NV P8 receives >60% of normal domestic water delivery in all potential futures. AZ CAP Indian, M&I, and 4 (i) receives >20% of normal domestic water delivery in 31-40% of potential futures. There are no potential futures in which Arizona CAP NIA-A and NIA-B and CA P4 priority groups receive any percentage of normal domestic water delivery. While this alternative results in all senior priority groups receiving domestic water delivery closest to normal conditions, it results in severe domestic shortage impacts to some Arizona and California junior priority groups.	>80% normal domestic water delivery occurs in all potential futures for all California priority groups. >60% of normal domestic delivery to all Arizona and Nevada priority groups occurs in all potential futures. While this alternative results in more Arizona junior priority groups receiving domestic delivery closer to normal conditions, it results in domestic shortage impacts on Arizona and Nevada senior entitlements that would otherwise receive deliveries consistent with normal conditions.	>80% of normal domestic water delivery to some senior priority groups (AZ PPR; CA PPR; and NV P1-7 priority groups) occurs in all potential futures. In contrast, for all Arizona, California, and Nevada junior entitlements (AZ CAP NIA-A and NIA-B; AZ CAP Indian, M&I, and 4(i); CA P4; and NV P8 priority groups) there are no potential futures, in which >80% of normal domestic water delivery occurs. AZ P2 & P3 receives >60% and >80% of normal delivery in 54% and 58% of potential futures, respectively. NV P8 receives >60% and >80% of normal domestic water delivery in 0% and 51% of potential futures, respectively. There are no potential futures in which Arizona and California junior entitlements receive any percentage of normal domestic water delivery. While this alternative results in Arizona and California PPR and Nevada senior priority groups receiving domestic water delivery closest to normal conditions, it results in domestic shortage impacts to all Arizona and California junior priority groups.
		AZ CAP Indian, M&I, and 4(i) receives >60% of normal domestic water delivery in all potential futures	There are no potential futures in which Arizona junior priority receive any percentage of normal domestic water delivery.					
		There are no potential futures in which Arizona CAP NIA-A and NIA-B priorities receive any percentage of normal domestic water delivery.	While this alternative results in all senior priority groups and some California junior priority groups receiving domestic water delivery closest to normal conditions, it results in severe domestic shortage impacts to Arizona junior priority groups.					
		While this alternative results in all senior priority groups and some Arizona, California, and Nevada junior priority groups receiving domestic water delivery closest to normal conditions, it results in severe domestic shortage impacts to Arizona CAP NIA-A and NIA-B.						

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
How would operational changes affect irrigated agricultural land?	Acres of irrigated agricultural land within the analysis area and potential for changes based on agricultural water availability	Frequent and severe shortages for junior-priority irrigation users likely lead to fallowing, crop switching, and long-term land retirement in Arizona counties (La Paz, Mohave and Yuma); Imperial Valley impacts are more limited.	Concentrated impacts for junior users in Arizona still drive significant agricultural land use changes; California and senior priority holders see limited more limited impacts	Pro rata distribution mitigates concentrated impacts for junior users but introduces broader reductions, increasing risk of widespread crop switching and fallowing in both Arizona and California.	Large shortage volumes and reliance on conservation participation create high uncertainty; potential for extensive land retirement if participation is low.	Concentrates impacts on junior users, preserving senior districts but accelerating land use change in Arizona counties (La Paz, Mohave and Yuma).	Distributes shortages broadly, increasing exposure for senior priority holders California and potentially leading to widespread fallowing and crop switching across the Basin.	The representative preferred alternative for 2027-2028 would result in shortages, with impacts concentrated on junior users. In the longer term (2029-2060) modeled outcomes indicate potential for additional fallowing land and crop switching, with impacts concentrated on junior users. However, the distribution of shortage under any specific operating guidelines adopted under the Preferred Alternative decision framework may differ from the priority distribution method reflected here for the Representative Preferred Alternative, as a result, the potential for fallowing, crop switching, and other associated long term land - use patterns in any given area may vary and impacts may be mitigated in part by specific operational guidelines

¹ Some performance indicator descriptions include italics to denote a definition of the “*preferred minimum performance*” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

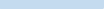
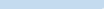
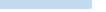
Indian Trust Assets (See Section 3.18)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Upper Basin Tribal Water Deliveries	Typical Water Deliveries	The alternatives act the same in terms of Upper Basin tribal water deliveries.						
Lower Basin Tribal Water Deliveries	Percent of modeled futures in which <i>dead pool-related delivery reductions never occur in 2027-2039</i>	41% of modeled futures do not have dead pool-related reductions.	68% of modeled futures do not have dead pool-related reductions.	88% of modeled futures do not have dead pool-related reductions.	94% of modeled do not have dead pool-related reductions.	77% of modeled futures do not have dead pool-related reductions.	88% of modeled futures do not have dead pool-related reductions.	95% of modeled futures do not have dead pool-related reductions.
Lower Basin Tribal Water Deliveries (Group of tribes with PPR rights)	At least 80% of Normal Water Deliveries (i.e., non-shortage conditions) occurs in at least 90% of years across 2037-2039. The higher the percentage, the more frequently deliveries are estimated to remain consistent with normal delivery.	100% of modeled futures meet the minimum preferred performance. ⁴	100% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance.	100% of modeled futures meet the minimum preferred performance.	100% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	100% of modeled futures meet the minimum preferred performance.
Lower Basin Tribal Water Deliveries (Group of tribes with AZ Priority 3 entitlements)	At least 80% of Normal Water Deliveries (i.e., non-shortage conditions) occurs in at least 90% of years across 2037-2039. The higher the percentage, the more frequently deliveries are estimated to remain consistent with normal delivery.	100% of modeled futures meet the minimum preferred performance. ⁴	100% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance.	60% of modeled futures meet the minimum preferred performance.	100% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	65% of modeled futures meet the minimum preferred performance.
Lower Basin Tribal Water Deliveries (Group of tribes with Arizona CAP Indian, M&I, and 4i entitlements)	At least 80% of Normal Water Deliveries (i.e., non-shortage conditions) occurs in at least 90% of years across 2037-2039. The higher the percentage, the more frequently deliveries are estimated to remain consistent with normal delivery.	100% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.
Lower Basin Tribal Water Deliveries (Group of tribes with Arizona CAP Non-Indian Agriculture entitlements)	At least 80% of Normal Water Deliveries (i.e., non-shortage conditions) occurs in at least 90% of years across 2037-2039. The higher the percentage, the more frequently deliveries are estimated to remain consistent with normal delivery.	0% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance. ⁴	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.	0% of modeled futures meet the minimum preferred performance.
Trust Land (Arizona)	Acres of Fallowed Tribal Land	12,419 ⁴	12,419 to 49,582 ⁴	8,067 to 39,200	6,535 to 68,054	6,535 to 53,560	15,794 to 38,605	6,535 to 67,375 ⁴
Trust Land (California)	Acres of Fallowed Tribal Land	0 ⁴	0 ⁴	1,298 to 5,092	0	0	579 to 2,803	0 ⁴
Trust Land (Nevada)	Acres of Fallowed Tribal Land	0 ⁴	0 ⁴	131 to 656	0	0	131 to 460	0 ⁴

¹ Some performance indicator descriptions include italics to denote a definition of the “preferred minimum performance” that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

⁴ Note that these impacts are based on low maximum Lower Basin shortage volumes that translate to higher volumes of dead pool-related reductions (see **Figure TA 4-12**), which could result in significant but highly uncertain impacts.

Visual Resources (See Section 3.19)

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Visibility of Attraction Features	Percent of futures in which <i>Lake Powell elevation is below 3,550 feet in at least 90% of months</i> . The higher the percentage, the more likely Lake Powell will remain at elevations where Cathedral in the Desert is visible and accessible.	 82% of modeled futures meet the preferred minimum performance. Most acceptable futures where Cathedral in the Desert is visible and accessible.	 78% of modeled futures meet the preferred minimum performance. Second most acceptable futures where Cathedral in the Desert is visible and accessible.	 52% of modeled futures meet the preferred minimum performance. Fewest acceptable futures where Cathedral in the Desert is visible and accessible.	 59% of modeled futures meet the preferred minimum performance. Second fewest acceptable futures where Cathedral in the Desert is visible and accessible.	 77% of modeled futures meet the preferred minimum performance. Third most acceptable futures where Cathedral in the Desert is visible and accessible.		 75% of modeled futures meet the preferred minimum performance. Fourth most acceptable futures where Cathedral in the Desert is visible and accessible.
	Percent of futures in which <i>Lake Powell elevation is above 3,550 feet in at least 90% of months</i> . The higher the percentage, the more likely less of Glen Canyon Dam will be visible. Hoover Dam visibility is based on modeling associated with the next issue statement.	 18% of modeled futures meet the preferred minimum performance. Fewest futures where less of Glen Canyon and Hoover dams would be visible, with their increased visibility further dominating the local landscape character.	 22% of modeled futures meet the preferred minimum performance. Second fewest futures where less of Glen Canyon Dam would be visible, with its increased visibility further dominating the local landscape character with less of Hoover Dam visible compared to the No Action.	 48% of modeled futures meet the preferred minimum performance. Most acceptable futures where less of Glen Canyon and Hoover dams would be visible, reducing their level of dominance in the local landscape compared to the No Action.	 41% of modeled futures meet the preferred minimum performance. Second most acceptable futures where less of Glen Canyon and Hoover dams would be visible, reducing their level of dominance in the local landscape compared to the No Action.	 23% of modeled futures meet the preferred minimum performance. Third fewest futures where less of Glen Canyon Dam would be visible, with its increased visibility further dominating the local landscape character. Based on managing higher reservoir levels in Lake Mead compared to Lake Powell under this alternative, less of the upstream side of Hoover Dam would be visible under this alternative (similar to the Enhanced Coordination and Maximum Flexibility alternatives) with comparatively more of the upstream side of Glen Canyon Dam being visible as described above.		 25% of modeled futures meet the preferred minimum performance. Third most futures where less of Glen Canyon Dam would be visible, with its increased visibility further dominating the local landscape character with less of Hoover Dam visible compared to the No Action.

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Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Lake Powell and Lake Mead landscape character	Percent of futures in which Lake Powell elevation would result in calcium carbonate rings remaining under historic maximums for 100% of the modeling period. Based on updated modeling, the analysis focused on a threshold of 200 feet instead of the historic maximum. The higher the percentage, the more likely calcium carbonate rings at Lake Powell will remain shorter than historic maximums.	4% of modeled futures meet the preferred minimum performance.	19% of modeled futures meet the preferred minimum performance.	81% of modeled futures meet the preferred minimum performance.	94% of modeled futures meet the preferred minimum performance.	35% of modeled futures meet the preferred minimum performance.		45% of modeled futures meet the preferred minimum performance.
	Percent of futures in which Lake Mead elevation would result in calcium carbonate rings remaining under historic maximums for 100% of the modeling period. Based on updated modeling, the analysis focused on a threshold of 200 feet instead of the historic maximum. The higher the percentage, the more likely calcium carbonate rings at Lake Mead will remain shorter than historic maximums.	8% of modeled futures meet the preferred minimum performance.	20% of modeled futures meet the preferred minimum performance.	17% of modeled futures meet the preferred minimum performance.	22% of modeled futures meet the preferred minimum performance.	44% of modeled futures meet the preferred minimum performance.		23% of modeled futures meet the preferred minimum performance.
Colorado River landscape character	Qualitative description of the effect associated with proposed flow rates and the potential to conduct HFEs from Glen Canyon Dam under each alternative.	Initially, there would be less impacts as flows would remain above 7.0 maf; however, if Lake Powell reaches dead pool, impacts would be extensive and immediate due to a dramatic reduction in flows. The current trends of increasing bank armoring, associated with expanding riparian vegetation areas (including tamarisk), would continue under the No Action Alternative. This alternative has the fewest futures where HFEs are conducted during the full modeling period.	Impacts would be similar to the No Action since it includes a similar range of releases from Glen Canyon Dam. This alternative would have an increased number of futures where HFEs are conducted compared to the No Action Alternative.	Based on yearly projections, if releases as low as 4.7 maf are needed, there would be increased impacts on the river's landscape character. If releases are above 7.0 maf, impacts would be the same as the No Action Alternative. This alternative would result in the second most futures where HFEs are conducted.	Based on yearly projections, if releases as low as 5.0 maf are needed, there would be increased impacts on the river's landscape character. If releases are above 7.0 maf, impacts would be the same as the No Action Alternative. This alternative would result in the most futures where HFEs are conducted.	Based on yearly projections, if releases as low as 4.7 maf are needed, there would be increased impacts on the river's landscape character. If releases are above 7.0 maf, impacts would be the same as the No Action Alternative. This alternative has the second fewest futures where HFEs are conducted during the full modeling period.		Based on yearly projections, if releases as low as 6.0 maf are needed, there would be increased impacts on the river's landscape character. If releases are above 7.0 maf, impacts would be the same as the No Action Alternative. This alternative has the second fewest futures where HFEs are conducted during the full modeling period similar to the Supply Driven Alternative.

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

Impact Category	Performance Indicator ¹	Impacts Summary						
		No Action Alternative	Basic Coordination Alternative	Enhanced Coordination Alternative	Maximum Operational Flexibility Alternative	Supply Driven Alternative (LB Priority)	Supply Driven Alternative (LB Pro Rata)	Representative Preferred Alternative
Lower Division States' landscape character	Qualitative description of the effects associated with potential decreases in water availability for the Lower Division States on the broader landscape character including the potential to reach dead pool.	Initially, there would be lower impacts; however, if Lake Mead reaches dead pool, dramatic decreases in water availability could affect the landscape character in all three Lower Division States. Depending on the duration of these decreased water deliveries, the character of irrigated and agricultural landscapes within the Lower Division States would be modified through aridification of these areas; this would diminish the vivid greens associated with crops and ornamental plantings. This alternative has the most futures where dead pool shortage is reached.	Impacts would be similar to the No Action except this alternative includes increased shortages to Arizona and Nevada (up to 1.48 maf). While the potential to reach dead pool is reduced under this alternative, compared to the No Action Alternative, there is still a risk to reach dead pool under some futures. This alternative has the second most futures where dead pool shortage is reached.	Shortages up to 3.0 maf are possible under this alternative, which would incrementally affect all three Lower Division States including irrigated and agricultural landscapes. These shortages are designed to avoid reaching dead pool, tempering the impacts on the character of irrigated and agricultural landscapes within the Lower Division States and avoid more extensive impacts if Lake Mead reached dead pool. This alternative has the second fewest futures where dead pool shortage is reached.	Shortages up to 4.0 maf are possible under this alternative, which would incrementally affect all three Lower Division States including irrigated and agricultural landscapes. The shortages are designed to avoid reaching dead pool. This alternative has the fewest futures where dead pool shortage is reached.	Shortages up to 2.1 maf are possible under this alternative, which would incrementally affect all three Lower Division States including irrigated and agricultural landscapes. The shortages are designed to avoid reaching dead pool. This alternative, similar to the Enhanced Coordination Alternative, has the second fewest futures where dead pool shortage is reached.		Shortages up to 3.0 maf are possible under this alternative, which would incrementally affect all three Lower Division States including irrigated and agricultural landscapes. The shortages are designed to avoid reaching dead pool. This alternative, similar to the Enhanced Coordination Alternative, has the second fewest futures where dead pool shortage is reached.

¹ Some performance indicator descriptions include italics to denote a definition of the "preferred minimum performance" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

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¹ Some performance indicator descriptions include italics to denote a definition of the "*preferred minimum performance*" that was used as a significant reference point for technical analysis. The following were considered when determining preferred minimum performance: input from resource experts, the severity of negative outcomes associated with not satisfying a given performance level, historical (observed) data, and/or reasonably expected outcomes if current operations and recent hydrology continued. To find more information about preferred minimum performance levels, see Volume III – Technical Appendices.

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Certified SDVOSB
Service-Disabled Veteran Owned Small Business
Certified WOSB
Woman Owned Small Business

Attachment 9:

- Nationwide Permit 13



U S Army Corps of
Engineers
Sacramento District

2021 Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide
Permits – February 25, 2022

13. Bank Stabilization. Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, streambarbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

- (a) No material is placed in excess of the minimum needed for erosion protection;
- (b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads—the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);
- (c) **The activity will not exceed an average of one cubic yard per running foot**, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and tree tops may be used in low energy areas);
- (g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;
- (h) The activity is not a stream channelization activity; and

(i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP authorizes those maintenance and repair activities if they require a authorization.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity:

- (1) Involves discharges of dredged or fill material into special aquatic sites; or
- (2) is in excess of 500 feet in length; or
- (3) will involve the discharge of dredged or fill material of greater than an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: In coastal waters and the Great Lakes, living shorelines may be an appropriate option for bank stabilization, and may be authorized by NWP 54.

A. Regional Conditions

1. [Regional Conditions for California](#)
2. [Regional Conditions for Nevada and Utah](#)

B. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or

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prior permit authorization under one or more NWP's, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to themodification, suspension, or revocation of any NWP authorization.

☐ 1. **Navigation.**

☐ (a) No activity may cause more than a minimal adverse effect on navigation.

☐ (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

☐ (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

☐ 2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

☐ 3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

☐ 4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

☐ 5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

☐ 6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

☐ 7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or a adjacent bank stabilization.

☐ 8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

☐ 9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

☐ 10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

☐ 11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ 12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

☐ 13. **Removal of Temporary Fills.** Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

☐ 14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

☐ 15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

☐ 16. **Wild and Scenic Rivers.**

☐ (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has

determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <https://www.rivers.gov/>.

☐ 17. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ 18. **Endangered Species.**

☐ (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”

☐ (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective Federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

☐ (d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

☐ (e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

☐ (f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether an additional ESA section 7 consultation is required.

☐ (g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <https://www.fws.gov/> or <https://www.fisheries.noaa.gov/topic/endangered-species-conservation> respectively.

☐ 19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

☐ 20. **Historic Properties.**

☐ (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

☐ (b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If

the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or a diverse effect.

☐ (d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106

consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

- ☐ (e) Prospective permittees should be aware that section 110(k) of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

☐ **21. Discovery of Previously Unknown Remains and Artifacts.** Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, a void construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

☐ **22. Designated Critical Resource Waters.** Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

- ☐ (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting critical resource waters, including wetlands adjacent to such waters.
- ☐ (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource

waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

☐ **23. Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

- ☐ (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).
- ☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

☐ (d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

☐ (e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or

maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

☐ (f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

☐ (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

☐ (2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

☐ (3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

☐ (4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the

district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

☐ (5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

☐ (6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

☐ (g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

☐ (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert

a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

☐ 24. **Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

☐ 25. **Water Quality.**

☐ (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

☐ (b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

☐ (c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

☐ 26. **Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

☐ 27. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality

Certification, or by the state in its Coastal Zone Management Act consistency determination.

☐ 28. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

☐ (a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

☐ (b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

☐ 29. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

☐ 30. **Compliance Certification.** Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

☐ (a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

☐ (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(f)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

☐ (c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

☐ **31. Activities Affecting Structures or Works Built by the United States.** If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(1)(d) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

☐ **32. Pre-Construction Notification.**

☐ (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

- ☐ (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
- ☐ (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written

notice from the district or division engineer.

However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- ☐ (1) Name, address and telephone numbers of the prospective permittee;
- ☐ (2) Location of the proposed activity;
- ☐ (3) Identify the specific NWP or NWPs the prospective permittee wants to use to authorize the proposed activity;
- ☐ (4)
 - ☐ (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for

compensatory mitigation or other mitigation measures.

☐ (ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

☐ (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

☐ (5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

☐ (6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

☐ (7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such

designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

☐ (8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

☐ (9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

☐ (10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

☐ (c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

☐ (d) Agency Coordination:

☐ (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

☐ (2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve

discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

☐ (3) When a agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

☐ (4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

☐ (5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

C. District Engineer's Decision

☐ 1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or

cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

☐ 2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is a viable and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

☐ 3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary.

Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

□ 4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with a activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

D. Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (See general condition 31).

E. Nationwide Permit Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gauges, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high-water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required, and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23).

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high-water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high-water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).



Certified SDVOSB
Service-Disabled Veteran Owned Small Business
Certified WOSB
Woman Owned Small Business

Attachment 10:

- Nationwide Permit 36



U S Army Corps of
Engineers
Sacramento District

2021 Nationwide Permit Summary

33 CFR Part 330: Issuance of Nationwide
Permits – February 25, 2022

36. Boat Ramps. Activities required for the construction, repair, or replacement of boat ramps, provided the activity meets all of the following criteria:

- (a) The discharge of dredged or fill material into waters of the United States does not exceed 50 cubic yards of concrete, rock, crushed stone or gravel into forms, or in the form of pre-cast concrete planks or slabs, unless the district engineer waives the 50 cubic yard limit by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (b) The boat ramp does not exceed 20 feet in width, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (c) The base material is crushed stone, gravel or other suitable material;
- (d) The excavation is limited to the area necessary for site preparation and all excavated material is removed to an area that has no waters of the United States; and,
- (e) No material is placed in special aquatic sites, including wetlands. The use of unsuitable material that is structurally unstable is not authorized. If dredging in navigable waters of the United States is necessary to provide access to the boat ramp, the dredging must be authorized by another NWP, a regional general permit, or an individual permit.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if:

- (1) The discharge of dredged or fill material into waters of the United States exceeds 50 cubic yards, or
- (2) the boat ramp exceeds 20 feet in width. (See general condition 32.) (Authorities: Sections 10 and 404).

A. Regional Conditions

- 1. [Regional Conditions for California](#)
- 2. [Regional Conditions for Nevada and Utah](#)

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B. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

☐ 1. **Navigation.**

- ☐ (a) No activity may cause more than a minimal adverse effect on navigation.
- ☐ (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
- ☐ (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

☐ 2. **Aquatic Life Movements.** No activity may

substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

☐ 3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

☐ 4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

☐ 5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

☐ 6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

☐ 7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

☐ 8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

☐ 9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management

activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

☐ 10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

☐ 11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ 12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

☐ 13. **Removal of Temporary Fills.** Temporary structures must be removed, to the maximum extent practicable, after their

use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

☐ 14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

☐ 15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

☐ 16. **Wild and Scenic Rivers.**

☐ (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <https://www.rivers.gov/>.

☐ 17. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ 18. **Endangered Species.**

☐ (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the

consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”

□ (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

□ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

□ (d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

□ (e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

□ (f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

□ (g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <https://www.fws.gov/> or <https://www.fisheries.noaa.gov/topic/endangered-species-conservation> respectively.

□ 19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird

Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

☐ 20. **Historic Properties.**

☐ (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

☐ (b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties.

Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will

conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or a diverse effect.

☐ (d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

☐ (e) Prospective permittees should be aware that section 110(k) of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

☐ 21. **Discovery of Previously Unknown Remains and Artifacts.** Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

☐ 22. **Designated Critical Resource Waters.** Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

☐ (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP's 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting critical resource waters, including wetlands adjacent to such waters.

☐ (b) For NWP's 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWP's only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

☐ 23. **Mitigation.** The district engineer will consider the following factors when determining a appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

☐ (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

☐ (d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse

environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

☐ (e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

☐ (f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

☐ (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP's, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district

engineer, the district engineer may approve the use of permittee-responsible mitigation.

☐ (2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

☐ (3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

☐ (4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which a nother federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

☐ (5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

☐ (6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

☐ (g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits

also satisfies the no more than minimal impact requirement for the NWPs.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

☐ (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

☐ 24. **Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

☐ 25. **Water Quality.**

☐ (a) Where the certifying authority (state, a authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

☐ (b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

☐ (c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

☐ 26. **Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

☐ 27. **Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

☐ 28. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

☐ (a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

☐ (b) If one or more of the NWPs used to authorize the single and complete project has specified a acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified a acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum a acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total a acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

☐ 29. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit,

including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

☐ 30. **Compliance Certification.** Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

☐ (a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

☐ (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.30(i)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

☐ (c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

☐ 31. **Activities Affecting Structures or Works Built by the United States.** If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

☐ 32. **Pre-Construction Notification.**

☐ (a) **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be

incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

☐ (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

☐ (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed activity;

☐ (3) Identify the specific NWP or NWPs the prospective permittee wants to use to authorize the proposed activity;

☐ (4)

☐ (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

☐ (ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

☐ (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

☐ (5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

☐ (6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

☐ (7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

☐ (8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

☐ (9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

☐ (10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps of Engineers having jurisdiction over that USACE project.

☐ (c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

☐ (d) Agency Coordination:

☐ (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

☐ (2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

☐ (3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant

loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

☐ (4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

☐ (5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

C. District Engineer's Decision

☐ 1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

☐ 2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and

practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

☐ 3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary.

Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

☐ 4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31),

with a activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal.

When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

D. Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

E. Nationwide Permit Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located.

Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten,

intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gauges, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled,

flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high-water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required, and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of an aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-

establishment results in rebuilding a former aquatic resource and results in a gain in an aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in an aquatic resource function but does not result in a gain in an aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in an aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23).

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate material placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high-water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high-water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have

rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).



Certified SDVOSB
Service-Disabled Veteran Owned Small Business
Certified WOSB
Woman Owned Small Business

Attachment 11:

- OHWM Quantities Technical Memo



TO: Dan Brown-AES Group
Senior Electrical Designer

FROM: Tony Woods - RPA
Project Engineer

DATE: August 27, 2026

SUBJECT: Relocate Public Launch Ramp at Callville Bay
Materials To Be Removed or Placed Below Ordinary High-Water Mark

Purpose

A proposed project includes relocating Callville Bay Marina and boat launch ramp. Callville Bay is located within the Lake Mead National Recreation Area, Nevada. The purpose of this technical memorandum is to give the reader a basic understanding of how the Ordinary High-Water Mark (OHWM) was calculated and what materials are proposed to be removed or placed below the OHWM with the improvements of the project.

Ordinary High-Water Mark (OHWM)

As with previous boat launch projects within the park, including Echo Bay and Hemenway Harbor, the OHWM was defined per interim guidance from Jason Gipson (US Army Corp of Engineers) as the “average of the highest 2 months per year for the past two years”. The Bureau of Reclamation figure below shows the historical lake levels for Lake Mead, with the column on the left summarizing and highlighting the two (2) highest water levels for the previous two (2) years.

LAKE MEAD AT HOOVER DAM, END OF MONTH ELEVATION (FEET)												
☐ Toggle to show older historical elevations												
24-Jun	1062.5	Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
24-Jul	1061.49	2017	1068.08	1069.76	1068.26	1064.69	1061.56	1079.52	1079.03	1081.44	1082.05	1082.30
24-Aug	1063.16	2018	1067.50	1068.21	1068.11	1064.49	1060.00	1076.81	1077.43	1078.88	1078.29	1078.52
24-Sep	1063.71	2019	1065.75	1067.97	1069.24	1068.95	1068.46	1064.71	1062.82	1063.45	1063.00	1062.61
24-Oct	1061.22	2020	1064.68	1066.27	1066.59	1066.39	1061.32	1067.07	1064.63	1064.04	1063.21	1061.66
24-Nov	1060.89	2021	1065.95	1067.26	1064.39	1073.50	1073.50	1068.77	1067.65	1067.86	1067.68	1066.77
24-Dec	1063.29	2022	1067.09	1066.76	1061.49	1054.69	1047.69	1043.02	1040.92	1044.28	1045.03	1046.26
25-Jan	1066.37	2023	1046.97	1047.02	1046.03	1046.69	1054.28	1058.39	1061.02	1065.35	1065.62	1065.34
25-Feb	1066.43	2024	1072.67	1076.52	1075.35	1077.24	1082.50	1082.50	1061.49	1063.16	1063.71	1061.22
25-Mar	1062.23	2025	1066.37	1068.16	1066.43	1062.23	1057.02	1054.98	1054.14	1055.54	1057.25	1057.57
25-Apr	1062.23	2026	1065.37	1068.14	1062.05	1058.32	1050.00	1044.58				
25-May	1057.02											
25-Jun	1054.98											
25-Jul	1054.14											
25-Aug	1055.54											
25-Sep	1057.25											
25-Oct	1057.57											
25-Nov	1058.91											
25-Dec	1062.24											
26-Jan	1065.37											
26-Feb	1066.14											
26-Mar	1062.05											
26-Apr	1056.32											
26-May	1050.00											
26-Jun	1044.58											

**All data is supplied from Bureau of Reclamation Records.

Last updated: 01-JUL-2026

Figure 1: BOR Historical Lake Levels with Highlighted Summary

The high-water levels shown in Figure 1 use the localized Powerhouse Datum which is approximately 2.1 feet lower than the NAVD88 datum used in the plans for the project. See below for the OHWM calculation used in the plans.

From June 2024 to June 2026, the highest lake levels are:					
		Power House Datum	NAVD88 Datum		
25-Feb		1068.18	1070.28		
25-Mar		1066.43	1068.53		
26-Jan		1065.37	1067.47		
26-Feb		1066.14	1068.24		
Average (ft)=		1066.53	1068.63	Ordinary High Water as of June 2026	

Figure 2: OHWM Calculation and Conversion to NAVD88

Project Overview

The overall project consists of a Base Bid and six (6) additional bid options. A brief overview of the Base Bid and Bid Options are listed below:

- Base Bid – Roadway, boat launch ramp and boat launch ramp parking
- Bid Option #1 – Moveable restrooms
- Bid Option #2 – Buried utilities including power, water, and sewer
- Bid Option #3 – Fuel Station
- Bid Option #4 – Marina access road with marina parking
- Bid Option #5 – Maintenance area for concessionaire
- Bid Option #6 – Helipad

From the items listed above, only portions of the **Base Bid** and **Bid Option #4** contain construction activities below the OHWM of 1068.63 feet NAVD88.

Base Bid Quantities Below OHWM

Boat Launch Ramp

The new boat launch ramp is listed within the Base Bid with separate Contract Line Items (CLINs) that may be awarded separately based on the lake water levels at the time of construction. See sheet C40 for the breakdown of the separate CLIN's for the boat launch ramp. Note that CLIN 1 includes all of the Cast-In-Place (CIP) launch ramp and 92 precast panels. The OHWM is shown approximately through the middle of the CIP portion of the launch ramp. Comparison surfaces were created for each CLIN. The typical sections of the launch ramp are shown on sheet C5 and below:

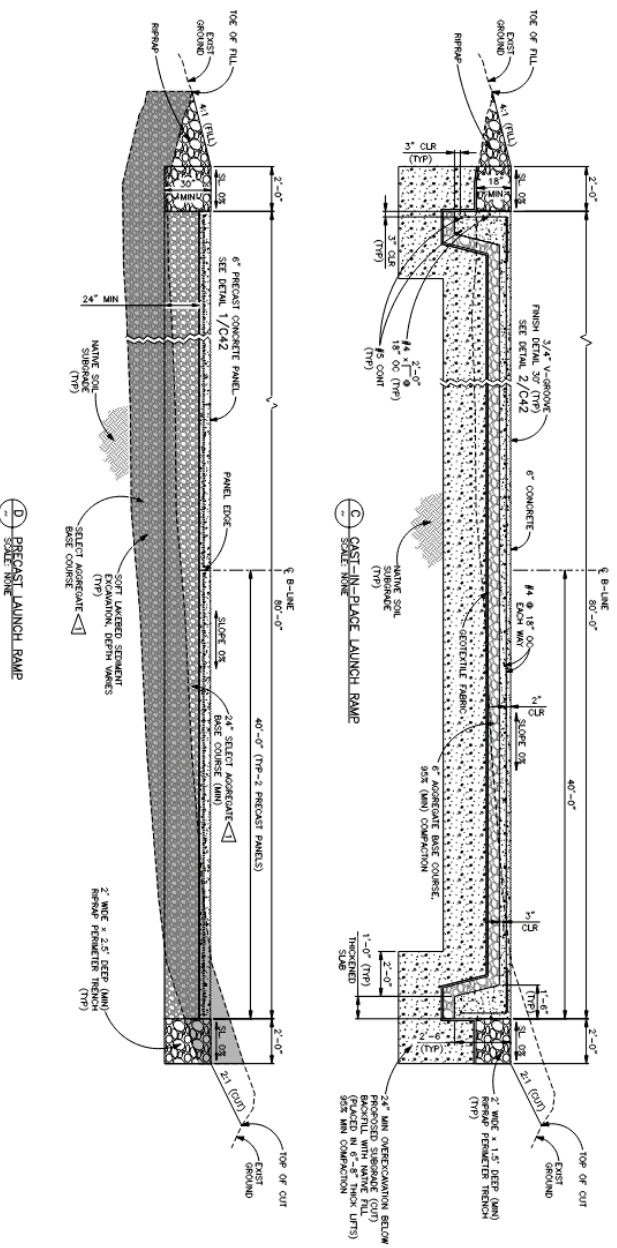


Figure 3: Launch Ramp Typical Sections Shown on Sheet C5

A summary of the quantities for the launch ramp is provided on sheet C40 for Contractor reference, includes **quantities above** the OHWM. Figure 4 shows the highlighted adjusted quantities for items below OHWM:

[illegible]

Roadway

Only a small portion of the Base Bid Roadway is below OHWM and is shown on sheet C14 and in Figure 5 below:

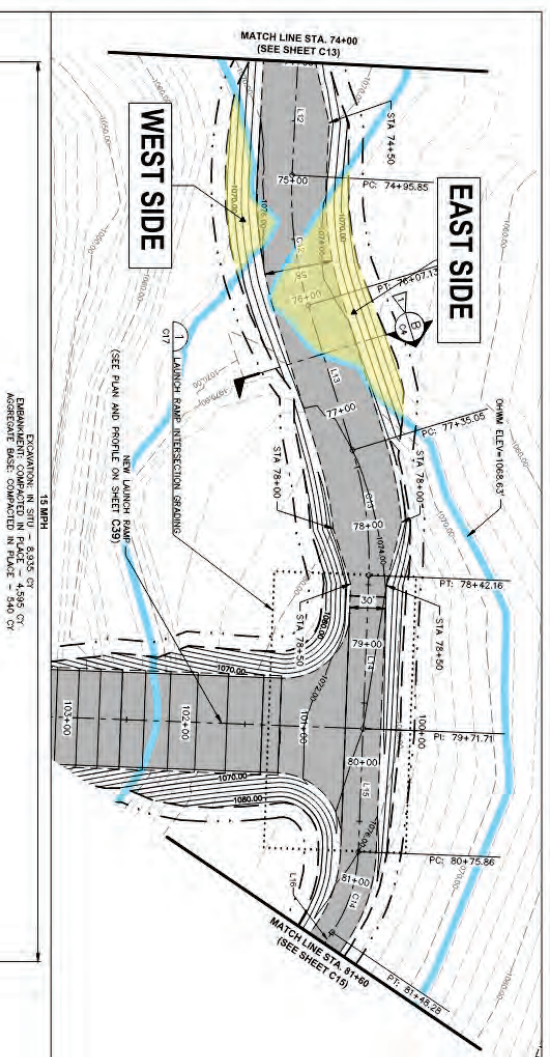


Figure 5: Roadway Areas Below OHWM on Sheet C14

Comparison surfaces were created in AutoCAD Civil3d for the two areas, the east side and west side, shown in Figure 5 to compare the existing surface to the roadway subgrade. The aggregate base was then hand calculated for the areas. The comparison surfaces are shown below in Figure 6 and Figure 7:

Surface Properties - EG VS ROAD SG - EAST BELOW OHWM	
Information	Definition
Statistics	Value
General	
TIN	
Volume	
Base Surface	2022-Combined
Comparison Surface	SG-ROAD-EAST BELOW OHWM
Cut Factor	1.000
Fill Factor	1.000
Cut volume (adjusted)	0.00 Cu. Yd.
Fill volume (adjusted)	948.45 Cu. Yd.

Figure 6: AutoCAD Comparison Surface for East Side Area (Shown in Figure 5)

C Surface Properties - EG vs ROAD SG - WEST BELOW OHWM			
Information	Definition	Analysis	Statistics
Statistics			Value
⊕ General			
⊕ TIN			
⊖ Volume			
Base Surface			2022-Combined
Comparison Surface			SG-ROAD-WEST BELOW OHWM
Cut Factor			1.000
Fill Factor			1.000
Cut volume (adjusted)			0.00 Cu. Yd.
Fill volume (adjusted)			128.30 Cu. Yd.

Figure 7:AutoCAD Comparison Surface for West Side Area (Shown in Figure 5)

A summary of the roadway quantities below OHWM is shown in Figure 8 for native fill calculations from the comparison surfaces and hand calculated base based on the two areas from Figure 5.

BASE BID - ROADWAY					
HIGHLIGHTED AREA FOR BASE (Figure 5)		5248 SF			
TOTAL BASE BELOW OHWM (4.5" THICK)		73 CY			
Fill (native)- SEE COMPARISON SURFACES		1078			
	EXCAVATION (CY)	FILL (NATIVE) (CY)	BASE (CY)	RIPRAP (CY)	CONCRETE (6"THICK) (SY)
TOTALS	0	1078	73	0	0

Figure 8:Summary of Base Bid Roadway Totals Below OHWM

Bid Option #4 Quantities Below OHWM Roadway and Parking Areas

Bid Option #4 contains the marina access road and the marina parking areas. Nearly the entire Bid Option is below OHWM except for a small portion of the roadway shown on Sheet C6.5 and below:

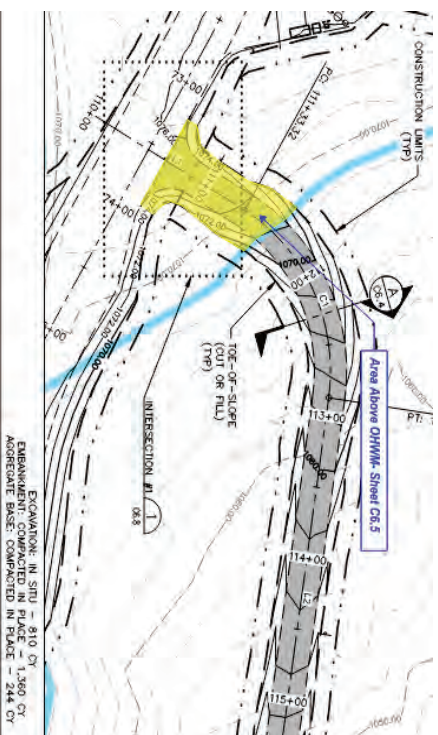


Figure 9: Bid Option #4 Area Above OHWM

A comparison surface for the area was created and then subtracted from the quantities shown on Sheet C6.5 (Figure 9). Figure 10, shown below, are the quantities of the comparison surface.

Surface Properties - EG VS MAR SG-ABOVE OHWM			
Information	Definition	Analysis	Statistics
Statistics			
General			Value
TIN			
Volume			
Base Surface			2022-Combined
Comparison Surface			SG-MARINA ACCESS ABOVE OHWM
Cut Factor			1.000
Fill Factor			1.000
Cut volume (adjusted)			0.06 Cu. Yd.
Fill volume (adjusted)			407.64 Cu. Yd.

Figure 10:AutoCAD Comparison Surface for Bid Option #4 Area Above OHWM

All other portions of Bid Option #4 (sheet C6.6 and C6.7) are located below the OHWM and are summarized in Figure 11 shown below.

BID OPTION #4- MARINA PARKING					
SEE SHEET C6.5, C6.6, & C6.7					
	EXCAVATION (CY)	FILL (NATIVE) (CY)	BASE (CY)	RIPRAP (CY)	CONCRETE (6"THICK) (SF)
SHEET C6.5 (total quantities)	810	1360	244	0	0
SHEET C6.5 ABOVE OHWM	0	408	50	0	0
SHEET C6.5 EXCLUDING ABOVE OHWM	810	952	194		
SHEET C6.6	2353	2558	617	16	
SHEET C6.7	23123	1621	1372		
TOTALS	26286	5131	2183	16	0

Figure 11:Summary of Bid Option #4 Totals Below OHWM

Total Project Summary

The following is a compiled summary of quantities below OHWM for the entire project.

SUMMARY OF QUANTITIES BELOW OHWM					
	EXCAVATION (CY)	FILL (NATIVE) (CY)	BASE (CY)	RIPRAP (CY)	CONCRETE (6"THICK) (SY)
BASE BID - LAUNCH RAMP (Figure 4)	6,284	0	5,684	687	5245
BASE BID - ROADWAY (Figure 8)	0	1,078	73	0	0
BID OPTION 4- (Figure 11)	26,286	5,131	2,183	16	0
TOTAL (BELOW OHWM)-WHOLE PROJECT	32,570	6,209	7,940	703	5,245



U S Army Corps of
Engineers
Sacramento District

2026 Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide
Permits – March 15, 2026

13. Bank Stabilization. Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

- (a) No material is placed in excess of the minimum needed for erosion protection;
- (b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);
- (c) The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas);
- (g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;
- (h) The activity is not a stream channelization activity; and
- (i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP

authorizes those maintenance and repair activities if they require authorization.

In addition, this NWP authorizes discharges of dredged or fill material into waters of the United States and structures and work in navigable waters of the United States to incorporate nature-based solutions into new and existing bank stabilization activities to provide habitat and other ecosystem functions and services and to reduce adverse effects of bank stabilization activities on the aquatic environment. Examples of nature-based solutions for bank stabilization activities include the use of construction materials for seawalls and bulkheads that have textured surfaces, crevices, shelves, benches, and pits that support attachment and growth of benthic organisms; vegetative stabilization; bioengineering; the construction of rock pools next to the bank stabilization activity; the construction of small pocket beaches next to the bank stabilization activity; the use of various sizes of rock for revetments to provide different sizes of spaces between rocks for habitat for various species of organisms; the placement of rock clusters next to a seawall or bulkhead; the placement of large wood next to seawalls, bulkheads, and revetments; and the placement of bags of molluscs or the placement of small reef structures to provide habitat for molluscs and other sessile aquatic organisms next to a seawall, bulkhead, or revetment. Nature-based solutions should be appropriate for the physical and biological characteristics of the site.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges of dredged or fill material into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of dredged or fill material of greater than an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: In coastal waters and the Great Lakes, living shorelines may be an appropriate option for bank stabilization, and may be authorized by NWP 54.

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Note 2: Under 33 CFR 320.4(g)(2), a landowner has the general right to protect his or her property from erosion, and the district engineer can provide general guidance to the landowner regarding possible alternative methods of protecting his or her property. Permittees are encouraged to use soft bank stabilization approaches (e.g., bioengineering, vegetative stabilization) at sites where those methods are likely to be effective in managing erosion, such as sites where shorelines and banks are subject to moderate to low erosive forces. However, hard bank stabilization activities (e.g., seawalls, bulkheads, revetments, riprap) may be necessary at sites where shorelines and banks are subject to strong erosive forces. An appropriate and effective approach to managing shoreline or bank erosion at a specific site requires consideration of a variety of factors, including but not limited to: bank height; bank condition; the energy of tides, waves, currents, or other water flows that the bank is exposed to; fetch; nearshore water depths; the potential for storm surges; sediment or substrate type; tidal range in waters subject to the ebb and flow of tides; shoreline configuration and orientation; the width of the waterway; and whether there is infrastructure in the vicinity of the proposed bank stabilization activity that needs to be protected and the degree of protection needed.

A. Regional Conditions

1. [Regional Conditions for California](#)
2. [Regional Conditions for Nevada and Utah](#)

B. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

- ☐ 1. **Navigation.**
 - ☐ (a) No activity may cause more than a minimal adverse effect on navigation.
 - ☐ (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.
 - ☐ (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or

work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

- ☐ 2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.
- ☐ 3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.
- ☐ 4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
- ☐ 5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.
- ☐ 6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).
- ☐ 7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.
- ☐ 8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.
- ☐ 9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows, including tidal flows. The activity must not restrict or impede the passage of normal or

high flows, including tidal flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

☐ **10. Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA approved state or local floodplain management requirements.

☐ **11. Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance. If mats are used to minimize soil disturbance, the affected areas must be returned to pre-construction elevations, and revegetated as appropriate. In circumstances where the use of mats has caused significant soil compaction, efforts using techniques (e.g., soil re-aeration techniques) to break up the compaction should be employed to return the soil to a pre-construction state prior to returning to pre-construction elevations.

☐ **12. Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

☐ **13. Removal of Temporary Fills.** Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

☐ **14. Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

☐ **15. Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

☐ **16. Wild and Scenic Rivers.**

☐ (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The

district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

☐ (c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

☐ **17. Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ **18. Endangered Species.**

☐ (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation.

☐ (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat

proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

☐ (d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

☐ (e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

☐ (f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal permittee should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were

considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

☐ (g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

☐ 19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

☐ 20. **Historic Properties.**

☐ (a) No activity is authorized under any NWP which may have the potential to cause effects on properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

☐ (b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects on any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties.

Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

☐ (d) Where the non-federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects on historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

☐ (e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to

notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

☐ 21. **Discovery of Previously Unknown Remains and Artifacts.** Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activities authorized by NWPs, must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the federal, tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

☐ 22. **Designated Critical Resource Waters.** Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

☐ (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

☐ (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

☐ 23. **Mitigation.** The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

☐ (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the

individual and cumulative adverse environmental effects are no more than minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

☐ (d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, because streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

☐ (e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate

compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

☐ (f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

☐ (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

☐ (2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

☐ (3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

☐ (4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

☐ (5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan

needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

☐ (6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

☐ (g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

☐ (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

☐ **24. Safety of Impoundment Structures.** To ensure that all impoundment structures are safely designed, the district engineer may require non-federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

☐ **25. Water Quality.**

☐ (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed activity which may result in any discharge from a point source into waters of the United States must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by the certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed activity which may result in any discharge from a point source into waters of the United States in order for the activity to be authorized by an NWP.

☐ (b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed activity which may result in any discharge from a point source into waters of the United States is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge into waters of the United States, the permittee must submit a copy of the certification to the district engineer. The discharge into waters of the United States is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied (i.e., by the issuance of a water quality certification or a waiver and completion of the Section 401(a)(2) process).

☐ (c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

[California 401 Water Quality Certification Status](#)

[Nevada 401 Water Quality Certification Status](#)

[Utah 401 Water Quality Certification Status](#)

☐ **26. Coastal Zone Management.** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

☐ **27. Regional and Case-By-Case Conditions.** The activity must comply with any regional conditions that may have been added by the division engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

☐ 28. **Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

☐ (a) The total acreage loss of waters of the United States for a single and complete project cannot exceed the acreage limit of the NWP with the highest specified acreage limit when multiple NWPs are used to authorize an activity.

☐ (b) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States for that single and complete project cannot exceed that specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14 (which has an acreage limit of 1/3 acre in tidal waters), with associated bank stabilization authorized by NWP 13 (which does not have a specified acreage limit), the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

☐ (c) If two or more of the NWPs used to authorize the single and complete project have specified acreage limits, the acreage loss of waters of the United States authorized by each of those NWPs cannot exceed the specified acreage limits of each of those NWPs. For example, if a commercial development is constructed under NWP 39 (which has a 1/2-acre limit), and the single and complete project includes the filling of a ditch authorized by NWP 46 (which has a 1-acre limit), the maximum acreage loss of waters of the United States for the construction of the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States caused by the combination of the NWP 39 and NWP 46 activities cannot exceed 1 acre.

☐ 29. **Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

☐ 30. **Compliance Certification.** Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The successful completion of any required permittee-responsible mitigation, including the achievement of

ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

☐ (a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

☐ (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

☐ (c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

☐ 31. **Activities Affecting Structures or Works Built by the United States.** If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

☐ 32. **Pre-Construction Notification.**

☐ (a) **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

☐ (1) He or she is notified in writing by the district engineer that the activity may proceed under

the NWP with any special conditions imposed by the district or division engineer; or

☐ (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed activity;

☐ (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

☐ (4)

☐ (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including

other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

☐ (ii) For linear projects where one or more single and complete crossings require preconstruction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

☐ (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

☐ (5) The PCN must include a delineation of waters, wetlands, and other special aquatic sites on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate. For NWP 27 activities that require PCNs because of other general conditions or regional conditions imposed by division engineers, see Note 2 of that NWP;

☐ (6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the compensatory mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

☐ (7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

☐ (8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require preconstruction notification, federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

☐ (9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

☐ (10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

☐ (c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

☐ (d) Agency Coordination:

☐ (1) The district engineer will consider any comments from federal and state agencies concerning

the proposed activity’s compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity’s adverse environmental effects so that they are no more than minimal.

☐ (2) Agency coordination is required for: (i) all NWP activities that require preconstruction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

☐ (3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity’s compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies’ concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

☐ (4) In cases where the prospective permittee is not a federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section

305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

- ☐ (5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

C. District Engineer's Decision

☐ 1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

☐ 2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add activity-specific conditions to the NWP authorization to address site-specific environmental concerns.

☐ 3. If the proposed NWP activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller

impacts, or for impacts to other types of waters. However, compensatory mitigation shall not be required for activities authorized by NWP 27 because those activities must result in net increases in aquatic resource functions and services (see the text of NWP 27). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal when determining whether the net adverse environmental effects of the proposed NWP activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the proposed activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

☐ 4. If the district engineer determines that the adverse environmental effects of the proposed NWP activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN review period (unless additional time is required to comply with general conditions 16, 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is

required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

D. Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

E. Nationwide Permit Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic ecosystem restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on: (1) the structure, functions, and dynamics of an aquatic ecosystem type or a riparian area type that currently exists in the region; (2) the structure, functions, and dynamics of an aquatic ecosystem type or riparian area type that existed in the region in the past; and/or (3) indigenous and local ecological knowledge that apply to the aquatic ecosystem type or riparian area type (i.e., a cultural ecosystem). Cultural ecosystems are ecosystems that have developed under the joint influence of natural processes and human management activities (e.g., fire stewardship). An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic

resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts

resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Nature-based solutions: Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWP, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-

establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by

one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. The substrate may also be comprised, in part, of organic matter, such as large or small wood fragments, leaves, algae, and other organic materials. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and

estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).