APPENDIX A – FIGURES

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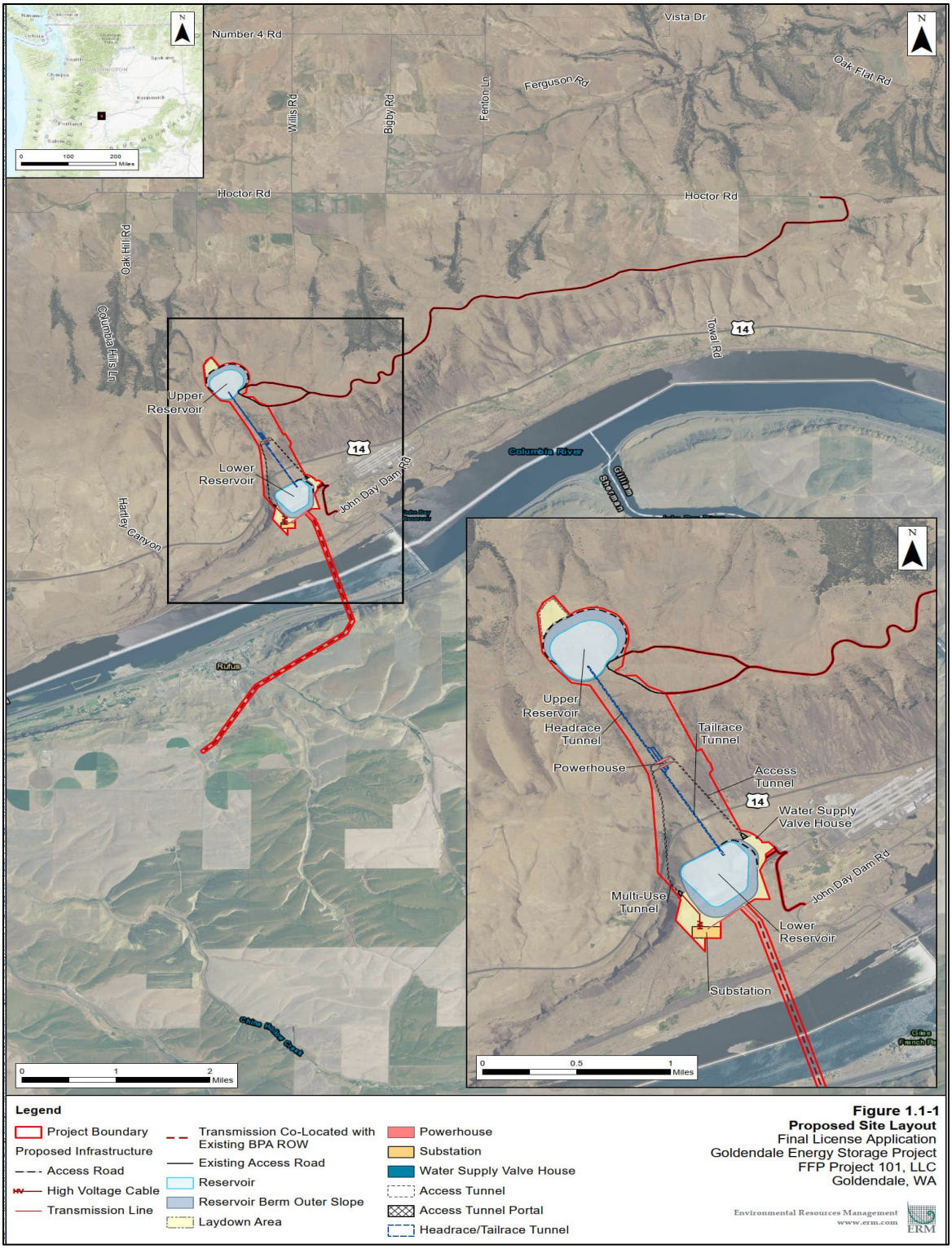

Figure 1.1-1. Location of Goldendale Energy Storage Hydroelectric Project (source: FFP, 2020, as modified by staff).

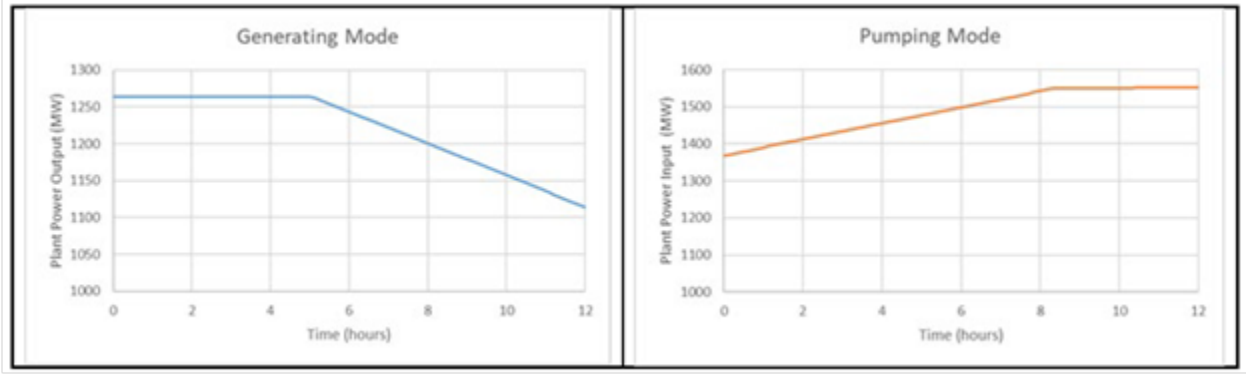

Figure 2.2.3-1. Plant power during generating and pumping cycles – 14,745 MWh scenario (FFP, 2021a).

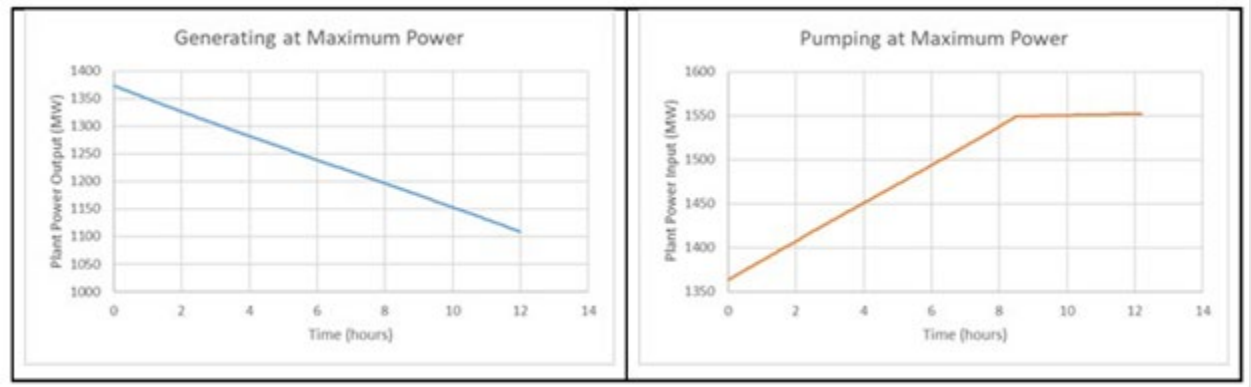

Figure 2.2.3-2. Plant power during generating and pumping cycles – maximum capacity scenario 3 (source: FFP, 2021a).

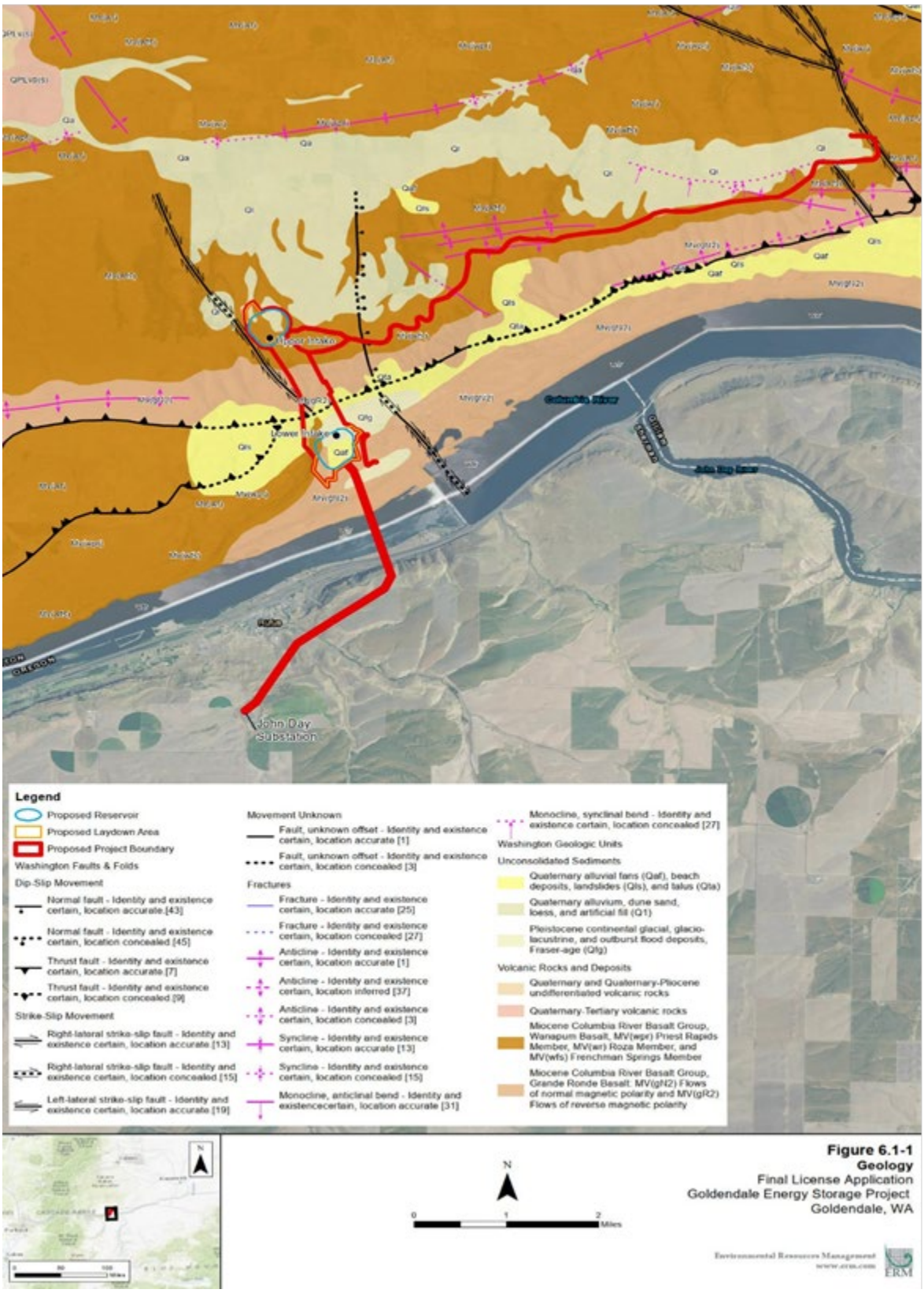

Figure 3.3.1-1. Geology of the Goldendale Project area (source: FFP, 2020).

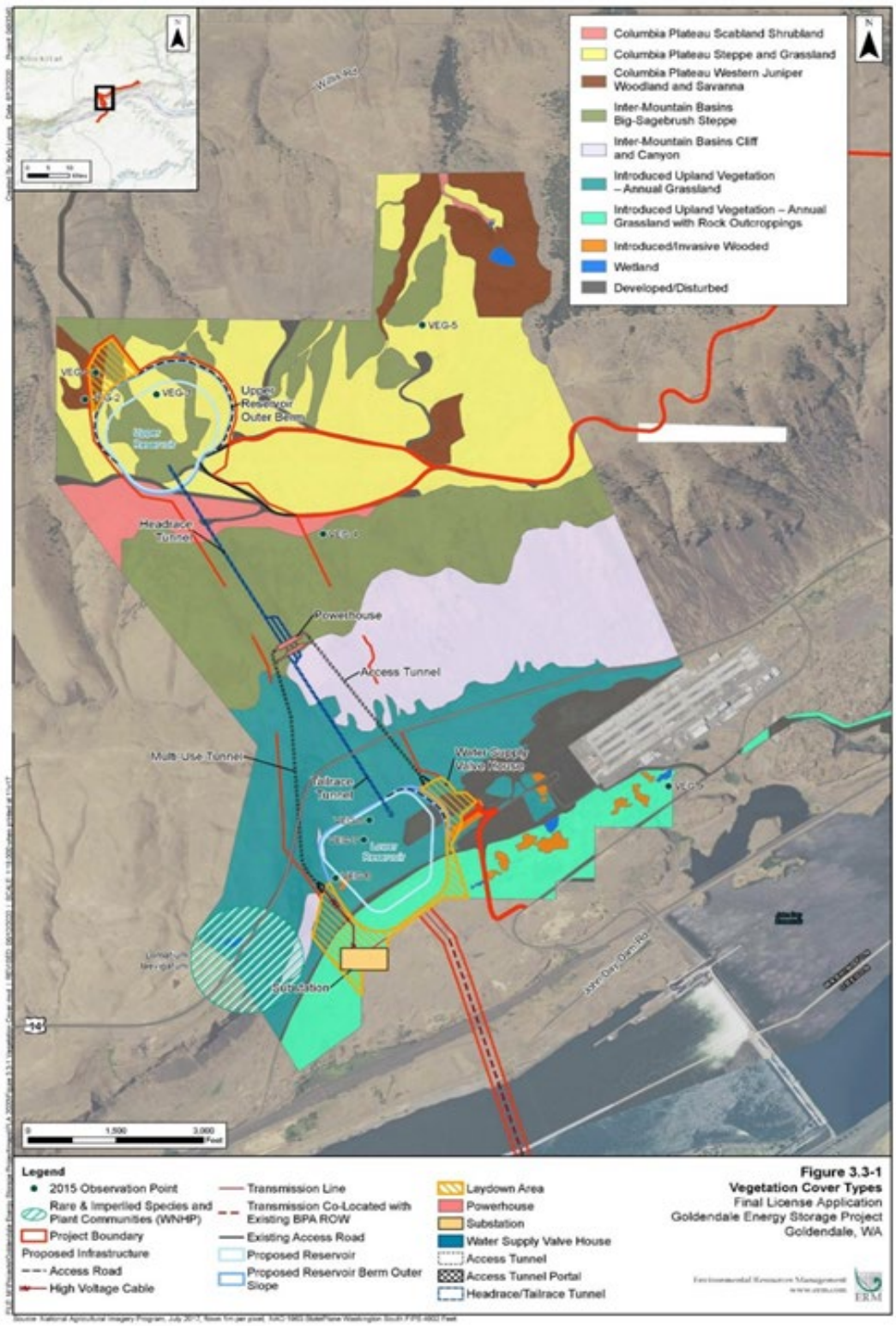

Figure 3.3.4-1. Vegetation cover types in the project area (source: FFP, 2020).

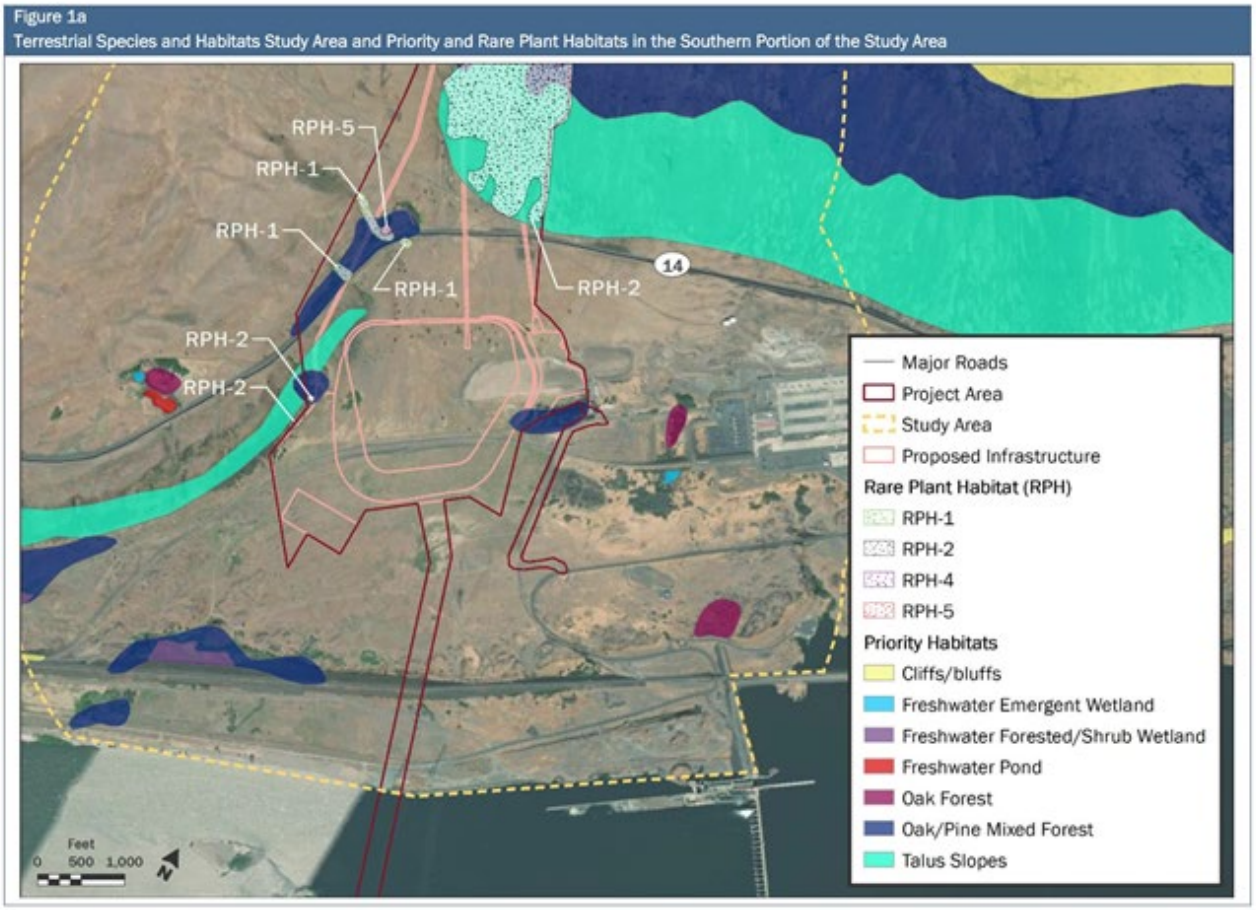

Figure 3.3.4-2a. Priority habitat and rare plant habitat mapping in the southern/lower portion of the project area (source: Washington DOE, 2022a).

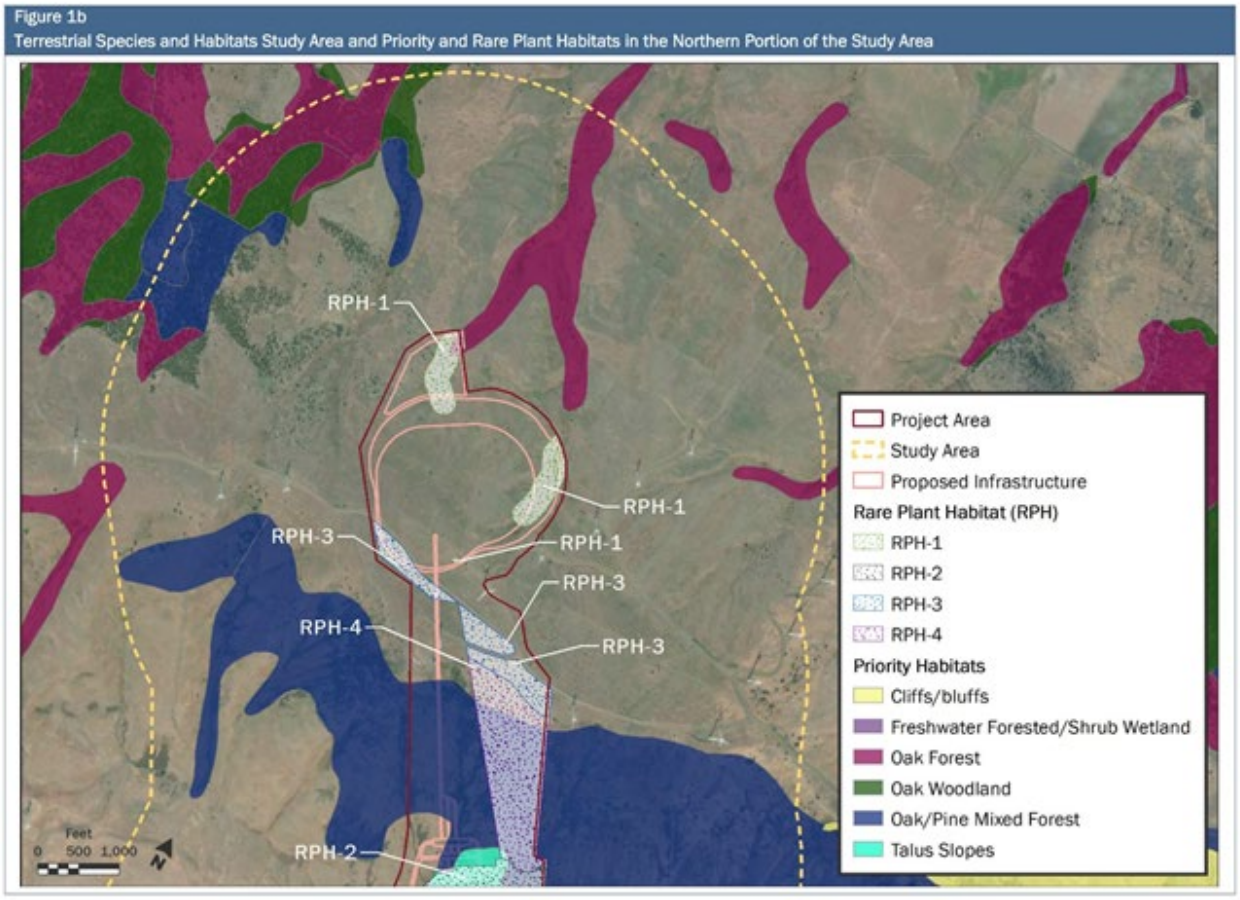

Figure 3.3.4-2b. Priority habitat and rare plant habitat mapping in the northern/upper portion of the project area (source: Washington DOE, 2022a).

Figure 3.3.4-3a. Delineated wetlands and waterbodies in the southern/lower portion of the project area (source: Washington DOE, 2022a).

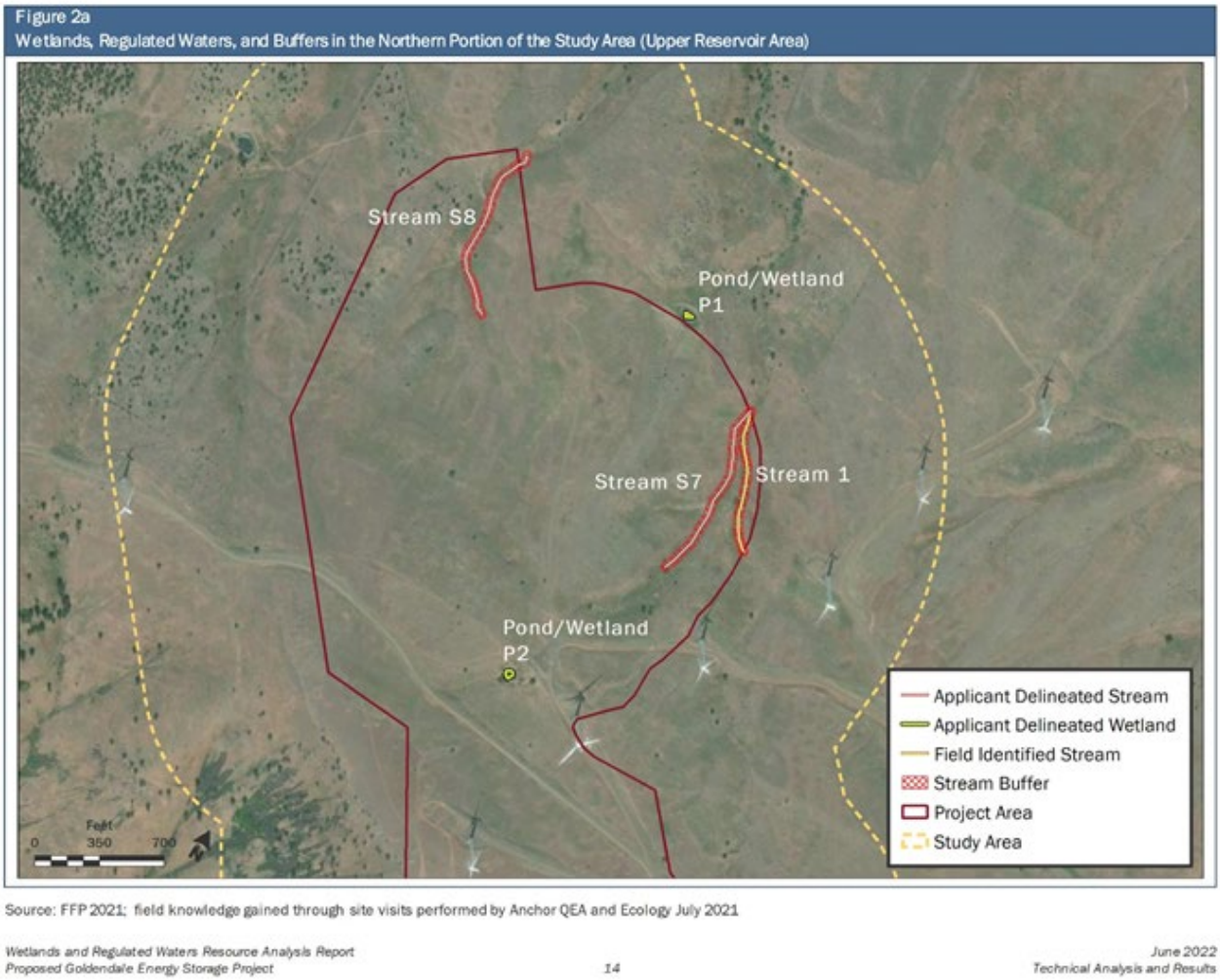

Figure 3.3.4-3b. Delineated wetlands and waterbodies in the northern/upper portion of the project area (source: Washington DOE, 2022a).

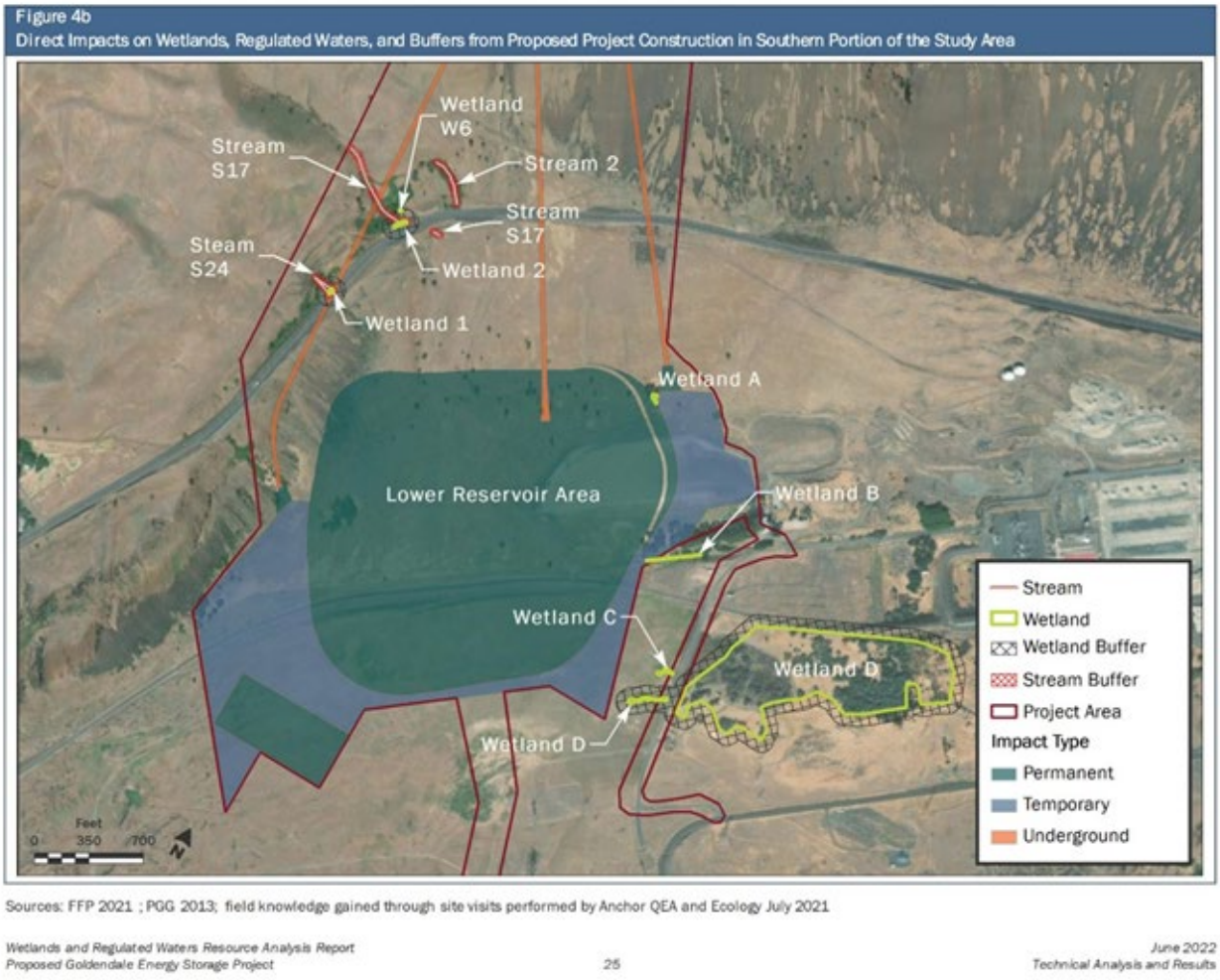

Figure 3.3.4-4a. Direct impacts of project construction on delineated wetlands and waterbodies in the southern/lower portion of the project area (source: Washington DOE, 2022a).

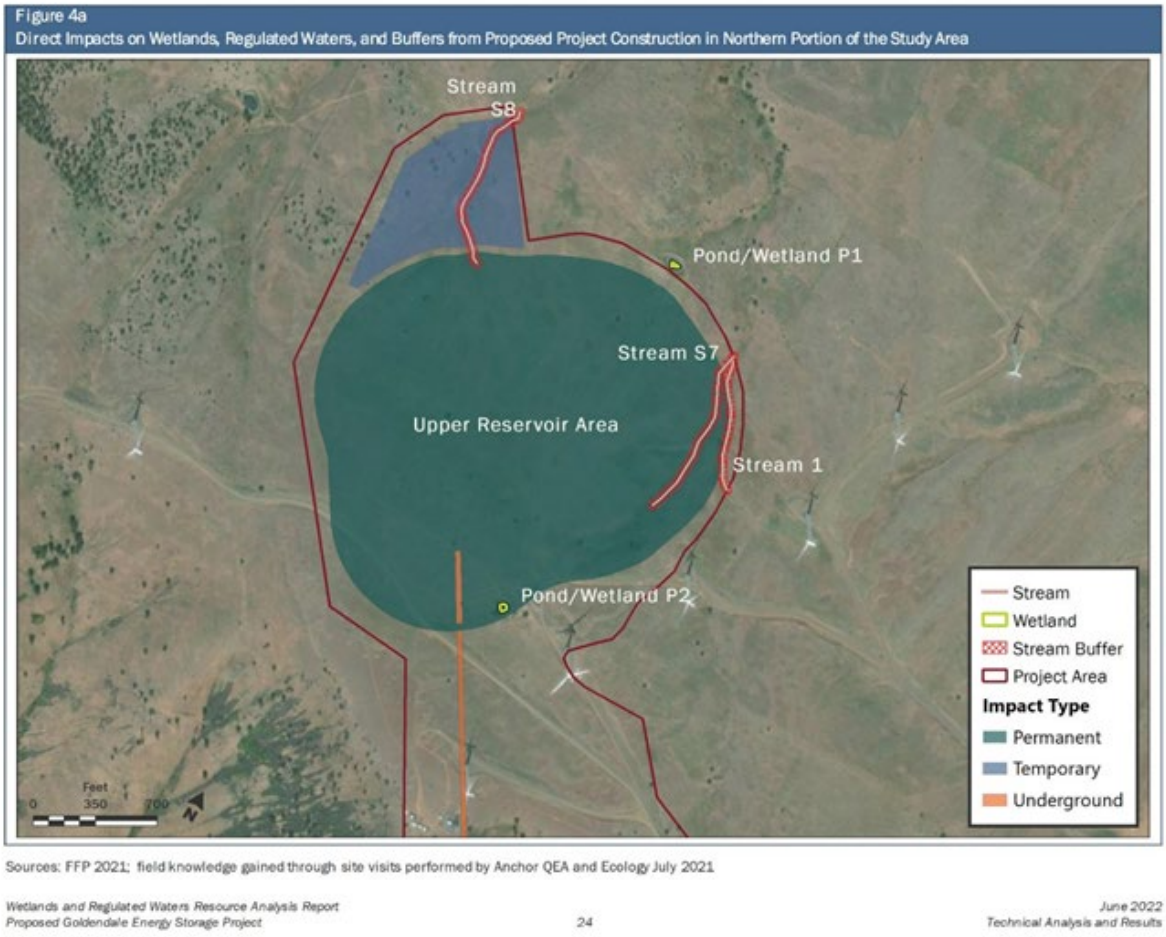

Figure 3.3.4-4b. Direct impacts of project construction on delineated wetlands and waterbodies in the northern/upper portion of the project area (source: Washington DOE, 2022a).

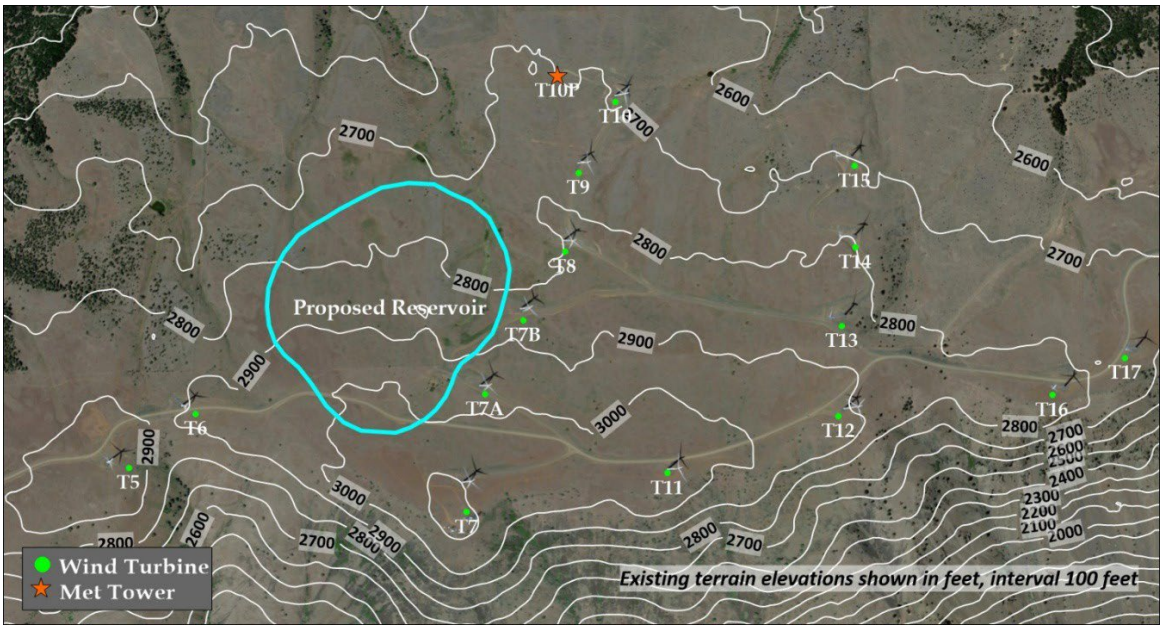

Figure 3.3.6-1. Wind turbine locations relative to the upper reservoir (Source: ERM, 2021b).

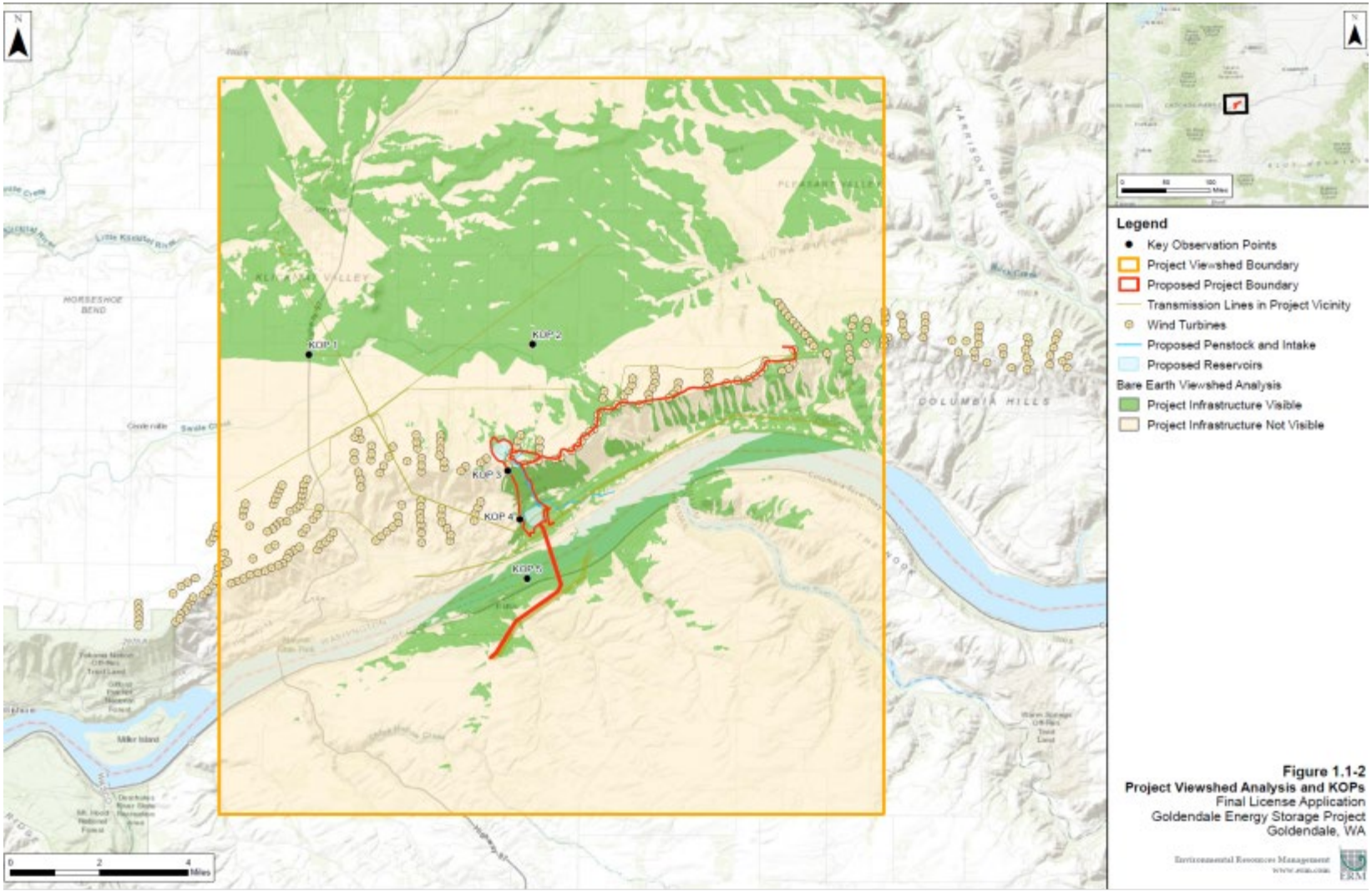

Figure 3.3.7-1. Key observation points for the Goldendale Pumped Storage Project (source: FFP, June 2020).

Figure 3.3.7-2. View of proposed lower reservoir area from State Route 14 (source: FFP, 2020).

Figure 3.3.7-3. View in vicinity upper reservoir area (source: FFP, 2020).

Figure 3.3.7-4. Photo-simulation of the upper reservoir from the intersection of Hoctor Road and Highway 97 as seen from KOP 1 (source: FFP, 2020).

Figure 3.3.7-5. Photo-simulation of the upper reservoir from the intersection of Willis Road and Hoctor Road as seen from KOP 2 (source: FFP, 2020).

Figure 3.3.7-6. Photo-simulation of the lower reservoir from the Columbia Hills at Juniper Point as seen from KOP 3 (source: FFP, 2020).

Figure 3.3.7-7. Photo-simulation of the lower reservoir from State Route 14 as seen from KOP 4 (source: FFP, 2020).

Figure 3.3.7-8. Photo-simulation of the lower reservoir from the bank of the Columbia River in Giles French/John Day Dam Park as seen from KOP-5 (source: FFP, 2020).

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**70**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**60**	
		Large business office
Quiet urban daytime	**50**	Dishwasher in next room
Quiet urban nighttime	**40**	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Figure 3.3.11-1. Decibel scale and examples of commonly encountered noise sources (source: Caltrans, 2013).

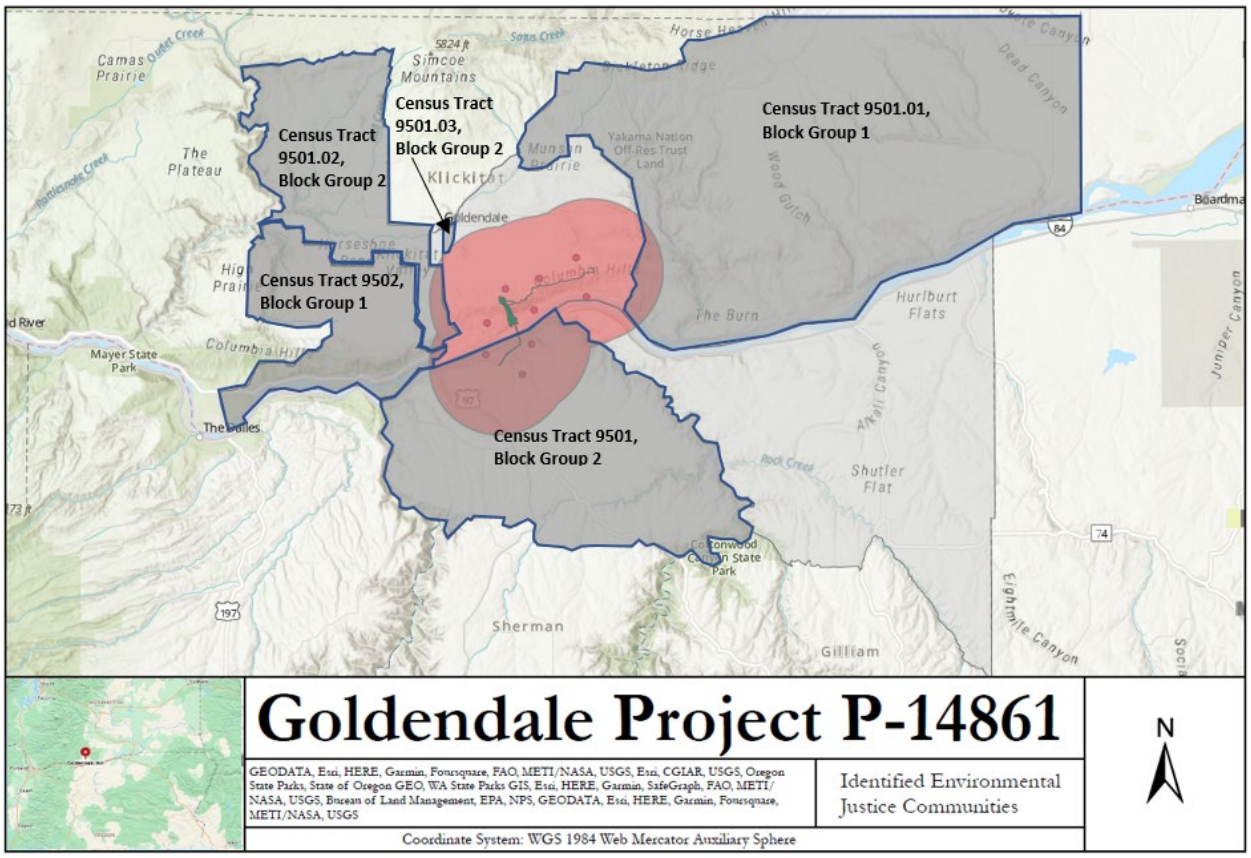

Figure 3.3.12-1 The 5 identified environmental justice communities (Census Tract 9501.02, Block Group 2; Census Tract 9501.01, Block Group 1; Census Tract 9501.03, Block Group 2; Census Tract 9502, Block Group 1; and Census Tract 9501, Block Group 2) within a 5-mile buffer of the Goldendale project area (source: https://www.epa.gov/ejscreen).

APPENDIX B – TABLES

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Table 3.3.1-1. Soil erodibility characteristics (source: FFP, 2020).

Name of Primary Soils	Range of Water Erosion Factors		Wind Erodibility Group	Wind Erodibility Index
	Kw	Kf		
Lower Reservoir Area				
Ewall	0.10	0.10	2	134
Dallesport	0.02-0.28	0.02-0.43	3-7	38-56
Haploxerolls	0.15-0.32	0.32	3	86
Horseflat	0.10-0.20	0.37-0.43	6	48
Upper Reservoir Area				
Goldendale	0.37-0.43	0.37-0.43	5	56
Lorena	0.37-0.43	0.37-0.43	5	56
Rockly	0.10	0.37	8	0
Slope between Reservoir Areas				
Haploxerolls	0.15-0.32	0.32	3	88
Horseflat	0.10-0.20	0.37-0.43	6	48
Onyx	0.15-0.43	0.37-0.43	5	56
Rockly	0.10	0.37	8	0

Notes:

Water Erosion Factors: Kf = Fine fraction soil (grain size less than 2 millimeters) erosion rate of tons per acre per year; Kw = Whole soil erodibility

Range of Kw and Kf erosion potential factors: 0.02–0.15 = Low, 0.16–0.28 = Moderately Low, 0.29–0.43 = Moderate, 0.44–0.55 = Moderately High, 0.56–0.69 = High

Wind Erosion Factors: Wind Erosion Group is a dimensionless score ranging from 1 (highly erodible) to 8 (not erodible)

Wind Erodibility Group scoring: 1–2 = High, 3–4 = Moderately High, 5–6 = Moderately Low, 7–8 = Low

Wind Erodibility Index estimates susceptibility to wind erosion in tons per acre per year.

Wind Erodibility Index ranges: 0–62 = Low, 63–124 = Moderately Low, 125–186 = Moderate, 187–248 = Moderately High, 249–310 = High

Table 3.3.2-1. Monthly discharge metrics (thousand cfs) for the Columbia River at The Dalles, OR (1990–2019) (source: USGS, 2022).

	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Annual**
Mean	108	128	152	169	176	188	228	289	282	192	144	104	180
Median	105	124	146	163	160	173	222	271	262	179	140	100	160
Max	151	192	233	250	280	348	398	498	472	328	233	156	498
Min	72	89	96	107	105	104	114	155	143	107	89	67	67

Table 3.3.2-2. Washington DOE's water quality standards required for surface waters of freshwater environments to support the aquatic life (salmon spawning, rearing, and migration) designated use (source: Washington State Legislature, 2022a).

Water quality parameter	**Standard**
Temperature	The 7-day average daily maximum (7-DADM) shall not exceed 17.5°C (63.5°F)
Dissolved Oxygen	The daily minimum shall not be less than 10 mg/L or 90% saturation.
Turbidity	Turbidity shall not exceed: • 5 Nephelometric Turbidity unit (NTU) over background when the background is 50 NTU or less; or • A 10% increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas	Total dissolved gas shall not exceed 110% saturation at any point of sample collection
pH	pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

Table 3.3.3-1. Minimum instantaneous flows specified by the Washington Administrative Code for the John Day Dam (source: Washington State Legislature, 2022b).

Period	Minimum Instantaneous Flow (1,000 cfs)
January	20
February	20
March	50
April 1-15	50
April 16-25	70
April 26-30	70
May	70
June 1-15	70
June 16-30	50
July 1-15	50
July 16-31	50
August	50
September	50
October 1-15	50
October 16-31	50
November	50
December	20

Table 3.3.3-2. Passage timing for years 2012 through 2021 of wild PIT-tagged juvenile and adult salmonids at the John Day Dam and The Dalles Dam (source: NMFS, 2022a; Columbia Basin Research, 2022a).

Associated Dam	Lifestage	Species	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
John Day	Juvenile													
		Snake River Fall-run Chinook												
		Snake River Spring Summer-run Chinook												
		Snake River Sockeye												
		Snake River Steelhead												
		Upper Columbia River Spring-run Chinook												
		Upper Columbia River Steelhead												
		Middle Columbia River Steelhead												
The Dalles	Adult	Snake River Fall-run Chinook												
		Snake River Spring Summer-run Chinook												
		Snake River Sockeye												
		Snake River Steelhead												
		Upper Columbia River Spring-run Chinook												
		Upper Columbia River Steelhead												

Associated Dam	Lifestage	Species	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
		Middle Columbia River Steelhead												

Note: Light gray shading indicates the full range of detections, while dark gray shading indicates the middle 90% of detection. Adult passage timing is provided for The Dalles Dam because it is the nearest location to the proposed project where specific 10-year historical run timing data are available.

Table 3.3.4-1. Special status plant species known to occur in Klickitat County (source: FFP, 2020).

Common Name	Scientific Name	Status
California's broomrape	*Orobanche californica* ssp. *grayana*	State-endangered
Hot-rock penstemon	*Penstemon deustus* var. variabilis	State-endangered
Obscure buttercup	*Ranunculus triternatus*	State-endangered
Wormskiold's northern wormwood	*Artemisia campestris var. wormskioldii*	State-endangered
Inch-high rush	*Juncus uncialis*	State-threatened
Smooth desert parsley	*Lomatium laevigatum*	State-threatened
Bolander's linanthus	*Leptosiphon bolanderi*	State-sensitive
Common bluecup	*Githopsis specularioides*	State-sensitive
Douglas' draba	*Cusickiella douglasii*	State-sensitive
Few-flowered collinsia	*Collinsia sparsiflora* var. *bruceae*	State-sensitive
Nuttall's quillwort	*Isoetes nuttallii*	State-sensitive
Smooth goldfields	*Lasthenia glaberrima*	State-sensitive
Suksdorf's desert parsley	*Lomatium suksdorfii*	State-sensitive
Western ladies' tresses	*Spiranthes porrifolia*	State-sensitive

Note: Within 3 miles of the project area, Washington NHP has recorded two occurrences of smooth desert parsley. Smooth desert parsley is a state-threatened and Tribally important plant.

Table 3.3.4-2. Special status and culturally important plant species documented or with potential to occur in the project area (source: FFP, 2020 and Washington DOE, 2022a).

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Gray's broomrape	*Aphyllon californicum var. grayanum or Orobanche grayana or Orobanche californica ssp. grayana*	G4T3T4, S1	E	-	Peripheral; Vernally moist meadows and lower montane meadows, parasitic on sagebrush	Potentially present but not observed during botanical or cultural survey
Wormskiold's northern wormwood	*Artemisia campestris var. wormskioldii or Artemisia campestris ssp. borealis var. wormskioldii*	G5T1, S1	E	-	Regional Endemic; Arid shrub-steppe on basalt, usually flat terrain, floodplain of Columbia River	Potentially present but not observed during botanical or cultural survey
Few-flowered collinsia	*Collinsia sparsiflora var. sparsiflora or Collinsia sparsiflora var. bruceae*	G4T4, S1	S	-	Peripheral; Thin soils over basalt on almost flat to steep, generally south-facing slopes; moist in spring, but becoming dry by summer	Potentially present but not observed during botanical or cultural survey
Douglas' draba	*Cusickiella douglasii or Draba douglasii*	G4G5, S1	S	-	Peripheral; Windswept rocky ridges, granitic rock screes, loose volcanic hillsides, red barren hills, rocky flats, and serpentine ridges	Potentially present but not observed during botanical or cultural survey
Common bluecup	*Githopsis specularioides*	G5, S2S3	S	-	Sparse; Dry, open places at lower elevations, such as thin soils over bedrock outcrops, grassy balds, talus slopes, and gravelly prairies	Potentially present but not observed during botanical or cultural survey
Diffuse stickseed	*Hackelia diffusa var. diffusa*	G4T3, S2	T	-	Regional Endemic; Bottoms of mossy talus and scree slopes, shaded areas, cliffs, roadsides, and other disturbed sites	Potentially present but not observed during botanical or cultural survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Nuttall's quillwort	*Isoetes nuttallii*	G4?, S2	S	-	Sparse; Terrestrial in seasonally wet ground, seepages, temporary streams, and mud near vernal pools	Potentially present but not observed during botanical or cultural survey
Inch-high rush	*Juncus uncialis*	G3G4, S2	T	-	Sparse; Vernal pools and pond edges, often in channeled scablands, or biscuit-swale topography	Potentially present but not observed during botanical or cultural survey
Smooth goldfields	*Lasthenia glaberrima*	G5, S1	S	-	Peripheral; Margins of vernal pools, wet or muddy stream banks, wetlands, and winter-flooded meadows	Potentially present but not observed during botanical or cultural survey
Bolander's linanthus	*Leptosiphon bolanderi or Linanthus bakeri*	G4G5, S2	S	-	Peripheral; Dry, rocky places and open or partially vegetated slopes with scattered basalt rocks	Potentially present but not observed during botanical or cultural survey
Basalt biscuitroot (Smooth Desert Parsley)	*Lomatium laevigatum*	G3, S2S3	T	-	Local Endemic; Ledges and crevices of basalt cliffs along the Columbia River and adjacent rocky slopes of sagebrush steppe	Potentially present and observed during cultural survey but not overserved during botanical survey
Suksdorf's biscuitroot	*Lomatium suksdorfii*	G3, S3	S	-	Local Endemic; Semiopen to open, dry, rocky hillsides on moderate to steep slopes at elevation of 90 to 1100 meters (300-3,600 feet)	Potentially present but not observed during botanical or cultural survey
Hot-rock penstemon	*Penstemon deustus var. variabilis*	G5T2, S1	E	-	Regional Endemic; Dry foothills and lowlands, on open, dry, thin soils over basalt	Potentially present but not observed during botanical or cultural survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Obscure buttercup	*Ranunculus triternatus or Ranunculus glaberrimus var. reconditus o Ranunculus reconditus*	G5T2, S1S2	E	-	Local Endemic; Meadow steppe habitat dominated by bunchgrasses and forbs.	Potentially present but not observed during botanical or cultural survey
Western ladies-tresses	*Spiranthes porrifolia or Spiranthes romanzoffiana var. porrifolia*	G4, S2	S	-	Sparse; Wet meadows, bogs, streams, and seepage slopes. Elevation in Washington: 3-2,075 meters (10-6,800 feet)	Potentially present but not observed during botanical or cultural survey
Yarrow	*Achillea millefolium*	-	-	-	Grows in wet to dry soil in meadows, open places, in all elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Tapertip onion	*Allium acuminatum*	-	-	-	Grows in open, usually rocky places below 6,000 feet	Potentially present and observed during cultural survey but not observed during botanical survey
Barestem biscuitroot	*Lomatium nudicaule*	-	-	-	Grows in open areas with dry rocky clay or sandy soils from near coastline to mid elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Nine-leaf biscuitroot	*Lomatium triturnatum*	-	-	-	Grows on open or sagebrush slopes, ridges, pine woodlands in vernal-wet spots, often in serpentine areas	Potentially present and observed during cultural survey but not observed during botanical survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Pungent desert parsley	*Lomatium papilioniferum (L. grayi)*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Biscuit root	*Lomatium macrocarpum*	-	-	-	Grows in rocky slopes, woodlands, at low elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Fernleaf biscuitroot	*Lomatium dissectum*	-	-	-	Grows in wooded or brushy slopes, talus and steep rocky slopes, at low to high elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Arrowleaf balsamroot	*Balsamorhiza sagittata*	-	-	-	Grows in deep rich soils in ponderosa pine and sagebrush habitats, often in huge patches, at mid elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Black Hawthorne	*Crataegus spp. (C. suksdorfii or C. douglasii)*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Smooth sumac	*Rhus glabra*	-	-	-	Grows in disturbed soils and grasslands near water in dry areas	Potentially present and observed during cultural survey but not observed during botanical survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Western juniper	*Juniperus occidentalis*	-	-	-	In Oregon and Washington found in elevations between 500 to 5,000 feet (150-1,500 meters) (OSU 2021)	Potentially present and observed during cultural survey but not observed during botanical survey
Ponderosa pine	*Pinus ponderosa*	-	-	-	In the Pacific Northwest it is most commonly found east of the Cascades, however in Oregon it is common in the western valleys of the Willamette, Umpqua, and Rogue Rivers (OSU 2021)	Potentially present and observed during cultural survey but not observed during botanical survey
Strict buckwheat	*Eriogonum strictum var. proliferun*	-	-	-	Grows in rocky places in shrublands, mountains, at low to high elevations (OSU 2021)	Potentially present and observed during cultural survey but not observed during botanical survey
Thyme-leaved buckwheat	*Eriogonum thymoides*	-	-	-	Grows in dry or rocky soils in sagebrush, on rocky ridges	Potentially present and observed during cultural survey but not observed during botanical survey
Arrowleaf buckwheat	*Erogonum compositum*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Columbia Gorge broad-leaf lupine	*Lupinus latifolius*	-	-	-	Grows in moist, open to shady woods and meadows	Potentially present and observed during cultural survey but not observed during botanical survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Rubber rabbitbrush	*Ericameria nauseosa*	-	-	-	Grows in dry soils in many habitats below 10,500 feet	Potentially present and observed during cultural survey but not observed during botanical survey
Chocolate lily	*Fritillaria camschatcensis*	-	-	-	Grows in wet soils that never dry in coastal areas and rain forest	Potentially present and observed during cultural survey but not observed during botanical survey
Nootka rose	*Rosa nutkana*	-	-	-	Grows in moist flats at low to mid elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Brodiaea	*Triteleia hyacinthina*	-	-	-	Grows in spring-wet grasslands from coast to mid-elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Wavyleaf thistle	*Cirsium undulatum*	-	-	-	East-Side Forest, Shrub-Steppe, Meadow, grows in open dry areas at low to mid elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Slender hawksbeard	*Crepis atribarba*	-	-	-	Grows in dry, grassy, open areas, pine forests in steppe	Potentially present and observed during cultural survey but not observed during botanical survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Northern mule-ears	*Wyethia amplexicailis*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Bitterroot	*Lewisia rediviva*	-	-	-	Grows in rocky soils in open places from just above sea level to alpine	Potentially present and observed during cultural survey but not observed during botanical survey
Common stork's-bill	*Erodium cicutarium*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Miner's lettuce	*Claytonia perfoliata*	-	-	-	Grows in spring-damp, often shady places in the south, open to shady places in the north, often on disturbed soils, from sea level to mid-elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Spreading dogbane	*Apocynum androsaemifolium*	-	-	-	Grows in rocky places, dry open areas in conifer forests and adjacent shrub-steppe and prairies, at low to subalpine elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Silver puffs	*Uropappus lindleyi*	-	-	-	Grows in loose soils in meadows, woods, steppe or deserts, at low and mid elevations	Potentially present and observed during cultural survey but not observed during botanical survey

Common Name	Species Name	Heritage Rank	State Status	Federal Status	Distribution Pattern/Habitat[a]	Study Area[b]
Menzies' fiddleneck	*Amsinckia menziesii*	-	-	-	Abundant over a wide range in open ground from coastline to mid elevations, Meadow, West-Side Forest, Shrub-Steppe	Potentially present and observed during cultural survey but not observed during botanical survey
Netleaf hackberry	*Celtis laevigata*	-	-	-		Potentially present and observed during cultural survey but not observed during botanical survey
Nuttal's larkspur	*Delphinium nuttallianum*	-	-	-	Grows in open meadows, near streams, ponderosa pine woodlands, sagebrush, at low to high elevations	Potentially present and observed during cultural survey but not observed during botanical survey
Western serviceberry	*Amelanchier alnifolia*	-	-	-	Grows in open meadows, fencerows, woodlands, streambanks, conifer forests, at low to high elevations	Potentially present and observed during cultural survey but not observed during botanical survey

Notes:

[a] Unless otherwise noted, plant habitat and distribution information are from WNHP, 2021.

[b] Presence in the study is based on the applicant's 2015 and 2019 habitat and botanical surveys (FFP, 2020) and on a study area cultural survey (Shellenberger et al., 2019).

Heritage Rank: WNHP uses the ranking system developed by NatureServe to assess global and state conservation status of each plant species, subspecies, and variety. Taxa are ranked on a scale of 1 to 5 (from highest to lowest conservation concern).
G = Global Rank: rangewide status of a full species; T = Trinomial Rank: rangewide status of a subspecies or variety; S = State Rank: status of a species, subspecies, or variety within the state of Washington
1 = Critically Imperiled – at very high risk of extirpation due to very restricted range, very few occurrences, very steep declines, very severe threats, or other factors; 2 = Imperiled – at high risk of extirpation due to restricted range, few

occurrences, steep declines, severe threats, or other factors; 3 = Vulnerable – at moderate risk of extirpation due to a fairly restricted range, relatively few occurrences, recent and widespread declines, threats, or other factors; 4 = Apparently secure – at fairly low risk of extirpation due to an extensive range or many occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors; 5 = Secure – at very low risk of extirpation due to a very extensive range, abundant occurrences, and little to no concern from decline or threats
H = Historical– known from only historical occurrences (prior to 1978) but still with some hope of rediscovery

State Status: E = Endangered, in danger of becoming extinct or extirpated from Washington; T = Threatened, likely to become Endangered in Washington; S = Sensitive, vulnerable or declining and could become Threatened or Endangered in Washington; Extirp = possibly extinct or extirpated in Washington (includes state historical species)

Federal Status: E = Endangered, A species, subspecies, or variety in danger of extinction throughout all or a significant portion of its range; T = Threatened, A species, subspecies, or variety likely to become Endangered in the foreseeable future; Prop = Proposed, A species, subspecies, or variety formally proposed for listing as Endangered or Threatened (a proposal has been published in the Federal Register, but not a final rule); Cand = Candidate, A species, subspecies, or variety being evaluated by FWS for potential listing as Threatened or Endangered under the ESA, but no formal proposal has been published yet.

Table 3.3.4-3. Wetlands and waterbodies in the project area (source: FFP, 2020 and Washington DOE, 2022a).

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
Northern/Upper Portion of the Project Area (Swale Creek Watershed/Upper Reservoir Area)						
Stream S7	Perennial water course	R5UBH	Intermittent stream with ephemeral upstream extent; channel is 16 to 24 inches wide, 1 to 3 inches deep, and extends approximately 995 feet into the project boundary; no flowing water was observed, but	N/A	Yes	0.046

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
			much of the substrate was covered with algal matting			
Stream S8	Perennial water course	R5UBH	Intermittent stream; channel is 12 to 24 inches wide, 1 to 3 inches deep, and extends approximately 990 feet into the project boundary; no flowing water was observed, several pockets of standing water were observed, and much of the substrate was covered with algal matting	N/A	Yes	0.045
Stream 1[b]	Not identified	Not identified	Ephemeral stream: channel is 8 to 12 inches wide, 1 to 3 inches deep, and about 773 feet long; no flowing water was observed in the channel, but much of the substrate was covered with algal matting	N/A	Yes	0.018
Pond/Wetland P1[c]	Perennial pond	PUBHx	Perennial excavated pond for cattle with wetland characteristics; Unidentified emergent vegetation was observed	PUBFx	No	0.010

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
			growing in 1 to 2 feet of standing water.			
Pond/Wetland P2	Perennial pond	Not identified	Excavated pond for cattle with wetland characteristics; edges of the pond are largely unvegetated, and no emergent vegetation was observed growing within the water. Historic aerial imagery suggests that the pond dries up entirely most years	PUBCx	No	0.027
Area Subtotal						0.0146
Southern/Lower Portion of the Project Area (Columbia Tributaries Watershed/Lower Reservoir Area)[4]						
Stream S17	Intermittent	R4SBC/PSS1A	Intermittent stream; channel about 24 inches wide, 1 to 3 inches deep; Flowing water 1 to 3 inches deep was observed above the highway; however, no water was observed exiting the culvert at the outlet on the southeast side of the highway.	R4SBJ	No	0.031

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
Stream S24	Not identified	Not identified	Intermittent stream; appears to be a groundwater seep located along the excavated hillside above Highway 14. Water flows down the hillside into a roadside drainage ditch and into a culvert that conveys the water to east side of the highway. No flowing water was observed existing the culvert outlet	R4SBJ	No	0.060
Stream 2[d]	Not identified	Not identified	Intermittent stream; channel 24 inches wide, 1 to 3 inches deep, and approximately 316 feet long. No water was observed in the channel	R4SBJ	No	0.015
Wetland W6	Not identified	Not identified	Herbaceous wetland; both flowing and standing water was observed but there appears to be no surface connection to Stream S17, which is located about 70 feet downslope.	PEM1C	No	0.003

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
Wetland 1	Not identified	Not identified	Scrub-shrub/herbaceous wetland; stream does not appear to cross SR 14, and water collects in a depression formed by the road fill embankment	PSS/PEM1C	Yes	0.020
Wetland 2	Not identified	Not identified	Scrub-shrub/herbaceous wetland; The stream does not cross SR 14 due to a damaged culvert	PSS/PEM1C	Yes	0.037
Wetland A[e]	Not identified	Not identified	Herbaceous wetland; fed by a spring that has been piped to an overflowing livestock watering trough. Site observations and aerial photography indicates the wetland has seasonal hydrology and no surface connection to other wetlands or waters	PEM1C	No	0.028
Wetland B[f]	Not identified	Not identified	Scrub-shrub wetland located in an excavated ditch fed by stormwater that drains from the north through ditches to the wetland, but the wetland has no surface water outlet	PSS1C	No	0.051

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
Wetland C	Not identified	Not identified	Herbaceous wetland; isolated depression that has seasonal standing water likely provided by a high groundwater table, direct precipitation, and overland runoff.	PEM1C	No	0.049
Wetland D[g]	Not identified	PEM1Ch	Scrub-shrub wetland fed by a seasonal spring, which flows into a small pond and then continues west through a culvert to a small depression. The spring likely provides water to the wetland throughout the year, although much of the wetland dries out in the summer.	PSS1C	No	13.784
Area Subtotal						14.078
Aerial Transmission Line Right of Way[h]						
Stream S20 (Columbia River/Lake Celilo)	Perennial water course	L1UBHh	Impounded pool of Columbia River	N/A	Yes	Not Calculated
Stream S23	Intermittent water course	R4SBC	Ephemeral unvegetated swale	R4SBC	No	Not Calculated

Feature	NHD Classification	NWI Classification[a]	Field Description	Cowardin Classification[a]	Surface Connection to Other Waters?	Area (Acres)
Stream S21	Intermittent water course	R4SBC	Scott Canyon	R4SBC	No	Not Calculated
Stream S22	Intermittent water course	R4SBC	Gerking Canyon	R4SBC	No	Not Calculated
Total Area						14.224

[a] Cowardin system wetland codes: L1UBHh = Lacustrine, limnetic, unconsolidated bottom, permanently flooded, diked/impounded; PEM1C = palustrine, emergent, persistent, seasonally flooded; PEM1Ch = palustrine, emergent, persistent, seasonally flooded, diked/impounded; PSS1A = palustrine, scrub-shrub, broad-leaved deciduous, temporary flooded; PSS1C = palustrine scrub-shrub, broad-leaved deciduous, seasonally flooded; PSS/PEM1C = palustrine scrub-shrub/palustrine emergent, persistent, seasonally flooded; PUBCx = palustrine, unconsolidated bottom, seasonally flooded, excavated; PUBHx = palustrine, unconsolidated bottom, permanently flooded; PUBFx = palustrine, unconsolidated bottom, semipermanently flooded, excavated; R4SBC = riverine, intermittent, streambed, seasonally flooded; R5UBH = riverine, unknown perennial, unconsolidated bottom, permanently flooded

[b] Also known as Stream S1.

[c] Pond/Wetland P1 extends outside the project area to the north.

[d] Stream 2 was first identified in an area located immediately north of SR 14 and approximately 350 feet east of Stream S17. During the 2022 investigation, no distinct channel was observed in this area and vegetation consisted of facultative -only species. The area showed evidence of previous flow with dead blackberry brambles wrapped around adjacent tree trunks, although no flow was observed during the time of the investigation. Hydric soils were also not observed in the soil pit dug in the area. Therefore, the area of Stream 2 is no longer considered a stream.

[e] Wetland A was delineated on the CGA smelter site in the southern portion of the study area, south of SR 14, but during 2022 investigations, the vegetation consisted of facultative-only species with no signs of wetland hydrology or other indicators suggesting wetland. Therefore, the area of Wetland A is no longer considered wetland.

[f] Wetland B was delineated on the CGA smelter site in the southern portion of the study area, south of SR 14, but during 2022 investigations, this area was observed to be a linear, graded ditch, with gentle sloping sides. Vegetation consisted of facultative-only species with no signs of wetland hydrology, other than the concave shape of the ditch. The soil pit dug at the lowest elevation indicated that hydric soils were not present. Therefore, the area of Wetland B is no longer considered wetland.

[g] Wetland D extends outside the project area to the east.

[h] Surface waters in the proposed aerial transmission line ROW were assessed using desktop methods and were not verified or delineated in the field.

Table 3.3.4-4. Special status wildlife with the potential to occur at the project (source: FFP, 2020; Washington DOE, 2022a).

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
Birds					
American peregrine falcon	*Falco peregrinus anatum*	PS (WA) SS (OR)		Historic populations have been reported along the Columbia River Basin in the project boundary; observed in the project vicinity.	Yes
Bald eagle	*Haliaeetus leucocephalus*	SS (OR)	BCC; BGEPA	Found primarily near coastlines, rivers, reservoirs, and lakes. Bald eagles principally eat fish, but also feed on carrion, waterfowl, and small mammals. Use large trees as nest sites and hunting perches. Documented along the Columbia River Basin and observed in the project vicinity.	Yes
Bufflehead	*Bucephala albeola*	PS (WA)		Cavity-nesting duck. Documented mortality at Columbia Plateau wind farms.	Yes
Cassin's finch	*Carpodacus cassinii*		BCC	Conifer belts of North America's western interior mountains, from central British Columbia to northern New Mexico and Arizona	Yes

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
Chukar	*Alectoris chukar*	PS (WA)		Dry high-elevation shrublands between 4,000 and 13,000 feet. They usually occur on steep, rocky hillsides with a mixture of brush, grasses, and forbs. They also occur across barren plateaus and deserts with sparse grasses	Yes
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SS (OR)		Bunchgrass prairies with deciduous shrubs and trees. Potential habitat present in the project area.	Yes
Common nighthawk	*Chordeiles minor*	SS (OR)		Sagebrush, prairies, plains, grasslands, and open forests. Potential habitat present in the project area	Yes
Ferruginous hawk	*Buteo regalis*	SE (WA) SS (OR)		Breed in grasslands, sagebrush, shrublands, and edges of pinyon-juniper forests (Cornell 2015). Observed in the project vicinity.	Yes
Flammulated owl	*Otus flammeolus*	SC (WA) SS (OR)		Forests of large diameter (>50 cm diameter at breast height) ponderosa pine/Douglas-fir or grand fir with ponderosa pine in the overstory.	Yes
Golden eagle	*Aquila chrysaetos*	SC (WA) SS (OR)	BGEPA	Associated with steep terrain and found grasslands, shrub-steppe, and dry open forests of eastern Washington, canyonlands, and high-elevation alpine zones. Hunts for prey in grasslands and shrublands. Nests on cliff ledges, rocky outcrops, large trees, or human-made structures.	Yes
Grasshopper sparrow	*Ammodramus savannarum*	SS (OR)		Grasslands, prairies, little to no shrub cover, potentially in the project area.	Yes
Great blue heron	*Ardea herodias*	PS (WA)		Found in freshwater and saltwater habitats and forage in grasslands and agricultural fields	Yes
Lewis' woodpecker	*Melanerpes lewis*		BCC	Breed in ponderosa pine forests or oak/pinyon-juniper woodlands. When not breeding, they occur in cottonwoods near streams, orchards, and oak woodlands.	Yes

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
Loggerhead shrike	*Lanius ludovicianus*	SC (WA) SS (OR)		Open country, including shrub-steppe and grasslands throughout eastern Washington. They generally nest in dense, thorny trees, or shrubs.	Yes
Long-billed curlew	*Numenius americanus*	SS (OR)		Summer in sparse short shortgrass and mixed-grass prairies as well as agricultural fields.	Yes
Long-eared owl	*Asio otus*		BCC	Dense vegetation for nesting and forage in open grasslands or shrublands; also open coniferous or deciduous woodlands.	Yes
Mallard	*Anas platyrhynchos*	PS (WA)		Lakes and Ponds and almost any wetland habitat	Yes
Northern pintail	*Anas acuta*	PS (WA)		Nests in seasonal wetlands, croplands, grasslands, wet meadows, and shortgrass prairies. Forage in nearby shallow wetlands, lakes, and ponds.	Yes
Pileated woodpecker	*Dryocopus pileatus*	SC (WA) SS (OR)		Mature deciduous or mixed deciduous-coniferous woodlands of nearly every type and can be found in suburban areas.	Yes
Prairie falcon	*Falco mexicanus*	PS (WA)		Inhabits the arid environments of eastern Washington, nesting on cliffs and hunting in steppe and shrub-steppe habitat	Yes
Ring-necked pheasant	*Phasianus colchicus*	PS (WA)		Agricultural areas west of the Cascades, but the grain-producing lands on the east side of the state provide the best habitat and the highest populations.	Yes
Rufous hummingbird	*Selasphorus rufus*		BCC	Open or shrubby areas, forest openings, yards, and parks, and sometimes in forests, thickets, swamps, and meadows.	Yes
Sage thrasher	*Oreoscoptes montanus*	SC (WA)		Large patches and expanses of sagebrush for breeding, as well as small fragments of sagebrush among agricultural. Required dense ground cover.	Yes
Sagebrush sparrow	*Artemisiospiza nevadensis*	SC (WA)		Sagebrush/bunchgrass shrub-steppe landscapes with shrubs up to 6-feet tall. Can nest in sagebrush-juniper habitat bordering	Yes

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
				sagebrush steppe; in winter migration use dry shrublands or grasslands.	
Swainson's hawk	*Buteo swainsoni*	SS (OR)		Open areas for foraging, prairie, grassland.	Yes
Western bluebird	*Sialia mexicana*	SS (OR)		Open woodlands, edges of woods, and disturbed areas.	Yes
Western grebe	*Aechmophorus occidentalis*	SC (WA)		Large freshwater lakes, reservoirs, and marshes in eastern Washington during the summer breeding season.	Yes
Western meadowlark	*Sturnella neglecta*	SS (OR)		Open grasslands, shrub-steppe, and meadows.	Yes
White-headed woodpecker	*Dryobates albolarvatus*	SC (WA) SS (OR)		Montane coniferous forests dominated by pine. Usually associated with ponderosa pine.	Yes
Yellow-breasted chat	*Icteria virens*	SS (OR)		Dense shrubbery like blackberry bushes in shrub-steppe habitats	Yes
Mammals					
California myotis	*Myotis californicus*	PS (WA) SS (OR)		Deserts, canyons, shrub-steppe, arid grasslands, and dry interior forests, as well as moister environments such as coastal and montane forests comprised of deciduous or coniferous trees, riparian forests, and mountain meadows.	Yes
Hoary bat	*Lasiurus cinereus*	SS (OR)		Mostly forest associated, can occur in open areas like grasslands.	Yes
Little brown bat	*Myotis lucifugus*	PS (WA)		Conifer and hardwood forests, but also occupies open forests, forest margins, shrub-steppe, clumps of trees in open habitats, sites with cliffs, and urban areas	Yes
Long-legged myotis	*Myotis volans*	SS (OR)		Mostly occur in coniferous forests, moist or dry, but also occur in riparian forests and dry rangeland.	Yes

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
Pallid bat	*Antrozous pallidus*	SS (OR)		Prefers drier areas like shrub-steppe, deserts, canyons, and dry coniferous forest, can occur in oak woodland; commonly associated with cliffs, rock outcrops and water sources.	Yes
Preble's shrew	*Sorex preblei*	PS (WA)		Open areas, woodlands, and forests; occurs in southwest Washington.	Yes
Silver-haired bat	*Lasionycteris noctivagans*	SS (OR)		Forests and riparian zones; may occur in shrub-steppe areas during migration.	Yes
Spotted bat	*Euderma maculatum*	SS (OR)		Dry climates, roost in high cliffs.	Yes
Townsend's big-eared bat	*Corynorhinus townsendii*	SC (WA)		Conifer-hardwood forests, ponderosa pine forest, and woodlands, shrub-steppe and riparian forest/wetlands and open fields. Roosts include caves, abandoned mines, buildings, concrete bunkers, tunnels, and bridges.	Yes
Western gray squirrel	*Sciurus griseus*	ST (WA)		Distribution closely correlated with Oregon white oak habitat, probably due to squirrels' dependence on acorns as a winter food source. Known populations of western gray squirrel exist in the oak woodlands to the northeast of the study area. However, their habitat does not exist at the project site and not likely to occur at the site.	No
White-tailed jackrabbit	*Lepus townsendii*	SC (WA)		Prairies and the semi-arid portions of the Columbia Plateau.	Yes
Reptiles					
California mountain kingsnake	*Lampropeltis zonat*	SC (WA)		The Columbia River Gorge is considered the northern extreme of its range	Yes
Sagebrush lizard	*Sceloporus graciosus*	SC (WA)		Vegetated sand dunes and associated sandy habitats that support shrubs and have large areas of bare ground.	Yes

Common Name	Species Name	State Status	Federal Status	Habitat	Potential Occurrence in Project Area[a]
Striped whipsnake	*Masticophis taeniatus*	SC (WA)		Shrub-steppe obligates and occur primarily in the driest areas of the central Columbia Basin.	Yes
Western rattlesnake	*Crotalus oreganus*			Deserts and shrub-steppe and open forests.	Yes
Amphibians					
Western toad	*Anaxyrus boreas*	SC (WA) SS (OR)		Wide range of habitat, forests, mountain meadows, desert flats	Yes
Invertebrates					
Columbia Oregonian (snail)	*Cryptomastix hendersoni*	SC (WA)		East end of the Columbia Gorge on Oregon and Washington sides.	Not Known
Dalles sideband snail	*Monadenia fidelis minor*	SC (WA)		Cool, moist talus habitat and upland forest areas that are near seeps and springs.	Yes
Juniper hairstreak	*Callophrys gryneus*	SC (WA)		Old fields, bluffs, barrens, juniper and pinyon-juniper woodlands, and cedar breaks.	Yes
Monarch butterfly	*Danaus plexippus*		CS	Upland, wetland, and riparian habitats	Yes

[a] No wildlife studies have been conducted specifically for the proposed project, and no wildlife studies have been conducted in the lower reservoir area of the study area. Where presence is documented near the study area it is based on wildlife surveys conducted for the nearby wind farm or from available Washington DFW data.

State Designations: SE = State, ST = State-Threatened, SC = State-Candidate, SS = State-Sensitive, PS = State Priority Species, only for Washington, includes all listed species and those the Washington DFW (2015) State Wildlife Action Plan's lists as Species of Greatest Conservation Need.

Federal Designations (FWS 2021c): FE = Federal Endangered, FT = Federal Threatened, CS = Candidate Species, BCC = Bird of Conservation Concern, BGEPA = protected by the Bald and Golden Eagle Protection Act

Table 3.3.4-5. Temporary and permanent effects on vegetation from the proposed project (source: FFP, 2021a).

Vegetation Type	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Columbia Plateau Steppe and Grassland	7.5	49.6
Columbia Plateau Scabland Shrubland	0	1.8
Inter-Mountain Basins Cliff and Canyon	0	0.6
Inter-Mountain Basins Big Sagebrush Steppe	8.1	40.8
Columbia Plateau Western Juniper Woodland and Savanna	0.8	0.2
Introduced/Invasive Annual Grassland	37.1	90.4
Introduced/Invasive Wooded	0	0.9
Developed/Disturbed	0.8	9.3
Total	54.3	193.6

Table 3.3.4-7. Direct wetland and waterbody effects from project construction (source: Washington DOE, 2022a).

Feature	Area of Stream Impact (Acres)	Area of Buffer Impact (Acres)	Duration	Cause of Impact
Northern/Upper Portion of the Project Area (Swale Creek Watershed/Upper Reservoir Area)				
Stream S7	0.041	1.006	Permanent	Construction of the upper reservoir would result in excavation and backfilling portions of Stream S7 and its buffer area.
Stream S8	0.037	0.886	Temporary	Portions of Stream S8 and its buffer area would be affected by temporary laydown areas for stockpiling upper reservoir excavated materials .
Stream S8	0.003	0.100	Permanent	Construction of the upper reservoir would result in excavation and backfilling portions of Stream S8 and its buffer area.
Stream 1	0.004	0.289	Permanent	Construction of the upper reservoir would result in excavation and backfilling portions of Stream 1 and its buffer area.
Pond/Wetland P1	0	0	N/A	N/A
Pond/Wetland P2	0.027	N/A	Permanent	Construction of the upper reservoir would result in excavation and backfilling of all Pond/Wetland P2.
Southern/Lower Portion of the Project Area (Columbia Tributaries Watershed/Lower Reservoir Area)				
Stream S17	0	0	N/A	N/A
Stream S24	0	0	N/A	N/A
Stream 2	0	0	N/A	N/A
Wetland W6	0	0	N/A	N/A
Wetland 1	0	0	N/A	N/A

Feature	Area of Stream Impact (Acres)	Area of Buffer Impact (Acres)	Duration	Cause of Impact
Wetland 2	0	0	N/A	N/A
Wetland A	0.013	N/A	Temporary	Portions of Wetland A would be affected by temporary laydown areas for stockpiling excavated materials near the lower reservoir
Wetland A	0.015	N/A	Permanent	Construction of the lower reservoir would result in excavation and backfilling a portion of Wetland A.
Wetland B	0.009	N/A	Temporary	Portions of Wetland B would be affected by temporary laydown areas for stockpiling excavated materials near the lower reservoir.
Wetland C	0	0	N/A	N/A
Wetland D	0	0	N/A	N/A
Aerial Transmission Line Right of Way[4]				
Stream S20 (Columbia River/Lake Celilo)	0	0	N/A	N/A
Stream S23	0	0	N/A	N/A
Stream S21	0	0	N/A	N/A
Stream S22	0	0	N/A	N/A

Table 3.3.5-1. Spring (April 1–June 5) salmonid passage counts at John Day Dam (1990–2022) (source: Columbia Basin Research, 2022b).

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
1990	42350	777	4054	2	0	0	181043	0	0	0
1991	20014	1833	3311	0	0	0	17012	0	0	0
1992	43716	1741	1837	68	0	0	692910	0	0	0
1993	55552	592	4460	8	0	0	75822	0	0	0
1994	9551	194	2767	0	0	0	122645	0	0	0
1995	4601	1175	2130	13	0	0	250403	0	0	0
1996	18651	2948	2188	9	0	0	2797	0	0	0
1997	62253	327	3157	15	0	0	565	0	0	0
1998	21800	377	5477	4	0	0	7944	0	0	0
1999	15409	5089	3564	3	0	0	8776	120	0	0
2000	86553	12157	3468	325	2	0	156134	42	0	0
2001	264177	6208	2791	143	0	0	688262	108	0	0
2002	139887	2403	8422	7	0	0	183742	180	0	0
2003	101436	10206	1662	48	0	0	312488	734	0	0
2004	112153	6367	2290	463	0	0	0	287	0	0
2005	56027	2715	1487	50	0	0	0	120	0	0
2006	50313	2093	2492	8	0	0	0	15	0	0
2007	43384	13663	2344	92	1	0	0	89	0	0
2008	81772	14925	3475	61	0	0	0	57	0	0
2009	76806	49733	3356	132	0	0	0	75	0	0
2010	179446	11794	2747	347	0	0	0	18	0	0

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
2011	103401	39823	2850	1	0	0	0	2	0	0
2012	107655	6755	2005	272	0	0	0	4	0	0
2013	56991	28957	1025	135	0	0	0	41	0	0
2014	123204	19096	883	54	0	0	0	139	0	0
2015	166015	11514	702	626	0	0	0	139	0	0
2016	93659	8262	422	1223	0	0	0	358	0	0
2017	46675	12475	533	124	0	0	0	353	0	0
2018	50561	5054	162	121	0	0	0	167	0	0
2019	35127	6000	244	51	0	0	0	44	0	0
2020	39076	4035	225	274	0	0	0	35	0	0
2021	51223	10193	263	44	0	0	0	27	0	0
2022	98744	17562	166	173	0	0	0	24	0	0

Table 3.3.5-2. Summer (June 6–August 5) salmonid passage counts at John Day Dam (1990–2022) (source: Columbia Basin Research, 2022b).

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
1990	18384	2148	14362	41974	0	0	1459663	0	0	0
1991	14274	2598	18361	63516	0	0	1364334	0	0	0
1992	11242	2668	16048	69539	0	0	1269050	0	0	0
1993	17493	871	14436	61109	0	0	570340	0	0	0
1994	12025	910	9406	11155	0	0	813067	0	0	0
1995	10376	1100	10641	8641	0	0	782805	0	0	0

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
1996	11830	1318	18176	25671	0	0	955695	0	0	0
1997	20508	1261	19917	35642	0	0	1006678	0	0	0
1998	16246	1534	12665	9726	0	0	1016809	0	0	0
1999	22210	2504	27078	14780	0	0	753533	2032	0	0
2000	23023	8033	31071	87997	0	0	695204	2726	0	0
2001	64186	10049	78376	107611	68	3	1108306	2453	0	0
2002	105354	5615	54961	41888	0	0	1666463	11916	0	0
2003	95542	10073	34602	35298	0	0	2421241	13662	0	0
2004	72518	10542	28538	112964	0	0	0	7912	0	0
2005	64034	5405	31763	69654	0	0	0	5754	0	0
2006	73814	4150	19711	35284	2	-2	0	6417	0	0
2007	36191	11717	21947	24037	0	1	0	3987	0	0
2008	63649	13680	57570	193235	0	0	0	3251	0	0
2009	65989	33147	52193	157147	2	7	0	1582	0	0
2010	70955	12475	88875	323702	8	3	0	999	0	0
2011	75375	35544	58074	143464	0	1	0	1357	0	0
2012	60814	10415	38574	393725	9	0	0	2302	0	0
2013	75248	19714	25186	155160	2	1	0	3958	0	0
2014	86033	17655	35529	556809	0	0	0	5743	0	0
2015	108768	10988	14507	363019	0	0	0	6083	0	0
2016	90259	7715	13891	288114	0	0	0	6267	0	0
2017	60416	7363	3757	65701	0	0	0	17522	0	0

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
2018	42835	4293	7038	168140	1	0	0	6948	0	0
2019	39000	8116	5393	52348	13	1	0	3367	0	0
2020	70466	9069	12407	309481	0	0	0	1895	0	0
2021	55817	10292	3431	126304	0	0	0	4778	0	0
2022	65893	10747	10317	604500	0	0	0	3755	0	0

Table 3.3.5-3. Fall (August 6–October 31) salmonid passage counts at John Day Dam (1990–2022) (source: Columbia Basin Research, 2022b).

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
1990	73384	19270	89433	101	1521	1502	1237	0	0	0
1991	55987	24215	138585	244	6692	1329	663	0	0	0
1992	54983	17675	177309	124	1710	923	1100	0	0	0
1993	59039	8158	76746	101	2679	316	935	0	0	0
1994	86202	17763	80902	15	2455	387	246	0	0	0
1995	68108	21917	110475	13	1913	204	519	0	0	0
1996	88050	7805	135638	18	3289	990	770	0	0	0
1997	86805	14086	133964	173	3518	711	653	0	0	0
1998	78237	11834	140405	107	7646	851	291	0	0	0
1999	106052	12018	134672	26	11901	1331	698	7720	0	0
2000	102903	36702	185789	50	20563	3404	260	3094	0	0
2001	124747	41620	402242	115	48802	2308	258	1444	0	0
2002	164920	29550	326917	20	7669	1603	737	14725	0	0

Year	Adult Chinook	Jack Chinook	Steelhead	Sockeye	Adult Coho	Jack Coho	Shad	Lamprey	Bull Trout	Chum
2003	215501	34327	249912	71	34453	4124	1379	6526	0	0
2004	213936	30787	196371	70	32627	2128	0	3464	0	0
2005	179634	14748	189924	66	30869	3328	0	2438	0	0
2006	135831	22233	194919	95	28866	4912	0	3168	0	1
2007	73443	35936	202907	148	33018	6208	0	1668	0	0
2008	136743	32183	216117	113	39975	4923	0	3317	0	0
2009	145069	81230	526096	123	64891	6839	0	387	0	0
2010	214344	45233	192190	79	21498	1763	0	645	0	0
2011	180404	63224	196421	140	62795	2872	0	2207	0	0
2012	166974	91523	121504	169	30207	3643	0	2281	0	0
2013	437516	89119	124744	203	16161	1364	0	2674	0	0
2014	440511	79692	164426	668	107853	7987	0	2695	0	0
2015	533979	60314	164297	2719	18762	3066	0	2148	0	0
2016	267446	39747	116313	639	17019	2616	0	3144	0	0
2017	165526	21431	78963	216	29080	5166	0	5529	0	0
2018	105939	18901	63810	208	16485	2885	0	1427	0	0
2019	137537	24190	45317	127	29834	4263	0	1175	0	0
2020	195255	35312	67071	204	45989	9117	0	1111	0	0
2021	169970	28474	51086	360	132057	13562	0	1383	0	0

Table 3.3.5-4. ESA-listed fish species with designated[a] critical habitat in the vicinity of the proposed Goldendale Project (source: NMFS, 2022b and FWS, 2022d).

Species	Critical Habitat Reach
Snake River Fall-run Chinook ESU	Columbia River from the mouth upstream to Snake River Confluence and Snake River
Snake River Spring/Summer-run Chinook ESU	Columbia River from the mouth upstream to Snake River Confluence and Snake River
Snake River Sockeye ESU	Columbia River from the mouth upstream to Snake River Confluence and Snake River
Snake River Steelhead DPS	Columbia River from the mouth upstream to Snake River Confluence and Snake River
Upper Columbia River Spring-run Chinook ESU	Columbia River
Upper Columbia River Steelhead DPS	Columbia River
Middle Columbia River Steelhead DPS	Lower most 12 miles of Swale Creek, Klickitat River, Columbia River
Lower Columbia River Steelhead DPS	Columbia River from the mouth upstream to the Hood River Confluence
Lower Columbia River coho salmon ESU	Columbia River from the mouth upstream to the Hood River Confluence
Lower Columbia River Chinook ESU	Columbia River from the mouth upstream to the Hood River Confluence
Columbia River chum ESU	Columbia River from the mouth upstream to the Hood River Confluence
Bull trout	Columbia River, Klickitat River, John Day River

[a] Critical habitat for Snake River Sockeye salmon, Snake River spring/summer Chinook salmon, and Snake River fall Chinook salmon was designated on December 28, 1993 (58 FR 68543); for Snake River steelhead, Upper Columbia River spring-run Chinook, Upper, Middle, and Lower Columbia River Steelhead, Lower Columbia River Chinook, and Columbia River chum on September 2, 2005 (70 FR 52629); for Lower Columbia River coho salmon on February 25, 2016 (81 FR 9251); and for bull trout on October 18, 2010 (75 FR 63898).

Table 3.3.8-1. Goldendale Project archaeological resources (source: adapted from FFP, 2021b).

District/Site/ Isolated Find	Recordation	Type	Description	National Register Eligibility
45DT241	Previous	Precontact/Historic	Columbia Hills Archaeological District	Eligible
45KL566	Previous	Precontact	Lithic Scatter	Eligible (A, B, D)
45KL567 (including 45KL569/570)	Previous	Precontact	Lithic Scatter	Eligible (A, B, D)
45KL744 (including 45KL745)	Previous	Precontact/Historic	Lithics, historic debris and features	Eligible (A, B, D)
45KL746	Previous	Precontact/Historic	Lithic scatter, historic debris and features	Eligible (A, B, D)
45KL2476	New	Precontact	Lithic scatter	Eligible (A, B, D)
45KL772	Previous	Precontact	Single lithic flake (Isolated find)	Not relocated
45KL1712	Previous	Precontact	Lithic Scatter (single artifact in APE)	Not relocated
45KL1296	Previous	Precontact	Single lithic flake (Isolated find)	Unevaluated; out of affected area
45KL1297	Previous	Precontact	Lithic biface (Isolated find)	Unevaluated; out of affected area
45KL1298	Previous	Precontact	Lithic scatter	Unevaluated; out of affected area
45KL2026	Previous	Precontact	Lithic scatter	Unevaluated; out of affected area

Table 3.3.8-2. Project-related effects on archaeological resources within the APE (source: adapted from FFP, 2021b).

District/Site/ Isolated Find	**Description**	**Project-related effects**
45DT241	Columbia Hills Archaeological District	None. Effects are limited to the five individual archaeological sites
45KL566	Lithic Scatter	**Adverse**: Reservoir and berm construction
45KL567 (incl.45KL569/570)	Lithic Scatter	**Adverse**: Reservoir and berm construction, laydown, access road
45KL744 (incl. 45KL745)	Lithics, historic debris and features	**Adverse**: Reservoir, berm, and tunnel construction, laydown area
45KL746	Lithic scatter, historic debris and features	**Adverse**: Reservoir and berm construction, laydown area
45KL2476	Lithic scatter	**Adverse**: Reservoir and berm construction
45KL772	Single lithic flake (isolated find)	Not relocated during 2019 survey
45KL1712	Lithic scatter (single artifact in APE)	Not relocated during 2019 survey
45KL1296 (ISO)	Single lithic flake (isolated find)	None anticipated
45KL1297 (ISO)	Lithic biface (isolated find)	None anticipated
45KL1298	Lithic scatter	None anticipated
45KL2026	Lithic scatter	None anticipated

Table 3.3.9-1. Klickitat and Sherman County population, race and housing demographics (source: U.S. Census Bureau, 2020).

	Klickitat County	**Sherman County**	**Total**
Population			
2020 Census Population	22,735	1,870	24,605
2010 Census Population	20,318	1,765	22,083
% Change	11.9%	5.9%	11.4%
Racial Demographics	**Klickitat County**	**Sherman County**	**Weighted Total**
White	92.8%	94.4%	92.9%
Black or African American	0.7%	0.3%	0.7%
American Indian and Alaska Native	2.6%	2.5%	2.6%
Asian	1.0%	0.7%	1.0%
Native Hawaiian and Other Pacific Islander	0.2%	0.1%	0.2%
Two or more other races	2.7%	2.1%	2.7%
Housing and Family	**Klickitat County**	**Sherman County**	
Persons per Household (2016–2020)	2.35	2.30	

Table 3.3.9-2. Study area total revenues (source: Oregon DOR, 2022).

	FY2017	**FY2018**	**FY2019**	**CAGR**
Klickitat County Revenue	$43,189,096	$41,057,573	$44,752,139	1.2%
City of Goldendale Revenue	$4,743,926	$5,665,742	$5,582,466	5.6%
Sherman County Revenue	$3,682,951	$2,189,012	$2,146,228	-16.5%
City of Wasco Revenue	$197,423	$202,790	$235,735	6.1%

Table 3.3.9-3. Housing units and vacancy rates in Klickitat, Sherman, and Wasco Counties (source: U.S. Census Data, n.d.).

	Total Housing Units (number)	**Total Vacancies (number)**	**Vacant Housing Units (%)**
Klickitat County	10,626	1,358	13%
- Goldendale	1,764	142	8%
- Wishram	249	25	10%
Sherman County	905	178	20%
- Rufus	141	32	23%
- Wasco	450	61	14%
Wasco County	11,712	1,379	12%
- The Dalles	9,167	635	7%

Table 3.3.10-1. Goldendale environmental justice data table using 2022 5-year estimates for Klickitat County (WA) (source: U.S. Census Data, n.d.).

Geographic Area	Total Population	White (%) [a]	African American/ Black (%) [a]	American Indian/ Alaska Native (%) [a]	Asian (%) [a]	Native HI & Other Pacific Islander (%) [a]	Some Other Race (%) [a]	Two or More Races (%)[a]	Hispanic Origin (any race) (%) [a]	Total Minority Population (%) [a]	Households in Poverty (%) [b]
WASHINGTON	7,688,549	65.5%	3.8%	0.9%	9.1%	0.7%	0.5%	6.1%	13.5%	34.5%	9.6%
Klickitat County*	22,798	80.2%	0.8%	0.8%	0.6%	0.2%	>0.1%	4.6%	12.6%	19.8%	12.7%
Census Tract 9501.01, Block Group 1	971	69.6%	0.3%	0.0%	0.0%	0.0%	0.0%	5.1%	24.9%	30.4%	8.3%
Census Tract 9501.02, Block Group 2	1,157	90.8%	0.0%	2.4%	0.0%	4.8%	0.0%	1.5%	0.4%	9.2%	16.4%
Census Tract 9501.03, Block Group 1	1,505	85.6%	5.6%	0.0%	1.1%	0.0%	0.0%	7.2%	0.6%	14.4%	5.2%
Census Tract 9501.03, Block Group 2	1,474	96.6%	<0.1%	0.0%	0.7%	0.0%	0.0%	2.6%	0.0%	3.4%	20.1%
Census Tract 9501.03, Block Group 4	557	93.0%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	2.9%	7.0%	6.0%
Census Tract 9502, Block Group 1	1,088	94.0%	0.5%	0.9%	1.5%	0.0%	0.9%	1.6%	0.6%	6.0%	16.8%

* Reference Community

[a] Percent of Total Population (Table B03002 – Hispanic or Latino Origin by Race. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates: https://data.census.gov/table?d=ACS+5-Year+Estimates+Detailed+Tables&tid=ACSDT5Y2022.B03002). Accessed December 11, 2023.

[b] Percent of Households (Table B17017 – Poverty Status in the Past 12 Months by Household Type and Age of Householder. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates: https://data.census.gov/cedsci/table?d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2022.B17017). Accessed December 11, 2023.

Gray shading denotes an Environmental Justice community.

Table 3.3.10-2 Goldendale environmental justice data table using 2022 5-year estimates for Sherman and Gilliam counties (OR) (source: U.S. Census Data, n.d.).

Geographic Area	Total Population	White (%) [a]	African American/ Black (%) [a]	American Indian/ Alaska Native (%) [a]	Asian (%) [a]	Native HI & Other Pacific Islander (%) [a]	Some Other Race (%) [a]	Two or More Races (%)[a]	Hispanic Origin (any race) (%) [a]	Total Minority Population (%) [a]	Households in Poverty (%) [b]
OREGON	4,229,374	73.3%	1.8%	0.7%	4.4%	0.4%	0.4%	5.2%	13.8%	26.7%	11.6%
Sherman County*	1,900	87.1%	0.4%	0.6%	0.4%	1.9%	0.0%	4.5%	5.1%	12.9%	15.3%
Census Tract 9501, Block Group 2	935	84.3%	0.0%	0.4%	0.7%	0.0%	0.0%	5.1%	9.4%	15.7%	15.0%
Gilliam County*	1,983	83.8%	0.0%	1.4%	0.8%	0.0%	1.1%	4.6%	8.4%	16.2%	14.2%
Census Tract 9601, Block Group 1	928	82.7%	0.0%	2.4%	0.8%	0.0%	0.0%	2.4%	11.9%	17.3%	11.2%

* Reference Community

[a] Percent of Total Population (Table B03002 – Hispanic or Latino Origin by Race. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates: https://data.census.gov/table?d=ACS+5-Year+Estimates+Detailed+Tables&tid=ACSDT5Y2022.B03002). Accessed December 11, 2023.

[b] Percent of Households (Table B17017 – Poverty Status in the Past 12 Months by Household Type and Age of Householder. 2022 ACS 5-Year Estimates Detailed Tables. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates: https://data.census.gov/cedsci/table?d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2022.B17017). Accessed December 11, 2023.

Gray shading denotes an Environmental Justice community.

Table 3.3.11-1. Existing noise environment at proposed construction sites near the Upper and Lower Reservoir facilities (source: staff).

Construction Site	Nearest Receptor Description	Distance from Construction Site	Estimated Existing Daytime Leq (dBA)	Estimated Existing Nighttime Leq (dBA)
Upper Reservoir	Residence on Oak Hill Road	5,600 feet northwest	40	30
Upper Reservoir	Residences on Hector Road	11,000 feet north	40	30
Lower Reservoir	Residences on Rt. 14	1,300 feet west	40	30
Lower Reservoir	Railroad Island Park	3,750 feet east	40	30
Lower Reservoir	Giles French Park	6,300 feet south	40	30
Lower Reservoir	Residences in Rufus	8,000 feet southwest	40	30

Table 3.3.11-2. Average noise levels from common construction equipment at a reference distance of 50 feet (source: FHWA, 2011).

Construction Equipment	Typical Average Noise Level at 50 feet (dBA)
Blasting	94.0
Concrete Batch Plant	83.0
Concrete Mixer Truck	78.8
Concrete Pump Truck	81.4
Dozer	81.7
Crane	80.6
Excavator	80.7
Dump Truck	76.5
Front End Loader	79.1

Table 3.3.11-3. Air quality thresholds for construction and operation phases total emissions: average tons per year over 5 year construction period (source: Washington DOE, 2022a, as modified by staff).

Pollutant	Construction Total (tons)	Total Stationary and NOC-Construction Emissions[a]	Total Operation (tons)	Total Stationary and NOC-Operational Emissions[a]	NOC Thres-hold	Comparison to NOC Threshold Construction /Operation	Title V Permit Thres-hold[b]	PSD Major Source Thres-hold[c]	Comparison to PSD and Title thresholds[d] Construction/ Operation
PM10	1,086.20	4.39	1.07	0.70	0.75	Above/Below	100	250	Below/Below
PM2.5	118.17	4.39	1.07	0.70	0.50	Above/Above	100	250	Below/Below
NOx	216.92	89.79	36.69	24.14	2.0	Above/Above	100	250	Below/Below
CO	176.72	20.58	8.41	5.53	5.0	Above/Above	100	250	Below/Below
SO2	1.56	0.00	1.86E-06	1.22E-06	2.0	Below/Below	100	250	Below/Below
VOCs	11.81	2.64	1.08	0.71	2.0	Above/Above	100	250	Below/Below
CO2	19,318.09	NA	1,773.37	NA	NA	NA	NA	NA	NA
Methane	0.78	NA	7.19E-02	NA	NA	NA	NA	NA	NA
NO2	0.16	NA	1.44E-02	NA	NA	NA	NA	NA	NA
CO2e[e,f]	19,382.74 metric tons	NA	1,779.30 metric tons	NA	NA	NA	NA	NA	NA

Notes: NA = not applicable; NOC = Notice of Construction; PSD = Prevention of Significant Deterioration

[a] Stationary emissions include non-fugitive and stationary construction emissions, which are limited to the concrete batch plant and generators.

[b] Title V operation permit thresholds codified in C.F.R. 40.40.

[c] PSD major source thresholds codified in C.F.R. 40.51.

[d] Comparison to both thresholds does not include fugitive emissions or mobile source emissions.

[e] CO2e calculated based on Global Warming Potentials in table A-1 IPCC AR6 table 7.SM.7 for 100-year time horizon.

[f] GHG emissions related to off-site production of cement are considered indirect emissions and are not included in this table. Those emissions are quantified to be approximately 59,642 tons of CO2e total.

Table 3.3.11-4. Estimated construction noise levels at selected receptors (source: staff).

Receptor	Activity	Noise Level (dBA L10)
Residence along Oak Hill Road	Upper Reservoir Excavation	42.0
	Upper Reservoir Lining	41.0
Residences along Rt. 14	Lower Reservoir Excavation	55.3
	Lower Reservoir Lining	51.1
Railroad Island Park	Lower Reservoir Excavation	46.1
	Lower Reservoir Lining	41.9

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APPENDIX C – STATUTORY AND REGULATORY REQUIREMENTS

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Federal Power Act

Section 18 Fishway Prescription

Section 18 of the Federal Power Act (FPA), 16 United States Code (U.S.C.) § 811, states that the Federal Energy Regulatory Commission (Commission) is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of the U.S. Department of Commerce or the U.S. Department of the Interior (Interior).

By letters filed May 23, 2022 and August 4, 2023, Interior requests that a reservation of authority to prescribe fishways under section 18 be included in any license issued for the project.

Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j)(1), each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions in any license issued unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

The Washington Department of Fish and Wildlife (Washington DFW), Interior, and National Marine Fisheries Service (NMFS) timely filed recommendations under section 10(j) on May 18, 2022, May 19, 2022, and May 23, 2022, respectively. NMFS and Interior filed revised 10(j) recommendations on June 6, 2023 and August 4, 2023, respectively. In section 5.3, *Fish and Wildlife Agency Recommendations*, we discuss how we address the agencies' recommendations and comply with section 10(j). Appendix H lists the recommendations filed pursuant to section 10(j), indicates whether the recommendations are included under the Staff Alternative, and includes the specifics of each recommendation's inconsistency and our determinations. Recommendations that we consider outside the scope of section 10(j) have been considered under section 10(a) of the FPA and are addressed in the specific resource sections of section 3.0, *Environmental Analysis*, and in section 5.1, *Comprehensive Development and Recommended Alternative*. In Appendix G, we discuss the basis for our additional measures or modifications to FFP's proposal and also explain why we did not recommend certain measures.

Clean Water Act

Under section 401(a)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (WQC) from the appropriate state pollution control agency verifying that any discharge from a project would comply with applicable provisions of the CWA, or a waiver of such certification. A waiver occurs if the state agency does not act on a request for a WQC within a reasonable period of time, not to exceed one year after receipt of such request.

On June 24, 2020, FFP Project 101, LLC (FFP) applied to the Washington State Department of Ecology (Washington DOE) for a WQC for the project. On June 23, 2021, Washington DOE denied FFP's request without prejudice, citing a lack of sufficient information to make a decision. On May 23, 2022, FFP submitted a new request for certification, which Washington DOE received the same day. Washington DOE issued a WQC to FFP on May 22, 2023, and filed a copy of the WQC with the Commission on the same day. The conditions of the WQC are included in Appendix M and discussed in the specific resource sections of section 3.0, *Environmental Analysis*, in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix G.

Endangered Species Act

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. On February 3, 2023, we accessed the U.S. Fish and Wildlife Service's (FWS) Information for Planning and Consultation database to determine whether any federally listed species could occur at the project. We accessed it again on December 7, 2023, to determine whether there if there were any updates to the list since the draft Environmental Impact Statement (EIS) was issued.[1] After reviewing the FWS's database as well as NMFS's public website, staff identified the following federally listed aquatic species that potentially occur in the Columbia River near the project: the endangered Upper Columbia River spring-run Chinook salmon (*Oncorhynchus tshawytscha*) evolutionary significant unit (ESU) and the Snake River sockeye salmon (*O. nerka*) ESU; and the threatened Lower Columbia River, Snake River fall-run, and Snake River spring/summer-run Chinook salmon ESUs; bull trout/Dolly Varden (*Salvelinus confluentus*); Columbia River chum salmon (*O. keta*) ESU; the Lower Columbia River coho salmon (*O. kisutch*) ESU; and the Lower, Middle, and Upper Columbia and Snake River steelhead (*O. mykiss*) distinct population segments (DPS).

The FWS's database also indicates that the endangered gray wolf (*Canis lupus*), the threatened yellow-billed cuckoo (*Coccyzus americanus*), the threatened North American wolverine (*Gulo gulo luscus*), the proposed threatened northwestern pond turtle (*Actinemys marmorata*)[2] and the candidate monarch butterfly (*Danaus plexippus*), may also be present in the project vicinity. There are no designated critical habitats for terrestrial species within the project area.

On March 31, 2023, we sent a letter to NMFS requesting concurrence that licensing the proposed project may affect, but is not likely to adversely affect Snake River Fall-run Chinook salmon ESU, Snake River Spring/Summer-run Chinook salmon ESU, Snake River sockeye salmon ESU, Snake River steelhead DPS, Upper Columbia River spring-run Chinook salmon

[1] See Interior's official lists of threatened and endangered species, accessed by staff using the IPaC database (https://ipac.ecosphere.fws.gov) on December 7, 2023, and placed into the records for Docket No. P-14861-002 the same day.

[2] After the draft EIS was issued, the FWS issued a rule on October 3, 2023, proposing to list the northwestern pond turtle as a threatened species under the ESA (see 88 FR 68370 68399).

ESU, Upper Columbia River steelhead DPS, Middle Columbia River steelhead DPS, Lower Columbia River steelhead DPS, Lower Columbia River coho salmon ESU, Lower Columbia River Chinook salmon ESU, and Columbia River chum salmon ESU. On the same day, we sent a letter to the FWS requesting concurrence that licensing the proposed project may affect, but is not likely to adversely affect bull trout and its critical habitat. In letters filed June 5 and June 6, 2023, NMFS and FWS responded that more information was needed regarding the timing of project water withdrawals and the likelihood of fish being entrained into the intake pool before the agencies could concur with staff's determinations.

Our analyses of project effects on threatened and endangered species are presented in section 3.3.5, *Threatened and Endangered Species*, and our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative* and in Appendix G. Based on available information, we again conclude that licensing the proposed project may affect, but is not likely to adversely affect Snake River Fall-run Chinook salmon ESU, Snake River Spring/Summer-run Chinook salmon ESU, Snake River sockeye salmon ESU, Snake River steelhead DPS, Upper Columbia River spring-run Chinook salmon ESU, Upper Columbia River steelhead DPS, Middle Columbia River steelhead DPS, Lower Columbia River steelhead DPS, Lower Columbia River coho salmon ESU, Lower Columbia River Chinook salmon ESU, Columbia River chum salmon ESU, bull trout, and these species' critical habitats. Further, we conclude that licensing the project is not likely to jeopardize the proposed threatened northwestern pond turtle. Following issuance of the final EIS, we will seek NMFS's and FWS' concurrence with staff's updated determinations on listed salmon, steelhead, and bull trout as well as the proposed threatened northwestern pond turtle.

We conclude that licensing of the project would not affect the gray wolf because it is unlikely to occur or use the habitats surrounding the project and would not affect the cuckoo or wolverine because there no suitable habitat to support these species at the project.

Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal agencies to consult with the Secretary of Commerce regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH) identified under the Act. There are four salmon ESUs not listed under the ESA that have designated EFH within the project area: (1) Upper Columbia summer/fall Chinook salmon, (2) Middle Columbia River spring Chinook salmon, (3) Okanogan River sockeye salmon, and (4) Lake Wenatchee sockeye salmon. Our analyses of project effects on EFH are presented in section 3.3.5, *Threatened and Endangered Species*, and our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative* and in Appendix G. Based on available information, we conclude that licensing the proposed project is not expected to adversely affect Chinook or sockeye salmon EFH.

Coastal Zone Management Act

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. §1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's

coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

Washington's coastal zone includes all lands (except for federal and Tribal lands) and waters within the state's 15 coastal counties but does not include Klickitat County where the project would be located. Oregon's coastal zone includes the state's coastal watersheds (except for federal and Tribal lands) and extends inland to the crest of the coast range, with a few exceptions (i.e., such as in the Columbia River Basin where the boundary extends upstream to Puget Island on the Columbia River, approximately 130 miles west of where the project would be located). Attachment 8 of FFP's November 20, 2020, response to additional information, includes emails from both Washington DOE and Oregon Department of Land Conservation and Development confirming that the project is not within Washington or Oregon's coastal zone boundaries and that CZMA would not apply to the Goldendale Pumped Storage Project.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties (TCPs), and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

On March 21, 2019, Commission staff issued a notice stating that it was initiating consultation with the Washington State Historic Preservation Officer (Washington SHPO) and the Oregon State Historic Preservation Officer (Oregon SHPO), as required by section 106 of the NHPA and the implementing regulations found at 36 Code of Federal Regulations (C.F.R.) § 800.2. The notice also stated that the Commission was designating FFP as the Commission's non-federal representative for carrying out day-to-day consultation pursuant to section 106. Subsequent letters to the Washington SHPO and Oregon SHPO on August 13, 2021, reiterated that the Commission had designated FFP as its representative and authorized FFP to initiate consultation with the Washington SHPO, Oregon SHPO, appropriate Native American Tribes, and other consulting parties, pursuant to 36 C.F.R. § 800.2(c)(4). However, the letters also state that the Commission remains ultimately responsible for all findings, determinations, and government-to-government consultation.

To meet the requirements of section 106, the Commission intends to execute a Programmatic Agreement (PA) for the protection of historic properties from the effects of the construction, operation, and maintenance of the Goldendale Project. The terms of the PA would ensure that FFP addresses and treats all historic properties identified within the project's Area of Potential Effect (APE) through the finalization of a Historic Properties Management Plan (HPMP).

Pacific Northwest Power Planning and Conservation Act

Under section 4(h) of the Pacific Northwest Power Planning and Conservation Act, the Northwest Power and Conservation Council (NPCC) developed the Columbia River Basin Fish

and Wildlife Program to protect, mitigate, and enhance the operation of the hydroelectric projects within the Columbia River Basin. Section 4(h) states that responsible federal and state agencies should provide equitable treatment for fish and wildlife resources, in addition to other purposes for which hydropower is developed, and that these agencies should consider, to the fullest extent practicable, the program adopted under the Pacific Northwest Power Planning and Conservation Act. The NPCC has designated over 40,000 miles of river in the Pacific Northwest region as not being suitable for hydroelectric development (protected area). Because the project would be a closed-looped system that would not be continuously connected to any surface waters, the project would not be located on or develop a protected area; therefore, the protected area provisions of the program do not apply.

The program directs project proponents to consult with federal and state fish and wildlife agencies, appropriate Native American Tribes, and NPCC during the study, design, construction, and operation of any hydroelectric development in the basin. At the time the application was filed, our regulations required the applicant to consult with the appropriate federal and state fish and wildlife agencies and Tribes before filing, and after filing, to provide these groups with opportunities to review and comment on the application. FFP followed this consultation process, and the relevant federal and state fish and wildlife agencies and Tribes have reviewed the application.

To mitigate harm to fish and wildlife resources, NPCC has adopted specific provisions to be considered in the licensing or relicensing of non-federal hydropower projects (Appendix F of the Program). The specific provisions that apply to the proposed project call for: (1) consulting with fish and wildlife managers during study design, construction and operation of the project; and (2) ensuring that the project would not degrade water quality beyond the point necessary to sustain sensitive fish species.

Our recommendations in this EIS are consistent with the applicable provisions of the program, listed above. Further, a condition of any license issued would reserve to the Commission the authority to require future alterations in project structures and operations to take into account, to the fullest extent practicable, the applicable provisions of the program.

Wild and Scenic Rivers Act

Section 7(a) of the Wild and Scenic Rivers Act requires federal agencies to make a determination as to whether the operation of the project under a license would invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the designated river corridor. Public Law 99-663 (November 17, 1986) designated tributaries of the Columbia River as Wild and Scenic. The John Day River's confluence with the Columbia River is less than 3 miles up-river from the John Day Dam, located southeast from the proposed project area. This river system has designations under the National Wild and Scenic Rivers Act and the Oregon Scenic Rivers Act. Upstream of the project vicinity, sections of the Lower Deschutes River in Oregon are designated as a Wild and Scenic River. The Klickitat River in Washington, also a Wild and Scenic River, is more than 10 miles away from the project area. Its confluence with the Columbia River is approximately 28 miles downriver (west) of the project area. The project is not located on, nor would it directly affect, these designated river segments; therefore, it would have no effect on the values for which the river segments are designated.

Executive Orders 14008 and 12898

The U.S. Environmental Protection Agency's (EPA) environmental justice policies are directed, in part, by the recent Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*,[3] and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*,[4] as amended, which require federal agencies to consider if effects on human health or the environment from the programs, policies, or activities of federal agencies would be disproportionately high and adverse for environmental justice communities. The term "environmental justice community" could encompass: (1) populations of color; (2) communities of color; (3) Native communities; and (4) low-income rural and urban communities, which are exposed to a disproportionate burden of the negative human health and environmental effects of pollution or other environmental hazards.

In the final EIS, staff used updated data (i.e., 2022 U.S. Census American Community Survey data) and revised the analysis accordingly. Staff identified five environmental justice communities within a 5-mile radius of the project boundary and considered how the communities may be affected by changes in air quality, noise, aesthetics, and Tribal use from the construction and operation of the project. Except for the transmission line, project-related construction, operation, and maintenance activities would not occur in any environmental justice communities. Construction of the project transmission line would occur within Bonneville Power Administration's (BPA) right-of-way within environmental justice community Census Tract 9501, Block Group 2 in Sherman County, Oregon. Construction emissions would be temporary and minimized through appropriate control measures (e.g., dust control measures); therefore, project construction would have less than a significant impact on air quality in the environmental justice communities. Noise levels in environmental justice communities would be highest at residences in the immediate vicinity of construction activities and would diminish with distance from the work areas. Because the closest known residents to project construction within an environmental justice community are located in Rufus, Oregon, construction noise may be heard at the residences, but are not expected to rise to a level that would be annoying or disruptive. In addition, FFP's proposal to limit construction to the hours of 8 a.m. to 6 p.m. to protect crepuscular wildlife would in turn minimize effects on nearby residences by confining the construction activities to the daytime. Therefore, the noise effects of project construction on nearby residents within the environmental justice communities would be less than significant. With respect to visual effects on environmental justice communities, project construction activities and the project reservoirs, substation, and transmission line would be visible by members of the environmental justice communities, primarily as they traverse local roads. The upper and lower reservoir, substation and overhead transmission line would be permanent introductions to the viewshed, adding to the existing industrial development in area (e.g., wind turbines, smelter, transmission lines, John Day Dam). FFP's proposed measures to reduce visual effects (e.g., use of vegetation screening, natural paint colors and surfacing materials that match

[3] 86 *Federal Register* 7,619-7,633 (February 1, 2021).

[4] 59 *Federal Register* 7,629-7,633 (February 16, 1994). While the Commission is not one of the specified agencies in Executive Order 12898, the Commission nonetheless addresses environmental justice in its analysis, in accordance with its governing regulations and guidance, and statutory duty to evaluate all factors bearing on the public interest.

the surrounding landscape and dull reflective surfaces that cannot be painted, and designed facility lighting) would reduce the contrast of the project facilities with landscape to the extent practicable and reduce visual effects to less than significant levels. While the identified environmental justice (EJ) communities do not have a large Native American population, one of the five identified EJ communities are reported to contain American Indian populations and the area that would be occupied by the project has important historical value to the members of the Yakama Nation, Umatilla Tribes, and Nez Perce Tribe for traditional purposes such as food gathering and ceremonies. Project construction would result in the removal of 92.36 acres that could be used by the Tribes if they have access. Access to the remainder of the lands associated with *Pushpum* for traditional Tribal purposes is not expected to change if a license is issued to construct the project because Tribal members would still need to work with adjoining private landowners to gain access.

Our analysis of the project's effects on these communities are presented in section 3.3.10, *Environmental Justice*. In consideration of the census data, scope of the proposed project, and the environmental protection and enhancement measures for noise, air quality, and aesthetics, we conclude that the adverse effects of the project on these resources would not result in a disproportionately high and adverse effect on environmental justice communities. However, the effects would be temporary and at a level that is less than significant with appropriate mitigation (e.g., erosion and dust control, and vegetation screening, lighting, and painting to reduce the contrast with the landscape).

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APPENDIX D – ALTERNATIVES CONSIDERED BUT ELMINATED FROM DETAILED ANALYSIS

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Alternative Locations

Without elaboration, Columbia Riverkeeper, Sierra Club, and Washington Environmental Council, American Rivers, and the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation) recommend that the Commission consider alternative geographic locations for the project.

FFP Project 101, LLC (FFP) states in its license application that the proposed site was chosen due to the unique opportunity to re-use a previous industrial facility and the proximity to the John Day Substation and Bonneville Power Administration transmission lines. Additionally, Klickitat Public Utility District's existing pump station and conveyance pipes would supply water from an existing intake pool to the project without the need to construct a new intake, which FFP states would reduce the potential environmental effects of the project.

Our Analysis

The Commission does not design or site projects. Rather it determines whether a proposed project can be constructed and operated in a fashion that is the public interest and the best comprehensive use of the waterway. FFP did not consider any other sites for the reasons discussed above and no other sites have been recommended by another entity. Therefore, there is no basis on which to evaluate alternative site locations. Our environmental analysis considered FFP's proposal as well as measures recommended by stakeholders, including those that recommended operational design changes, or other measures designed to avoid or minimize impacts to specific resources.

Alternative Technologies

Columbia Riverkeeper, Sierra Club, and Washington Environmental Council recommended the Commission consider the following alternatives to pumped storage: (1) using lithium-ion batteries; (2) using stacked blocks; (3) using liquid air; (4) using underground compressed air; (5) using flow batteries; and (6) using gravity batteries. Commenters noted that "stacked blocks" refers to storing energy by automating a robotic crane to stack thousands of purpose-built, monoliths into a "Babel-like tower" and dropping them down again to release the power. "Liquid air" refers to cooling down air and storing it in pressurized aboveground tanks to be used for grid storage. "Underground compressed air" refers to using excess electricity to pump compressed air into a suitable underground formation that acts like a giant storage tank which can allow for electricity generation when the pressurized air is released.

Our Analysis

The Commission may issue licenses under the Federal Power Act for the construction, operation, and maintenance of non-federal hydropower projects. The Commission does not have the authority to authorize the specific types of energy storage technologies cited by Columbia Riverkeeper, Sierra Club, and Washington Environmental Council. However, we do consider alternative technologies in selecting the most likely alternative source of power for the Goldendale Project for purposes of our developmental analysis (see Appendix E).

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APPENDIX E – DEVELOPMENTAL RESOURCES

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POWER AND DEVELOPMENTAL BENEFITS OF THE PROJECT

Table E-1 summarizes the assumptions and economic information used in the analysis. Most of this information was provided by the applicant in its license application. Some are developed by Commission staff. The values provided by the applicant are typically reasonable for the purposes of our analysis. If they are not, it is noted below. Cost items common to all alternatives include taxes and insurance costs; estimated capital investment required to develop the project; licensing costs; normal operation and maintenance cost; and Commission fees. All costs are adjusted to current year dollars.

Table E-1. Parameters for the economic analysis of the Goldendale Project (source: FFP, 2021a, as modified by staff).

Parameter	Value
Installed Capacity	1,200 megawatts (MW)
Average annual generation	3,561,000 megawatt-hours (MWh)
Period of analysis (years)	30
Federal tax rate	N/A
Local tax rate	N/A
Insurance, $[a]	N/A
Cost of money[b]	3.50%
Initial construction cost, $[c]	3,317,479,849
Application cost, $[c]	8,149,188
Operation and maintenance, $/year[c]	238,838,043
Annual pumping costs[d]	$130,410,000
Estimated Commission annual charges[e]	$1,890,314
Alternative source of power's cost, $/MWh[f]	181.70

[a] Assumed included in operations and maintenance costs.

[b] Assumed by staff.

[c] Attachment 3 of Exhibit D, as modified by staff.

[d] Calculated by staff based on 4,347,000 MWh/year pumping energy and off-peak energy value of $30/MWh, as used in the calculation of levelized cost of storage.

[e] Calculated by staff based on FERC administrative fees.

[f] In keeping with Commission policy as articulated in Mead, we use the most likely alternative source of power's cost.

MOST LIKELY ALTERNATIVE SOURCE OF POWER

Staff selected lithium-ion storage batteries as a likely source of alternative power to the Goldendale Project because it is a storage technology which can offer, configured appropriately, comparable benefits to that of pumped storage. These benefits include providing large amounts of peak energy for periods up to 10 hours in duration, a quick response time in providing power, the ability to utilize renewable energy in production of peak energy thereby being considered a low-carbon technology, and a high efficiency in converting stored energy to usable power.

Staff estimated the cost of constructing and operating a lithium-ion battery storage facility sized similar to the Goldendale Project, (i.e., 1,200 MW), capable of providing up to 10 hours of peak energy daily, and generating an average of 3,561,000 MWh annually. Our cost is based on the levelized cost of storage (LCOS) for lithium-ion batteries as estimated by the U.S. Department of Energy in their 2022 report "2022 Grid Energy Storage Technology Cost and Performance Assessment"[5] (DOE, 2022). Staff combined the cost of 1,000 MW of battery storage and 100 MW of storage as reported in DOE (2022) for year 2021, to get a combined cost of $158/MWh for a 1,200 MW installation. This value was then adjusted to 2023 dollars, using the consumers price index, for a total cost of $181.70/MWh.[6]

Because of the many variables which must be considered, the real cost of battery storage is difficult to estimate. Most battery costs estimates are based on small installations of 100 MW or less, which may be difficult to scale to larger installations. Some estimates may not consider the quickly changing cost of battery technology,[7] may not consider recent costs of inflation, and often include only the cost of a one-time installation. The LCOS estimate in DOE's 2022 report includes the complete cost of an energy storage system over its project life, including any major overhauls and replacements required to maintain operation. It also includes capital costs, taxes, financing costs, operations and maintenance, and performance metrics such as cycle life and calendar life. For lithium-ion batteries, the LCOS also considered decommissioning costs such as disconnection, site remediation, recycling, and disposal; however, DOE cautions that decommissioning costs are not highly developed at this time and may change as risks and environmental considerations change.

COMPARISON OF ALTERNATIVES

Table E-2 compares the installed capacity, annual generation, cost of alternative power, estimated total project cost, and difference between the cost of alternative power and total project

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[5] *See* Technical Report Publication No. PNNL-33283, August 2022; 2022 Grid Energy Storage Technology Cost and Performance Assessment, U.S. Department of Energy, Pacific Northwest National Laboratory.

[6] Pumped-storage technologies are generally considered to be the lowest cost storage technology. For comparison purposes the estimated LCOS for a 1,200 MW pumped storage system in 2023 dollars is estimated to be $121.9/MWh.

[7] Lithium-ion battery systems have experienced significant cost declines over the last few years due to component cost declines, system integration improvements, and deployment advancements.

cost for each of the alternatives considered in this draft Environmental Impact Statement (EIS): No Action, FFP's Proposal, and the Staff alternative.

Table E-2. Summary of the annual cost of alternative power and annual project cost for the alternatives for the Goldendale Project (Source: staff).

	FFP's Proposal	Staff Alternative
Installed capacity (MW)	1,200	1,200
Annual generation (MWh)	3,561,000	3,561,000
Capacity benefit (MW)	N/A[a]	N/A[a]
Current alternative source of power's cost	$647,033,700	$647,033,700
Total annual project cost	$553,693,655	$553,761,921
Difference between the alternative source of power's cost and total annual project cost[b]	$93,340,045	$93,271,779

[a] Captured in levelized cost of storage

[b] This number denotes that the difference between the cost of alternative power and project cost is positive, thus the total project cost is less than the cost of alternative power.

No Action Alternative

Under the No Action Alternative, the project would not be constructed and would not produce any electricity. The only cost associated with this alternative would be the cost to prepare the license application.

Applicant's Proposal

FFP proposes numerous environmental measures, as presented in table F-1 in Appendix F. Under FFP's proposal, the project would have a total installed capacity of 1,200 MW and an average annual generation of 3,561,000 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity would be $647,033,700. The total annual project cost would be $553,693,655. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity is $93,340,045 less than the alternative source of power's cost.

Staff Alternative

Under the staff-recommended alternative (i.e., Staff Alternative), the project would have a total installed capacity of 1,200 MW and an average annual generation of 3,561,000 MWh. Table F-1 in Appendix F shows the staff-recommended additions and modifications to FFP's proposed environmental protection and enhancement measures and the estimated cost of each.

The alternative source of power's current cost to produce the same amount of energy and provide the same capacity would be $647,033,700. The total annual project cost would be $553,761,921. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce power and capacity is $93,271,779 less than the alternative source of power's cost.

APPENDIX F – COSTS OF ENVIRONMENTAL MEASURES

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Table F-1. Costs of environmental mitigation and enhancement measures considered in assessing the effects of operating the Goldendale Project (Source: staff).

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
General				
1. Develop an adaptive management plan that coordinates post-licensing monitoring and adaptive management measures as necessary.	Columbia Riverkeeper, Sierra Club, and Washington Environmental Council	Unknown – the recommendation lacks sufficient detail on the monitoring and adaptive management measures to develop a cost	Unknown – the recommendation lacks sufficient detail on the monitoring and adaptive management measures to develop a cost	Unknown – the recommendation lacks sufficient detail on the monitoring and adaptive management measures to develop a cost
Geology and Soils				
2a. Develop a soil erosion and sediment control plan that includes FFP's proposal to use dust palliatives to control fugitive windblown dust.	FFP; staff	$110,597	$0	$6,013
2b. Include in the soil erosion and sediment control plan construction measures and BMPs consistent with WQC conditions.[o]	Washington DOE; staff	$0 [n]	$0 [n]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
2c. Include the following fugitive dust control measures in the soil erosion control plan: (1) surface/roadway watering plan; (2) monitoring and response plan; (3) high wind speed threshold for halting material movement and processing; (4) roadway speed limits to limit dust entrainment; (5) haul truck cleaning and load covering requirements; (6) identify responsible officials and training procedures; (7) record keeping and reporting; schedules; and (8) contact information to report dust impact events.	EPA; staff	$0 [n]	$0 [n]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
3. Develop a construction vibration monitoring program which includes: (a) conducting a baseline survey and assessment of existing utilities; (b) developing a detailed map of existing utilities; and (c) developing a construction vibration monitoring plan with contractor requirements, and vibration criteria to be followed.	FFP; staff	$814,919	$0	$44,308
4. Implement a Cleanup Action Plan for the West Surface Impoundment Plan with methods and procedures for excavating and disposing of contaminated soils and liner materials associated with the West Surface Impoundment.[o]	FFP; Columbia Riverkeeper, Sierra Club, and Washington Environmental Council; Washington DOE; staff	$11,758,115	$0	$639,304

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
Aquatic Resources				
5. As part of the Draft Cleanup Action Plan, decommission 10 existing groundwater monitoring wells and install new groundwater monitoring wells.	FFP; Columbia Riverkeeper, Sierra Club, and Washington Environmental Council; staff	$640,293	$0	$34,814
6. Implement a Spill Prevention, Control, and Countermeasure Plan.[o]	FFP; Washington DOE; staff	$23,283	$0	$1,266
7. Implement a Dewatering Plan during construction.[o]	FFP; Washington DOE; staff	$23,283 [b]	$0 [b]	$1,266
8. Implement a Reservoir Water Quality Monitoring Plan.[o]	FFP; Columbia Riverkeeper, Sierra Club, and Washington Environmental Council; Washington DOE; staff	$34,925	$2,328	$4,227
9. Implement a Stormwater Pollution and Prevention Plan.[o]	FFP; Washington DOE; staff	$23,283	$0	$1,266

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
10a. Include the intake pool and Klickitat PUD's intake and conveyance pipe that would connect to the new reservoir fill line in the project boundary and file revised project boundary exhibits.	Washington DFW; Interior	$0 [b]	$0 [b]	$0
10b. Include the culvert in the railroad berm within the project boundary.	Interior	$0 [b]	$0 [b]	$0
11a. Install and maintain fish screens on the Klickitat PUD intake works that meet NMFS and Washington DFW fish screening requirements.	Columbia Riverkeeper, Sierra Club, and Washington Environmental Council	Unknown. Costs would depend on engineering details that are not available	Unknown. Costs would depend on engineering details that are not available	Unknown. Costs would depend on engineering details that are not available

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
11b. Maintain Klickitat PUD's infiltration gallery and conform the structure to NMFS and Washington DFW fish screen criteria only if the currently installed infiltration gallery fails and needs repairs.	Washington DFW; Interior	Unknown. Costs would depend on engineering details that are not available	Unknown. Costs would depend on engineering details that are not available	Unknown. Costs would depend on engineering details that are not available
11c. File a written commitment in coordination with Klickitat PUD to screen any railroad berm culverts in a manner that conforms to NMFS' fish screening criteria prior to filling the reservoirs.	NMFS; Interior	$0 for filing a written agreement. Costs to potentially screen the railway berm culvert(s) depends on engineering details that are not available.	$0 for filing a written agreement. Costs to potentially screen the railway berm culvert(s) depends on engineering details that are not available.	$0
11d. Conduct a fry and juvenile entrainment survey in the intake pool to inform the potential need for fish screening.	NMFS (contingent on whether a written agreement to screen the culvert is filed); Interior (contingent on whether a written agreement to screen the culvert is filed); American Rivers; Yakama Nation	$75,000 [c]	$0 [c]	$4,078

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
11e. Develop a plan to monitor the effectiveness of the intake screen infrastructure and any screens that would be installed at railroad berm culverts.	Interior	Unknown. Depends on study design and parameters to be monitored as well as engineering details that are not available.	Unknown. Depends on study design and parameters to be monitored as well as engineering details that are not available.	Unknown. Depends on study design and parameters to be monitored as well as engineering details that are not available.
12a. Avoid withdrawing water from the Columbia River from April 1 to August 31 for initial fill.[o]	FFP; NMFS; Interior; Washington DFW; Washington DOE; American Rivers; staff	$0 [d]	$0 [d]	$0
12b. Avoid withdrawing water from the Columbia River from April 1 to August 31 for annual refill.	NMFS; Interior; Washington DFW; American Rivers; staff	$0 [d]	$0 [d]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
12c. If refill is scheduled between April 1 and August 31 and the railroad culverts are not screened and no juvenile salmonid survey has been conducted, then develop a water flow and smolt monitoring plan prior to withdrawing water that contains methods for (1) monitoring flow rate of water into the culvert prior to and during withdrawals; (2) documenting smolts observed in and around the culvert; and (3) reporting results to the resource agencies.	Interior	$25,000 [p]	$0 [p]	$1,359
13. Avoid releasing any effluent discharge into the Columbia River during project construction or operation.	NMFS; American Rivers	$0 [b]	$0 [b]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
Terrestrial Resources				
14a. Implement a Vegetation Management and Monitoring Plan that includes pre-construction surveys for sensitive and invasive plants, weed control, revegetation protocols, monitoring, and reporting.	FFP; staff	$291,042	$14,243	$30,068

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
14b. Modify the Vegetation Management Plan to include: (1) pre-construction surveys for federal and state listed plants during the spring and early summer; (2) using shrubs and species of traditional cultural importance if they are available in the revegetation seed mix; (3) an integrated pest management approach to controlling noxious weeds; and (4) protocols for preventing and controlling wildfires during project construction and operation.	Interior; staff	$20,000 [b]	$0 [b]	$1,087
14c. Consult with the affected Tribes when finalizing the Vegetation Management Plan.	American Rivers; staff	$0 [b]	$0 [b]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
15. Implement a Wetland Mitigation and Planting Plan that includes establishing and rehabilitating a new stream on-site to mitigate for permanent impacts to federal jurisdictional stream S7 and S8; using BMPs to control erosion; revegetate disturbed areas with native seed mix; control noxious weeds; and monitoring revegetated areas for 10 years.[o]	FFP; Washington DOE; staff	$50,000 [e]	$10,000 for years 5-10 [e]	$5,243

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
16a. Implement a Wildlife Management Plan that includes (1) an environmental training program; (2) biological monitoring during construction; (3) wildlife deterrent measures around the reservoirs (8-foot fencing, plastic shade balls, vegetation management); bird and mammal monitoring; (4) design transmission line to be raptor-safe; (5) 3 pre-construction raptor nest survey/monitoring events; and (6) acquire and manage 177 acres of conservation lands.	FFP; Washington DFW; Columbia Riverkeeper, Sierra Club, and Washington Environmental Council; staff	$17,149,955 [f]	$33,380 [f]	$965,846
16b. Modify the Wildlife Management Plan to include surveying for peregrine falcons and ferruginous hawks in addition to other raptors identified in the plan.	staff	$0 [b]	$0 [b]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
16c. Modify the Wildlife Management Plan to include conducting surveys for Dallas sideband snail, monarch butterfly and its preferred milkweed host plants, and juniper hairstreak butterfly prior to construction.	Washington DFW; Interior; staff	$0 [bm]	$0 [bm]	$0
16d. Modify the Wildlife Management Plan to include conducting surveys for northwestern pond turtle prior to construction.	staff	$0 [bm]	$0 [bm]	$0
16e. If the monarch butterfly or its host plants are determined to be present based on the pre-construction surveys, develop a monarch butterfly management plan that includes measures to protect the butterfly's habitat.	Interior; staff	$10,000 [b]	$0 [b]	$544

16f. Modify the Wildlife Management Plan to include a detailed bird and bat reservoir deterrent management plan that includes, in addition to FFP's proposed measures, monitoring methods, metrics for evaluating the effectiveness of the deterrents in reducing the attraction of the project reservoirs to birds, bats, and other wildlife, criteria for deciding whether additional deterrents or modifications to the project are needed, and providing annual reports to resource agencies and Tribes. Monitoring efforts would include point count surveys for birds, acoustic monitoring for bats, and fatality searches for one year prior to construction and 2 years following deployment of deterrent measures.	Washington DFW; Umatilla Tribes, staff	$10,000 [g]	$20,000 for years 1-3 [g]	$3,590

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
16g. Complete a baseline study assessing effects to golden eagles and an annual study that assesses any increase in bird strikes above baseline that occur with reservoirs built and operating.	TID	$20,000 [h]	$20,000 [h]	$21,087
16h. Modify the Wildlife management Plan to include a management plan for the 177-acre conservation lands that includes as appropriate noxious weed control, managing public access to avoid disturbing raptors, wildfire mitigation measures, fencing to protect and improve the habitat, and a wildlife water guzzler if there is an identified need for a source of water and procedures for updating the plan every 5 years.	Washington DFW; American Rivers; staff	$130,000 [i]	$2,000 every 5 years [i]	$7,441

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
16i. Develop an avian protection plan for the project transmission line that includes FFP's proposed protection measures but also includes procedures for monitoring bird fatalities and addressing problem poles and updating the plan as needed in consultation with FWS, Washington DFW, and Oregon DFW.	Interior, Oregon DFW; staff	$10,000 [b]	$2,000 [b]	$2,544
Recreation				
17. Install an interpretive sign at a location providing views of the project and is accessible to persons with disabilities.	FFP, staff	$8,149	$0	$443
18. Develop a fencing and/or public safety plan.	FFP, staff	$10,000 [b]	$0 [b]	$544

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
19. Coordinate construction schedules and associated road closures or delays with Washington DOT, Klickitat County, Corps, BIA, and Tribes to prevent interruption to recreational traffic.	FFP; staff	$0 [b]	$0 [b]	$0
Land Use				
20. Complete independent wind studies to establish pre-construction baseline wind (e.g., wind speeds, direction, turbulence) and turbine energy production data, using data provided by Siemens and wind readings taken at each of TID's wind turbines and compare baseline data to post-construction data as part of an ongoing annual study.	TID	$70,000 [j]	$60,000 [j]	$63,806

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
Cultural Resources				
21a. Implement a Draft HPMP filed on January 25, 2022 that includes conceptual measures developed by FFP for mitigating unavoidable adverse impacts to nine historic properties that would result from constructing, operating, and maintaining the project.	FFP	$0 [k]	$0 [k]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
21b. Revise the January 25, 2022 HPMP in consultation with the Washington SHPO and participating Tribes to (1) include specific treatment measures for all affected archaeological sites (including research design and site-specific data recovery plans, including analysis, and recordation), curation, and construction site monitoring; and (2) survey the archaeological sites for burial grounds using trained dogs.	staff; Umatilla Tribes (for surveys using trained dogs)	$700,000 [l]	$15,000 [l]	$53,060

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
21c. Develop a cultural resources management plan that includes all tribal recommendations and ensures Tribal member access to the area for gathering purposes is not hindered, encumbered, or otherwise interfered with.	Columbia Riverkeeper, Sierra Club, and Washington Environmental Council	Unknown. Cost cannot be estimated without knowing what might be required by the affected Tribes	Unknown. Cost cannot be estimated without knowing what might be required by the affected Tribes	Unknown. Cost cannot be estimated without knowing what might be required by the affected Tribes
22. Enforce existing Programmatic Agreement among BPA, Washington SHPO, and the Advisory Council on Historic Preservation for providing access to project lands for traditional root and plant gathering.	Yakama Nation	$0. The Commission cannot require the enforcement of another agency's PA	$0. The Commission cannot require the enforcement of another agency's PA	$0. The Commission cannot require the enforcement of another agency's PA
Visual Resources				
23a. Develop a visual resources and recreation management plan that contains FFP's proposed visual resources protection measures.	FFP; staff	$23,283	$0	$1,266

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
23b. Consult with the National Park Service and the Tribes in developing the visual resources and recreation management plan and include a provision in the plan to coordinate construction schedules and any associated road closures or delays on John Day Dam Road with Corps personnel at John Day Dam, BIA, and Tribal governments through the Columbia Inter Tribal Fish Commission	Interior; staff	$0 [b]	$0 [b]	$0

Enhancement/ Mitigation Measures	Recommending Entities	Capital Cost (2023$)[a]	Annual Cost (2023$)[a]	Levelized Annual Cost (2023$)
Traffic				
24a. Develop a traffic management plan containing applicable traffic control measures and protocols for coordinating construction schedules and any traffic control measures with Washington DOT and Klickitat County during project construction.	FFP, Klickitat County; staff	$10,000 [b]	$0 [b]	$544

[a] Unless otherwise noted, all cost estimates are from FFP's license application or subsequent additional information request responses. We reviewed these costs and determined that they are reasonable estimates, and then escalated the costs to 2023 dollars.

[b] Staff estimate.

[c] Staff estimate includes capital costs for periodically surveying for anadromous salmonids (including fry/juveniles) within the intake pool during the salmonid smolt outmigration season.

[d] Staff estimate. In the draft EIS, we stated this measure would likely delay filling of the reservoirs and the time that the project could begin generating by about 11 months and thus staff developed a cost for the lost generation in the first year (valued in the draft EIS at $593,114.225). After the draft EIS was issued, FFP clarified in its June 6, 2023, filing that it already proposes to conduct the initial fill over two calendar years and would avoid the salmon migration window of April 1 through August 30 when conducting the initial fill. Based on this clarification, staff no longer anticipates this measure to result in a delay in FFP completing the initial fill or for the project to begin generating and thus there would be no costs for lost generation. Also, because FFP can successfully complete its larger initial fill outside of the April 1 through August 30 time period, we assume FFP would still be able to complete the smaller annual refill each year outside of this period as well so there would not be a significant annual cost associated with restricting annual refill to periods outside of April 1 through August 31.

[e] Cost estimate includes $50,000 capital cost for establishing and rehabilitating a new stream on-site to mitigate for permanent impacts to federal jurisdictional streams. Costs for erosion control, revegetation, noxious weed management, and 5 years of monitoring are already included under the vegetation management plan. However, the Wetland Mitigation and Planting Plan would add 5 additional years of monitoring at $10,000 per year for years 5-10.

[f] Capital costs include the following costs provided by FFP and escalated to 2023 dollars: $23,062 for developing plan, $11,531 for training program, $23,9845 for biological monitoring, $1,729,650 for reducing wildlife attractants (deterrents, shoreline management, etc.), $5,766 for ongoing consultation, $5,766 for initial reservoir monitoring, $288,275 for fencing around reservoirs, $13,837,200 for installing shade balls, $172,965 for raptor-safe transmission line construction measures, $46,124 for three pre-construction raptor nest surveys/monitoring, $11,531 for migratory bird risk assessment literature review, $5,766 for carcass removals, and $609,400 for acquiring golden eagle compensatory wildlife mitigation lands. Annual costs include the following costs provided by FFP and escalated to 2023 dollars: $5,766 for annual reservoir monitoring for bird and mammal use, and $17,297 annual cost for shade balls maintenance.

[g] Cost estimate includes $10,000 capital cost for developing the bird and bat reservoir deterrent monitoring plan, and $20,000 annually for first three years for bat surveys and fatality searches. Capital and annual costs for bird monitoring within reservoirs and installing and maintaining shade balls in the reservoirs are already included as part of the costs for FFP's proposed Wildlife Management Plan.

[h] Cost estimate includes $20,000 for initial baseline study and $20,000 each year for the life of the license for ongoing yearly fatality searches and reporting results.

[i] Cost estimate includes $10,000 capital cost for developing the plan and $120,000 capital cost for installing fencing and noxious weed control. The capital cost for acquiring the land and annual cost for maintaining the mitigation lands are already included in the costs for FFP's Wildlife Management Plan in measure 16a. The cost estimate also includes $2,000 for updating the plan every five years.

[j] Cost estimate includes $70,000 for conducting wind study in first year ($60,000 for wind study as reported by FFP plus another $10,000 for obtaining additional information from wind turbine manufacturer and incorporating it into the study) and ongoing costs of $60,000 for an annual study conducted each year of the license term.

[k] Capital and annual costs for implementing the draft HPMP were not provided in the license application. An estimate to prepare and file the HPMP ($750,000) was provided in the applicant's July 7, 2021, response to the Commission's request for additional information, but actual capital and annual costs for implementing the HPMP were not provided and are dependent on the final measures that are ultimately selected.

[l] Staff estimate includes costs for (a) appropriate consultation to revise the draft HPMP ($25,000); (b) curation ($500,000); (c) Tribal monitoring during construction ($150,000); and (d) searching for burial sites using dogs ($25,000). Cost estimate does not include costs associated with mitigation of historic properties. Costs associated with HPMP implementation and specific mitigation measures are dependent on the final measures that are ultimately selected.

[m] Cost included in the rare plant survey of item 16a.
[n] Staff estimate assumes no additional costs to add these measures to the erosion and sediment control plan to be developed.
[o] Mandatory Clean Water Act Section 401 water quality certification condition.
[p] Staff estimate includes capital cost estimates of $10,000 for developing the plan and $15,000 for monitoring flow and smolt presence in and around the railway culvert during an approximate week-long refill period.

APPENDIX G – COMPREHENSIVE DEVELOPMENT

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As stated in Section 5.1, *Comprehensive Development and Recommended Alternative*, the following measures proposed by FFP would protect and enhance environmental resources and would be worth the cost:

Geology and Soils

- Develop a soil erosion and sediment control plan that includes best management practices (BMPs) for controlling wind and water erosion on project land.

- Develop a vibration monitoring plan to monitor for the effects of drilling the tunnels and powerhouse cavern during project construction on the foundations and underground utilities of nearby wind turbines.[8]

- Implement a Draft Cleanup Action Plan for the West Surface Impoundment that includes methods and procedures for excavating and disposing of contaminated soils and liner materials during construction of the lower reservoir.

Aquatic Resources

- Initially fill the project reservoirs between September 1 and March 31 to prevent project-related flow reductions in the Columbia River that could delay salmon smolt migration.

- As part of the proposed Draft Cleanup Action Plan, decommission 10 existing groundwater monitoring wells that would be displaced to construct the lower reservoir and install new groundwater monitoring wells at locations selected in collaboration with Washington Department of Ecology (Washington DOE).

- Implement a Spill Prevention, Control, and Countermeasure Plan (Spill Prevention Plan) filed on May 24, 2022, that includes protocols for handling and containing hazardous materials during project construction, operation, and maintenance.

- Implement a Dewatering Plan filed on May 24, 2022, that includes procedures for sampling and managing groundwater encountered while constructing the tunnels, powerhouse cavern, and lower reservoir.

- Implement a Stormwater Pollution and Prevention Plan filed on May 24, 2022, that includes BMPs for managing stormwater to prevent contamination of surface waters from construction, operation, and maintenance activities.

- Implement a Reservoir Water Quality Monitoring Plan filed on May 24, 2022, that includes procedures for annually monitoring and reporting on water quality in the project

[8] FFP would include in the plan a provision to conduct a construction baseline survey and include contractor requirements and vibration criteria to be followed to minimize effects on existing wind farm facilities.

reservoirs (i.e., dissolved solids, nutrients, and heavy metals) during project operation to determine the need for protection measures.

Terrestrial Resources

- Implement a Vegetation Management and Monitoring Plan filed on June 23, 2020, that includes noxious weed management, surveys and protection of special status plants, and revegetation of disturbed areas with a native upland seed mix and monitoring for 5 years or until fully established.

- Implement a Wetland Mitigation and Planting Plan[9] filed on May 24, 2022, that includes: (1) evaluating the viability of establishing and rehabilitating a new stream course on-site at a minimum 1:1.1 ratio to mitigate for permanent impacts to the streams labeled S7 and S8; (2) using BMPs to control erosion; (3) revegetating disturbed areas with a native seed mix; (4) using appropriate construction management to minimize the spread of invasive weeds; and (5) monitoring revegetated areas for a minimum of 10 years until specified performance standards are achieved.

- Implement a Wildlife Management Plan filed on June 23, 2020, that includes: (1) 2 years of pre-construction surveys to document bald eagle, golden eagle, and prairie falcon nesting and bald eagle roosting sites and to develop appropriate spatial and temporal restrictions on construction activities;[10] (2) a training program to inform employees of sensitive biological resources; (3) procedures to limit the construction zone to avoid sensitive areas; (4) a construction monitor; (5) limiting construction activities to the hours of 8:00 a.m. to 6:00 p.m. to avoid disrupting crepuscular and nocturnal wildlife; and (6) project vehicle speed limits on-site to reduce wildlife collisions.

- To mitigate for the permanent loss of wildlife habitat, work with FWS and Washington Department of Fish and Wildlife (Washington DFW) to select and purchase 277 acres[11] of off-site land and manage the land for golden eagle nesting and foraging habitat.

- To deter wildlife from using the project reservoirs, implement the following measures as part of the proposed Wildlife Management Plan, to: (1) install a chain link fence that is at least 8 feet high around the reservoirs; (2) mark all fences with vinyl strips and/or reflective tape to reduce avian collision risks; (3) prevent the establishment of vegetation around the reservoirs; (4) cover the reservoir surfaces with floating plastic shade balls to

[9] FFP entitled this plan "Mitigation and Planting Plan". However, we have chosen to call this plan a Wetland Mitigation and Planting Plan to clarify the primary focus of the plan is on wetlands.

[10] Survey methods would follow Washington DFW survey guidelines, in consultation with Washington DFW and FWS area biologists as well as guidance provided in Pagel et al., 2010 and Watson and Whalen, 2004.

[11] Acreage is based on a ratio of 2:1 acre for permanent loss of habitat for the upper reservoir (92.36 acres) and a ratio of 1:1 for the loss of habitat for the lower reservoir (91.8 acres) because of its poorer habitat quality.

reduce the open-water habitat that could attract waterfowl, water birds, and other raptor prey species; (5) monitor for and remove carcasses of livestock and other animals from the project area that may attract scavenging wildlife, foraging eagles, or other raptors; (6) develop a monitoring program to identify bird and mammal usage of the reservoirs and measure the effectiveness of wildlife deterrents in using the reservoirs; and (7) develop a reporting system to document wildlife mortalities, injuries, nuisance activity, and other interactions.

- To minimize avian electrocution and collision hazards with the project transmission line, construct the transmission line on existing poles and ensure there is 40 inches or more of vertical clearance and 60 inches or more of horizontal clearance between energized conductors or energized conductors and grounded hardware.

Recreation and Land Use

- Develop a fencing and/or public safety plan for restricting public access to hazardous areas and to protect recreationalists during construction and operation.

- Develop a visual and recreation resources management plan that includes installing an interpretive sign at a location that provides views of the project and is accessible to persons with disabilities. The signage would include a map of the project and information on pumped storage. The plan would also include a provision to coordinate construction schedules and any associated road closures or delays with Washington Department of Transportation (Washington DOT) and Klickitat County to prevent interruption to recreational traffic.

Cultural Resources

- Implement a Historic Properties Management Plan (HPMP) filed on January 25, 2022, to mitigate unavoidable adverse impacts to historic properties.

Aesthetic Resources

- Include in the visual and recreation resources management plan provisions to: (1) use "engineering controls" during the design process, where practicable, and select natural paint colors and dulling reflective surfaces that cannot be painted to reduce the contrasts of the project structures with the landscape; (2) minimize the footprints of aboveground features to the furthest extent reasonably practicable; (3) ensure facilities are free of debris and store unused or damaged equipment off-site so it is not visible; (4) plant native vegetation and/or trees to break up the lines of roads and facilities and soften the visual effect on the landscape; and (5) use directional, fully shielded, low pressure sodium lighting to prevent casting light in surrounding areas at night and use operational devices that allow surface night-lighting in the central project area to be turned on only as needed for safety.

Traffic Management

- Develop a traffic management plan containing traffic control measures (e.g., signage, flaggers at key intersections, reduced speed limits or other speed control devices, controlled or limited access routes) and protocols for coordinating construction schedules, any temporary road or lane closures, and traffic control measures identified in consultation with Washington DOT and Klickitat County to minimize disruption of traffic on public roads during project construction.

As stated in Section 5.1 under the staff alternative, the project would be constructed and operated with FFP's proposed measures identified above, the conditions required by the Washington DOE Clean Water Act section 401 water quality certification (WQC) included in Appendix M,[12] and staff's recommended modifications and additional measures described below.[13]

Geology and Soils

- Ensure that the proposed soil erosion and sediment control plan contains construction measures and BMPs consistent with WQC conditions G.1, G.2, G.3, G.5, G.6, G.7, G.8, G.9, G.10, G.11, and G.16.[14]

- Include the following fugitive dust control measures in the soil erosion and sediment control plan: (1) a surface/roadway watering plan; (2) a monitoring and response plan to identify and address periods of significant dust emission; (3) a provision to identify a threshold high windspeed to stop material movement and processing to prevent significant dust emission events; (4) roadway speed limits to limit dust entrainment; (5)

[12] The WQC conditions require FFP to file finalized plans for Washington DOE's approval (i.e. Dewatering Plan, Stormwater Pollution and Prevention Plan, Cleanup Action Plan for the West Surface Impoundment, Spill Prevention Plan, Water Quality Monitoring Plan, Wetland Mitigation and Planting Plan). These finalized plans will also need to be filed for Commission approval before construction can begin.

[13] If Klickitat PUD's existing water pump station, infiltration gallery, conveyance pipe, and water supply vault are determined by the Commission to be licensed project works, then FFP could be required to enclose these facilities within the project boundary, file updated project boundary exhibits, and maintain these facilities for the term of any license issued. If a license is issued, a project boundary determination will be made in the license order.

[14] The WQC conditions require erosion and sediment control measures such as marking all clearing limits, stockpiles, staging areas, and trees to be preserved prior to construction and ensuring stock piles and staging areas are located a minimum of 25 feet from wetlands and surface waters; installing high visibility construction fencing around environmentally sensitive areas (such as wetlands, wetland buffers, riparian buffers, and mitigation areas); using seed mixes consisting of native, annual, and non-invasive plant species; disposing excavated sediment in approved upland disposal sites; re-introducing water into mitigation stream channels gradually at a rate not higher than the normal flow; not using hay or straw on exposed or disturbed soil at mitigation site(s), etc. See Appendix M for the list of the conditions.

haul truck cleaning and load covering requirements; (6) responsible officials and training procedures; (7) record keeping and reporting schedules; and (8) community/citizen reporting forms/phone-line and contact information to report dust impact events.

Terrestrial Resources

- Modify the proposed Vegetation Management and Monitoring Plan to include: (1) pre-construction surveys for federal and state listed plants during the spring and early summer to improve the chances of detecting and protecting rare species; (2) shrubs and species of traditional cultural importance (identified in consultation with the Tribes) if they are available in the revegetation seed mix to offset the loss of culturally important plants and better achieve the revegetation goals; (3) an integrated pest management approach to controlling noxious weeds; and (4) protocols for preventing and controlling wildfires during project construction and operation.

- Modify the proposed Wildlife Management Plan to include: (1) provisions to conduct pre-construction surveys for peregrine falcons and ferruginous hawks (in addition to surveying other raptor species already identified in the plan); (2) provisions to conduct pre-construction surveys for Dalles sideband snail, northwestern pond turtle, monarch butterfly and its preferred milkweed host plants, and juniper hairstreak butterfly; (3) a detailed wildlife deterrent management plan for the project reservoirs that includes monitoring methods, metrics for evaluating the effectiveness of the deterrents in reducing the attraction of the project reservoirs to birds, bats, and other wildlife, criteria for deciding whether additional deterrents or modifications to the project are needed, and a schedule for filing monitoring reports with the U.S. Fish and Wildlife Service (FWS), Washington DFW, Oregon Department of Fish and Wildlife (Oregon DFW), Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), Confederated Tribes of the Umatilla Indian Reservation (Umatilla Tribes), Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs Tribes), and Nez Perce Tribe; and (4) a management plan for the golden eagle mitigation lands that includes controlling noxious weeds, managing public access to avoid disturbing raptors, wildfire mitigation measures such as replanting of burned areas with native species, fencing to protect and improve the habitat, and development of a wildlife water guzzler if there is an identified need for a source of water.

- If the monarch butterfly or its host plants are determined to be present based on the pre-construction surveys, develop a monarch butterfly management plan that includes measures to protect the butterfly's habitat, such as fencing off occupied areas or including milkweed in its revegetation seed mix.

- Develop an avian protection plan for the project transmission line that includes FFP's proposed protection measures but also includes procedures for monitoring bird fatalities and addressing problem poles and updating the plan as needed in consultation with FWS, Washington DFW, and Oregon DFW.

Threatened and Endangered Species

- Limit initial fill and periodic refill of the project reservoirs to between September 1 and March 31 to minimize project-related flow reductions in the Columbia River that could delay salmon smolt migration.

Recreation Resources

- Develop the visual resources and recreation management plan in consultation with the National Park Service and Tribes and include a provision in the plan to coordinate construction schedules and any associated road closures or delays on John Day Dam Road with U.S. Army Corps of Engineers (Corps) personnel at John Day Dam, the Bureau of Indian Affairs (BIA), and Tribal governments through the Columbia Inter Tribal Fish Commission, in addition to Klickitat County and Washington DOT.

Cultural Resources

- Revise the proposed HPMP to include specific treatment measures for all affected archaeological sites and traditional cultural properties (TCP). The treatment should include research design and site-specific data recovery or other treatment plans, including analysis, recordation, and curation, and a specific plan for construction site monitoring. Construction monitoring should include: (1) identifying the specific areas that will be monitored during construction; (2) the location of the National Register-eligible cultural sites to be avoided and how they will be marked and avoided where possible; (3) surveying the archaeological sites using specially trained canines for historic and prehistoric human remains detection to minimize the potential for disturbing any undetected burial sites; and (4) protocols for training construction workers on the importance of cultural sites, how to identify cultural sites, the need to avoid damage to cultural sites, and procedures to follow if previously unidentified cultural sites, including Indian graves, are encountered during construction.

Below we discuss the basis for our additional measures or modifications to FFP's proposal. We also explain why we did not recommend certain measures.

Project Boundary Considerations and Additional Measures Recommended by Staff

Project Boundary

FFP proposes to obtain water to fill and refill the reservoir by purchasing the water from Klickitat Public Utility District (Klickitat PUD). The water would come from an existing intake pool formed by a railroad berm adjacent to the Columbia River about two miles south and east of the proposed lower reservoir site. Within the intake pool, Klickitat PUD operates an intake pump station consisting of an infiltration gallery containing six vertical pumps installed in perforated casings surrounded by gravel. Water seeps through the gravel to the pump casings where it is pumped up and conveyed to the former smelter site via an existing two-mile long industrial water conveyance line also owned by Klickitat PUD. FFP would interconnect the

project's water fill line with Klickitat PUD's existing piping infrastructure within Klickitat PUD's water supply vault near the lower reservoir. Washington DFW and Interior recommend pursuant to section 10(j) that the intake pool as well as Klickitat PUD's existing pump station and water conveyance system be included within the project boundary because they are necessary for operation and maintenance of the project. Additionally in comments on the draft EIS, Interior recommends that the intake pool as well as the culvert within the railroad berm also be included within the project boundary.

In its reply comments and in comments filed on the draft EIS, FFP states Klickitat PUD's facilities are existing, multi-use facilities currently supporting other uses in Klickitat County and would be unrelated to the project. Thus, FFP maintains that Klickitat PUD's pump station and the intake pool are not project facilities and should remain outside of the project boundary. Klickitat PUD clarified in comments filed on the draft EIS that it currently serves one agricultural customer and one industrial customer at the former smelter site but that in addition to these customers and FFP, it anticipates serving other water system customers in the future consistent with its 2011 Cliffs Water System Plan and continues to oppose having any of its facilities included within the project boundary.[15] Klickitat PUD also clarified in comments on the draft EIS that the railway berm containing the culvert is owned by the Burlington Northern Santa Fe (BNSF) railway company.

If a license is issued, a project boundary determination will be made in the license order.

Erosion and Dust Control

Excavating the upper and lower reservoir and improving existing access roads would require the use of heavy equipment, vegetation disturbance and removal, stockpiling of soils, and the transport and disposal of large quantities of soil. If uncontrolled, these land-disturbing activities could cause soil erosion, dust, and sedimentation of aquatic habitat in the Columbia River and several ephemeral tributaries. To minimize the potential for soil erosion during construction, FFP proposes to implement a Draft Stormwater Pollution and Prevention Plan and develop an erosion and sediment control plan that would include BMPs for minimizing areas of disturbance, installing silt fencing, coir logs, and other measures around disturbed areas and soil stockpiles, and protecting and revegetating areas of exposed soil with native species. FFP would also include measures to control windblown dust and soil, such as periodic watering of surface roads, applying dust palliatives to disturbed areas, and covering haul trucks transporting soil, sand, or other loose material on the site.

Since the issuance of the draft EIS, Washington DOE issued a WQC for the project that includes conditions to control erosion and monitor the effectiveness of control measures. Specifically, the WQC conditions require FFP to: (1) finalize and submit for agency approval the Stormwater Pollution Prevention Plan; (2) ensure construction stormwater, sediment, and erosion control BMPs are in place before starting construction and are maintained throughout the duration of the activity; (3) where seeding is used for temporary erosion control, use a seed mix

[15] *See* Klickitat PUD's letter dated May 12, 2020, filed as appendix K to FFP's license application. A copy of the 2011 Cliffs Water System plan was included with the letter. *See also* Klickitat PUD's letter commenting on the draft EIS filed on June 7, 2023.

consisting of native, annual, non-invasive plant species; (4) locate stock piles and staging areas a minimum of 25-feet, from waters of the state, including wetlands and their buffers; (5) implement protective measures to avoid escaping or leaching of dust associated with trucks hauling soil or contaminated media off-site; and (6) dispose of all excavated sediment at an approved upland disposal site.

In addition, in comments on the draft EIS, EPA recommends that the fugitive dust control component of the proposed erosion and sediment control plan include: (1) a robust surface/roadway watering plan, possibly including chemical dust control and/or gravel roadway cover if necessary; (2) a robust monitoring and response plan to identify and address periods of significant dust emission; (3) a threshold high windspeed to stop material movement and processing to prevent significant dust emission events; (4) roadway speed limits to limit dust entrainment; (5) haul truck cleaning and load covering requirements; (6) identification of responsible officials and training procedures; (7) record keeping and reporting schedules; and (8) community/citizen reporting forms/phone-line and contact information to report dust impact events.

Our analysis in section 3.3.1.2 *Geology and Soils*, *Environmental Effects*, concludes that the BMPs that FFP proposes along with the additional detailed measures required by the WQC and recommended by EPA are consistent with industry standards for erosion and sediment control and would minimize the effects of soil disturbance on sensitive terrestrial and aquatic resources. Additionally, the details required by the WQC and recommended by EPA would make the erosion and sediment control plan and Stormwater Pollution and Prevention Plan more robust and improve monitoring and reporting requirements. Therefore, we recommend that the erosion and sediment control plan include EPA's recommended dust control measures and that the erosion and sediment control plan and Stormwater Pollution Prevention Plan include erosion control measures consistent with the WQC.

Timing of Water Withdrawals

The proposed construction and operation of the Goldendale Project would require 7,640 acre-feet of water to initially fill the upper and lower reservoirs. Annual refill in the amount of 360 acre-feet would be needed to make up for evaporation and leakage. Instead of constructing a new water supply infrastructure, FFP proposes to purchase the needed water from Klickitat PUD, which would be withdrawn from the Columbia River and delivered to the project via Klickitat PUD's pump station and existing piping infrastructure. Klickitat PUD withdraws water from an intake pool hydrologically connected to the Columbia River approximately two miles south and east of the project. Water from the Columbia River enters the intake pool via seepage through an existing railroad berm but can also enter via at least one existing unscreened 120-foot-long, 42-inch-diameter culvert that runs through the berm. The water purchased for the Goldendale Project would not require Klickitat PUD to obtain new appropriations of water from the Columbia River as they would be purchased under Klickitat PUD's existing water right, which currently would permit FFP to draw no more than 4,137 acre-feet of water in any calendar year at an average delivery rate of 21 cfs up to a maximum rate of 35 cfs. As a result, FFP proposes to complete the initial fill over a 7-month period spanning two calendar years (i.e., between

September 1 and March 31).[16] FFP does not propose a schedule or time window for refilling the reservoirs each year, but states that it has flexibility to conduct the refill once per year or through multiple shorter withdrawals throughout the year.

In its revised 10(j) recommendations filed June 6, 2023, the National Marine Fisheries Service (NMFS) recommends that FFP not withdraw water from the Columbia River for initial fill or annual refill at any time from April 1 through August 31 to ensure sufficient Columbia River flows for outmigrating juvenile salmonids and to reduce the likelihood of fish entrainment into the intake pool during the peak spring and summer smolt migration period. NMFS reasons that Columbia River flows have been greatly diminished by a host of human activities and further reductions in spring/summer Columbia River flows would increase the time and energy it would take for juvenile salmonids to migrate downriver to ocean habitat, which increases their exposure to native and nonnative predators and reduces their survival rates. Further, NMFS believes that the "likelihood of entrainment (stranding and/or predation) [in the intake pool] and 'take' would be substantially reduced" if project water is not withdrawn during the peak smolt migration period. In comments on the draft EIS, Interior, American Rivers and Washington DFW support NMFS' seasonal water withdraw restriction for both initial fill and refill. Additionally, the WQC requires FFP to conduct its initial fill over two calendar years but does not stipulate a time window for the initial fill or refill.

After the issuance of the draft EIS, FFP agreed not to withdraw water from the Columbia River for initial fill any time from April 1 to August 31; however, it opposes a requirement that places a timing restriction on refilling the reservoirs, FFP asserts that the proposed project should not be restricted by the annual withdrawal limits because the water used to fill and refill the reservoirs would be purchased from Klickitat PUD; Klickitat PUD's diversion of water and its exercise of its existing water right are not attributable to the proposed project and cannot be considered an effect of the project because Klickitat PUD could continue to exercise its water right whether the project could or could not use water during the defined timeframe; and the amount of water withdrawn by the project is negligible so the refill withdrawals would not impact salmon and trout.

Our analysis in section 3.3.3.2, *Fisheries Resources, Environmental Effects*, shows that the majority (i.e., 90 percent of detections) of juvenile Endangered Species Act (ESA)-listed anadromous salmonids migrate past the project from April through August each year. If FFP were to receive water withdrawn by Klickitat PUD to fill the reservoirs during these months, the maximum rate at which FFP would receive the water (i.e., 35 cfs) represents approximately 0.03% of the median flow in the Columbia at the location Klickitat PUD would withdraw the water and 0.08% of the lowest Columbia River flow on record at this location. The volume needed for initial fill (7,640 acre-feet) represents approximately 0.01% of the median volume of water expected to pass through the Columbia River at this gage in a year and 0.02% of the minimum volume of water passing through at this location based on the period of record. The estimated 360 acre-feet needed each year for annual make-up water would be 0.0004% of the median volume of water passing through the Columbia River at this gage location in a year and

[16] FFP updated its proposal for conducting the initial fill of the project reservoirs in its comments on the draft EIS filed on June 6, 2023.

0.001% of the minimum volume of water passing through at this location based on the period of record. Nonetheless, avoiding water withdrawals for initial fill during the peak salmonid smolt migration period as recommended by the resource agencies and American Rivers and agreed to by FFP would prevent the project from contributing (albeit negligibly) to reductions in Columbia River flows which could delay migrating salmon smolts and reduce potential fish entrainment into the intake pool where salmon smolts could be lost to predation (as discussed further below).

In its application, FFP states that it has some flexibility in the timing of annual refills, indicating that refills could occur once per year, or over multiple, shorter withdrawals per year, depending on site conditions. We estimate that it would take about 8.6 days to refill the reservoir with 360 acre-feet at 21 cfs (projected average annual refill rate). Given FFP's stated flexibility in refilling the reservoirs and the short time that would be needed to complete the refill, avoiding refilling the reservoirs during the peak smolt migration period should not pose a significant problem to project operation and would prevent project-related reductions in Columbia River flows during the peak smolt migration period.

For these reasons, staff recommend FFP limit filling and refilling the project reservoirs between September 1 and March 31.

Rare Plant Surveys

Project construction would temporarily disturb 54.3 acres of vegetation and remove 193.6 acres (see table 3.3.4-5 in Appendix B). Some of the habitats that would be disturbed are considered vulnerable by the state and could contain federal and state listed sensitive and rare plant species (e.g., California broomrape, smooth desert parsley, Douglas' draba, and hot-rock penstemon). FFP's surveys identified areas that could support these plants; however, its surveys were not conducted when they all would have been identifiable. In its draft Vegetation Management and Monitoring Plan, FFP proposes to survey for federally listed plants and sensitive plant communities within the areas to be disturbed prior to land-disturbing activities, and based on the survey results, limit construction-related disturbance of the communities by flagging or fencing off sensitive areas and designating specific areas for work and equipment movement. Interior recommends, pursuant to section 10(j), that the surveys be conducted in both upland shrub-steppe and riparian areas, that the surveys be conducted twice prior to ground-disturbing activities, once early in the spring and once in mid-summer to ensure that both early and late-blooming sensitive plants are identified, and that all sensitive plants be documented and avoided.

FFP does not specify when its pre-construction surveys would be conducted, but states that it would cover all disturbed areas, which include both shrub-steppe and riparian habitats referenced by Interior. Conducting pre-construction surveys in the spring and early summer would improve the probability of identifying sensitive plants and defining measures that would avoid or minimize those effects as proposed by FFP. Because FFP does not specify the frequency of its proposed surveys, we cannot tell how much additional effort would be needed to conduct two surveys relative to FFP's proposal. Assuming FFP only proposes one survey, we estimate it would cost $20,000 ($1,087 annualized) for the additional survey and find that the benefits of identifying and protecting these rare plants to be worth the added cost. Therefore, we recommend that the Vegetation Management Plan be modified to specify that FFP shall survey

for both state and federal listed plants twice, once in the spring and once in the summer prior to beginning construction.

Revegetation and Wildfire Control

As part of its draft Vegetation Management and Monitoring Plan, FFP proposes to hydroseed all temporarily disturbed vegetated areas with a native upland seed mix developed in consultation with Washington DFW and follow guidelines described in Benson et al. (2011). Interior recommends that FFP use a native seed mix that includes species from locally adapted plants and that Washington DFW, Washington Natural Heritage Program (Washington NHP), and Oregon DFW be consulted prior to replanting to confirm the appropriate seed mix. Interior also recommends supplementing the revegetation effort with supplemental plantings of containerized plants or bareroot nursery stock (including plants of cultural or spiritual importance) if available. Interior also recommends including in the plan fire suppression measures that would be implemented during construction and operation to minimize potential damage to wildlife habitat. FFP does not propose any fire suppression measures in its application. American Rivers recommends that FFP consult with affected Tribes when developing and finalizing its Vegetation Management and Monitoring Plan.

The seed mix proposed by FFP includes grasses and forbs used locally by the U.S. Forest Service at the Columbia River Gorge National Scenic Area that are known to provide good soil cover, prevent erosion, and are used by wildlife. However, including other species such as shrubs or other species of traditional cultural importance in the planting mix (e.g., juniper, yarrow, *Lomatium* spp., *Eriogonum* spp., Juniper, and serviceberry) if they are available as suggested by Interior could further improve habitat for wildlife (e.g., forage, cover), offset the loss of culturally important plants, and better achieve the revegetation goals of establishing self-sustaining, resilient, reproducing populations. Because FFP has not finalized its seed mix, consulting with resource agencies and Tribes on the appropriate seed mix and including shrubs and culturally important plants if available in its revegetation efforts would have a nominal additional cost and should be included in the plan.

The arid environment and increasing probability of drought increases the potential for wildfires during clearing and grubbing for project construction, which would create slash that could build up concentrations of combustible material that could fuel wildfire. Developing protocols for preventing and controlling wildfires during project construction and operation, including promptly removing slash and maintaining appropriate clearances along the project transmission line right-of-way, would help to protect terrestrial and other resources. Including such protocols in the plan is prudent and would not increase the cost of revising the plan. Therefore, we recommend that FFP include wildfire control measures in its Vegetation Management and Monitoring Plan.

We estimate that staff's additional measures would increase the cost of FFP's proposal by $20,000 ($1,087 annualized) and find that the benefits of protecting rare plants and replacing plants with importance to the Tribes to be worth the cost.

Pre-Construction Wildlife Surveys

To minimize construction effects on wildlife, FFP proposes in its draft Wildlife Management Plan to (1) conduct 2-years of pre-construction surveys (two nesting surveys from February 1 to April 30 and third survey from June through first week in July to evaluate productivity) to document bald eagle, golden eagle, and prairie falcon nesting and bald eagle roosting sites (between December and February) within 1 mile of the project. Based on the surveys, FFP would develop appropriate spatial and temporal restrictions on construction activities (e.g., avoiding on or near-surface blasting and helicopter use within 0.25 to 1 mile of an active nest, depending on the species), and monitor any documented nests to ensure construction activities avoid disturbing the nests.

Prairie falcons are known to nest on the steep bluffs between the proposed upper and lower reservoirs and ferruginous hawks are known to inhabit lands in and around the project site. Disturbance during construction could cause nest abandonment or reduce the survival of young if present. Including prairie falcons and ferruginous hawks in its survey efforts would not increase survey costs because they could be looked for during FFP's proposed survey efforts. Therefore, we recommend that FFP also survey for prairie falcons and ferruginous hawks and develop appropriate mitigation and monitoring measures for nesting prairie falcons and ferruginous hawks.

Pre-Construction Surveys for Dalles Sideband Snail, Northwestern Pond Turtle, Juniper Hairstreak, and Monarch Butterfly

Washington DFW recommends that FFP conduct pre-construction surveys for Dalles sideband snail (*Monadenia fidelis minor*) and juniper hairstreak butterfly (*Callophrys gryneus*). Washington DFW did not specifically recommend these surveys pursuant to section 10(j). Washington DFW states that it only recently became aware that these species may be present in the area. FFP did not conduct surveys for these species. In comments on the draft EIS, Interior recommends that FFP conduct pre-construction surveys for the monarch butterfly and its habitat and if individual butterflies or its host milkweed plants are found, work with the FWS and any other relevant resource agencies to develop a "monarch management plan" that includes mitigation for impacts to milkweed habitat.

Both the Dalles sideband snail and juniper hairstreak butterfly are candidates for state-listing in Washington. Habitat in the Columbia Basin for these species has generally decreased due to wildfire, conversion of grasslands to agriculture, and wind and solar power development; however, pockets of protected habitat remain in dissected canyons and public land areas. Habitat for both species could be affected by constructing the upper reservoir.

The monarch butterfly is a candidate for listing under the Endangered Species Act and its distribution includes the project area. It is unknown whether habitat for the butterfly would be disturbed during project construction.

Staff's updated review of FWS's Information for Planning and Consultation (IPaC) database indicates that northwestern pond turtle, a federally proposed threatened species, may be found in shoreline and upland habitats along the Columbia River and Columbia River Gorge

including the project. While the there is no documentation of northwestern pond turtles in the areas to be disturbed it is possible that habitat for the species could be affected by construction.

Surveying for these sensitive wildlife species prior to construction would determine if they are present and inform the need for any additional protective measures, such flagging to prevent disturbance, potentially relocating affected species, or revegetating disturbed areas with suitable plants. These surveys could be done at the same time as the rare plant surveys discussed above, therefore, there would be no additional cost to look for these sensitive species in conjunction with the rare plant surveys if the field crew is trained to look for them. Therefore, we recommend that FFP survey for Dalles sideband snail, northwestern pond turtle, juniper hairstreak butterfly, and monarch butterfly and its milkweed host plants prior to beginning construction and file a report with any recommended measures for their protection, if needed.

Additionally, if ESA-candidate monarch butterflies or its preferred milkweed hosts are found in areas to be disturbed as a result of the surveys, then developing a monarch butterfly management plan in consultation with the resource agencies as recommended by Interior would allow FFP to identify actionable steps to protect the butterfly's habitat, such as fencing off occupied areas or including milkweed in its revegetation seed mix. We estimate the levelized cost of developing such a plan would be $544 and find that the benefits of protecting sensitive monarch butterflies and their habitat to be worth the cost.

Wildlife Habitat Management for the Mitigation Lands

To mitigate for the permanent loss of wildlife habitat, FFP proposes to work with FWS and Washington DFW to select and purchase 277 acres[17] off-site lands and manage the land to provide golden eagle nesting and forging habitat. The lands would be in an area of known golden eagle and prairie falcon nesting habitat and would provide forage species that benefit these birds. FFP states it is working with Washington DFW and FWS to identify suitable lands and would select parcels based on the following criteria: the parcels would include a golden eagle nest and/or foraging habitat within 6 km of a known nest, exhibit a mix of foraging habitat characteristics such as topographic variation (big cliffs or slopes) and lower elevations intermixed with ponderosa pine, and ideally would be located adjacent to Washington DFW land.

Washington DFW recommends the development of a management plan for the mitigation lands and that the plan be approved by Washington DFW and FWS and be updated every five years to reflect new information, new management needs, and updated implementation strategies. Washington DFW states that the plan should include measures to control noxious weeds, manage public access to avoid disturbing raptors, wildfire mitigation such as replanting of burned areas with native species, fencing to protect and improve the habitat, and development of a wildlife water guzzler if there is an identified need for a source of water for wildlife. EPA recommends the development of detailed steps that would be used to ensure that the proposed

[17] Acreage is based on a ratio of 2:1 acres for permanent loss of habitat for the upper reservoir (92.36 acres) and a ratio of 1:1 for the loss of habitat for the lower reservoir (91.8 acres) because of its poorer habitat quality.

277 acres for mitigation is adequate to offset the potential impacts from the project, as well as the plan to acquire, manage and maintain the mitigation area over time.

Acquiring and managing 277 acres of off-site land for the benefit of golden eagles that meet the criteria proposed by FFP would offset the permanent loss of eagle foraging and nesting habitat at the project. FFP estimates it would cost $609,400 to acquire the land (FFP's costs escalated to 2023 dollars) and $10,000 per year to manage the land. While FFP's estimated costs for acquiring the land seem reasonable, until the parcel(s) are identified, and the habitats evaluated, it is not possible to determine what specific habitat management would be needed to achieve the intended purposes or to accurately estimate the costs for implementing the measures. However, it is likely that some habitat management will be required. Based on our understanding of the lands surrounding the project this could include controlling noxious weeds, managing public access to avoid disturbing raptors, fencing, and installing a wildlife water guzzler as recommended by Washington DFW. We estimate that initial site habitat improvements will likely be higher than that estimated by FFP, but $10,000 per year for management thereafter may be reasonable. Updating the plan every 5 years based on new information and changing conditions is also prudent.

Therefore, we recommend that FFP develop a management plan for the parcel(s). The management plan should identify the parcel(s) to be acquired, the habitat values of the land, the specific land management objectives, and the habitat improvements that would be implemented on the parcel(s). To continue to meet its objectives, the land would need to be monitored and management objectives and treatments updated periodically. Therefore, we also recommend including in the management plan, a schedule for reviewing and updating the plan. We estimate the initial habitat improvement costs and to prepare the plan with staff modifications would cost $130,000 more than FFP's estimated cost. We find the benefits of managing these lands for golden eagles to be worth the annualized cost of $7,441.

Wildlife Deterrent Management Plan

Washington DFW, Interior, EPA, Yakama Nation, and Turlock Irrigation District (TID) are concerned that constructing the upper and lower reservoir FFP would create 124 acres of open water that could attract waterfowl and waterbirds which are prey for golden eagles and other raptors, and a water and prey source for bats. The increased attraction to the reservoirs could in turn expose golden eagles and other raptors and birds to increased mortality from wind turbine strikes and bats to increased mortality from strikes and barotrauma.

FFP proposes to reduce the attraction of the project reservoirs to wildlife by (1) installing a chain link fence that is at least 8 feet high around the reservoirs to prevent animals from gaining access to the reservoirs; (2) marking all fences with vinyl strips and/or reflective tape to reduce avian collision risks; (3) preventing the establishment of vegetation around the reservoirs to reduce their attraction to wildlife; (4) covering the reservoirs surface with floating plastic shade balls to reduce the open-water habitat that could attract waterfowl, water birds and other raptor prey species; (5) monitoring for and removing carcasses of livestock and other animals from the project area that may attract scavenging wildlife, foraging eagles, or other raptors; (6) developing a monitoring program to identify bird and mammal usage of the reservoirs and

measure the effectiveness of wildlife deterrents; and (7) developing an reporting system to document wildlife mortalities, injuries, nuisance activity, and other interactions.

Washington DFW is supportive of the protection measures proposed in FFP's Wildlife Management Plan, but recommends pursuant to section 10(j), that a specific bird and bat reservoir deterrent management plan (wildlife deterrent management plan) be developed in coordination with Washington DFW, FWS, and the Yakama Nation. The objective of a wildlife deterrent management plan would be "no net increase of birds and bats in the upper and lower reservoir areas for the time period prior to reservoir construction compared to post construction." The plan would include the measures proposed by FFP but would also include monitoring bird and bat use of the reservoirs before and after deploying deterrents. Monitoring information would be used to decide to maintain, increase, modify or explore other options of deterrents. An annual report would be required that (1) identifies methods used to deter birds and bat use of the reservoirs, (2) whether the methods are successful in achieving the objective of the wildlife deterrent management plan, and (3) future deterrent measures needed if the objective is not achieved. Because of the importance of bald and golden eagles to the Tribes, the Umatilla Tribes request to receive any monitoring reports. TID recommends that that a new study be conducted to establish baseline, pre-construction data regarding average golden eagle strikes over the past 25 years. Then, prospectively, for the life of the surrounding wind turbines, an annual study would be performed to determine whether the proposed project is causing an increase in golden eagle strikes, when compared to the baseline data.

The new project reservoirs would be constructed in an area that supports eagles and other raptors and is located near the John Day Waterfowl Area. Therefore, it is reasonable to conclude that golden and bald eagles, falcons, bats, and other wildlife are likely to be attracted to the project reservoirs if FFP's proposed deterrents (use of shade balls, alteration of shoreline habitat to reduce the quality of habitat) are not successful. There is some data that shows that the use of shade balls reduces the attraction of birds to surface waters, but there is no information how effective they might be to deter bats.

FFP proposes to monitor bird usage of the reservoirs and measure the effectiveness of bird deterrents but does not propose to monitor bat use or address bat mortality from the wind turbines. FFP does not propose any monitoring methods.

Counting bird use before and after constructing the reservoirs and installing the shade balls as recommended by Washington DFW and Interior would provide a means to determine whether there was a change in bird use. Taking steps to deter waterfowl and raptors from using the project reservoirs is prudent, particularly since the number of golden eagles in John Day dam population appear to be declining and because wind energy development has been implicated as a factor in the decline of golden eagles in Washington (Watson et al., 2020, FWS 2015). However, an increase in bird use and risk does not necessarily indicate an adverse effect that requires further deterrents because interacting with adjacent wind turbines does not necessarily mean that injury and mortality events are inevitable. TID notes that their wind farm has experienced only one golden eagle strike since it was commissioned in May 2009. Therefore, if bird use increases, further monitoring of avian interactions with the adjacent wind turbines may be needed to determine whether there would be a significant adverse effect on golden eagles and other birds. This could require bird fatality searches both before constructing the project

reservoirs and after installing the shade balls using methods like those described by Smallwood and Karas (2009). However, the Commission does not have the authority to require access across non-project lands to conduct the searches and so permission from the landowner would be needed to access those lands. In the alternative, FFP could consult with the landowner on any observed mortalities on their land.

The current use of the project site by bats and the current mortality rates of bats from the wind turbines is unknown. Bats appear to be attracted to wind turbines for a variety of hypothesized reasons, including auditory, heat, and insect abundance.[18] However, the reasons for such attraction are not known and could be for reasons other than foraging (De Jong et al., 2021). In addition, the project reservoirs could attract bats and increase their risk of collision with nearby wind turbines. Year-round acoustic monitoring of bat use prior to constructing the reservoir and after installing the shade balls as recommended by Washington DFW would allow FFP to determine whether bats are attracted to the reservoirs by nighttime insect activity, water, or other factors, and whether the proposed use of floating shade balls is effective in deterring bat foraging above the reservoirs. If monitoring shows that bats are attracted to the reservoirs, then bat deterrent measures (e.g., acoustic deterrents such as those used at wind farms) may be needed. However, some measure of bat fatality rates before and after project construction would be needed to determine whether the rate of mortality increases because of the new reservoirs and is significant enough to require further mitigation measures. Conducting bat mortality searches such as those done by Smallwood and Karas (2009) on project lands would aid in that determination. Again, because the Commission does not have the authority to require access to non-project lands to conduct such searches, in the alternative, FFP could consult with the landowner on any observed mortalities on their land.

An effective monitoring plan would need to include methods for documenting bird and bat use before and after constructing and filling the reservoirs, metrics for evaluating the effectiveness of the deterrents in reducing the attraction of the project reservoirs by birds, bats, and other wildlife, criteria for deciding whether additional deterrents or modifications to the project are needed, and a schedule for filing monitoring reports with FWS, Washington DFW, Oregon DFW, Yakama Nation, Umatilla Tribes, Warm Springs Tribes, and Nez Perce Tribe. We estimate that modifying the wildlife management plan to include a detailed wildlife deterrent management plan that includes one year of pre-construction surveys for birds and bats and two years of surveys following the start of project operation with the proposed deterrents in place would have an annualized cost of $3,590. The survey methods should include acoustic monitoring to monitor bat species and point count surveys to monitor bird species. It should also include consulting with the TID on any bird and bat fatality observed at the wind farm. We conclude the benefits of the efforts in protecting golden eagles and bats are worth the cost.

These efforts should be sufficient to determine whether the project is causing an increase in risk to eagles without requiring developing a baseline study and conducting annual monitoring

[18] *See* article titled Why Bats Are Insanely Attracted to Wind Turbines?. Available online at: https://electrical-engineering-portal.com/why-bats-are-insanely-attracted-to-wind-turbines#:~:text=9%20Hypotheses%20for%20Bat%20Attraction%20to%20Wind%20Turbines,8%208.%20Forest%20Edge%20Effect%20...%20More%20items. Accessed March 22, 2023.

for the life of the license as recommended by TID at an annualized cost of $21,087. However, a potential outcome of the initial monitoring efforts could be recommendations for further monitoring.

Avian Protection Measures for the Project Transmission Line

The project would require constructing a 3.13-mile-long, overhead 500-kV transmission line. To minimize avian electrocution and collision hazards with the project transmission line, FFP proposes in its draft Wildlife Management Plan to ensure that the transmission line is sited on BPA's existing poles so that there is 40 inches or more of vertical clearance and 60 inches or more of horizontal clearance between energized conductors or energized conductors and grounded hardware. If the existing transmission lines already have visibility enhancement devices installed, no new ones will be added. If no visibility enhancement devices are on the existing lines, then FFP would install appropriate devices after proposes to construct consultation with the FWS and Washington DFW. Any new poles and lines will be designed with appropriate conductor spacing and visibility enhancement devices.

Interior recommends pursuant to section 10(j) that FFP develop an avian protection plan that requires constructing transmission structures according to bird protection standards and guidelines consistent with *Avian Protection Plan Guidelines* (APLIC, 2005), *Suggested Practices for Raptor Safety on Power Lines: The State of the Art in 1996* (APLIC, 1996), and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC, 2012). Oregon DFW also recommends developing an avian protection plan that includes measures for documenting and reporting bird mortality and addressing problem poles.

FFP's proposed construction design measures are already consistent with these guidelines. However, FFP's measures do not include measures for documenting and reporting bird mortality and addressing problem poles. Developing an avian protection plan that includes monitoring and reporting procedures and addressing identified problem poles would be consistent with APLIC guidelines and better protect birds from electrocution and collision hazards. We estimate it would cost $2,544 (annualized) to develop this plan and find that the benefits are worth the cost.

Recreation and Visual Resources Management Plan

Construction-related traffic would increase the volume of traffic on John Day Dam Road, which could create some delays for those recreationists trying to reach Corp's Cliffs Park and Railroad Island Park, Tribal members trying to reach a BIA treaty fishing access site next to the Corps Railroad Island boat launch, and Corp personnel trying to reach or leave John Day Dam via this road. FFP proposes as part of its recreation and visual resources management plan to coordinate construction schedules and any associated road closures with Washington DOT and Klickitat County to prevent interruption to recreational traffic. FFP states "where temporary disturbance to identified recreational resources are significant and unavoidable, mitigation measures will be identified and implemented."

In comments submitted on the draft EIS, Interior states that the project is located along and crosses portions of the Lewis and Clark National Historic Trail and the "Auto-Tour Route"

for the trail (specifically State Route 14 in Washington along the north side of the Columbia River and Interstate 84 in Oregon along the south side of the Columbia River). To minimize potential visual and recreational impacts to the trail, Interior recommends that FFP develop its visual and recreation resource management plan in consultation with the National Park Service. Interior states that park service staff can advise FFP on textures, lines, colors, and forms of project components to minimize negative impacts to the Lewis and Clark National Historic Trail and has expertise with respect to location and content of interpretive signage and communications with the public/visitors.

In addition, Rebecca Sue Sonniksen (member of the public) recommends in comments on the draft EIS that FFP consult with the Tribes on the content of its proposed interpretive facility to ensure it communicates the "cultural heritage and significance of the area."

Our analysis in section 3.3.6.2 concludes that coordinating construction schedules and any associated road closures with the Corps, BIA, and Tribal governments (e.g., through the Columbia River Inter Tribal Fish Commission), in addition to Klickitat County and Washington DOT, would alert tribal members and Corp personnel at the John Day Dam to potential delays and closures, and minimize disruptions to treaty fishing rights and the Corps operations. Including details on the design, location, and content of FFP's proposed interpretive facility as part of the visual and recreational resources management plan and consulting Washington DFW, the Corps, Bureau of Land Management, Washington DOE, the National Park Service, and the Tribes to develop the plan would allow agencies and Tribes to share their expertise and ensure that the interpretative display is built to appropriate standards and that effects on the Lewis and Clark National Historic Trail and "Auto-Tour Route" are minimized. Coordinating with these additional entities would not increase the cost of developing FFP's proposed recreation and visual resources management plan.

Historic Properties Management Plan

Project construction would directly and indirectly adversely affect the five individual archaeological resources, the larger Columbia Hills Archaeological District, and the three TCPs (*Pushpum, Nch'ima*, and *T'at'alíyapa*). Direct effects include the destruction and removal of five archaeological sites. These sites, consisting of lithic scatters and rock features, are eligible for listing on the National Register. They also represent a significant part of the Yakama Nation and other Tribal traditions and are contributing elements to the Columbia Hills Archaeological District and the TCPs. Indirect effects include additional permanent alterations to the viewshed (e.g., numerous wind turbines, John Day Dam, Columbia Gorge Aluminum smelter, transmission lines) that changes the setting and feeling of the TCPs and could alter the Yakama Nation's and other Tribes' spiritual and cultural practices.

To mitigate these effects, FFP proposes to more fully develop an HPMP in consultation with the Washington SHPO and the affected Tribes. On January 25, 2022, FFP filed a draft HPMP. The draft HPMP provides a basic summary of cultural resources, including TCPs, the results of National Register evaluations and assessment of effects, and includes the following general management measures: (1) steps to designate a cultural resources coordinator; (2) procedures for review of activities requiring ground disturbance and a list of activities exempt from review; (3) procedures for reviewing activities with the potential to result in effects to historic properties, including additional surveys and/or expansion of the project Area of Potential

Effect (APE) as appropriate; (4) requirements for additional consultation with the SHPO(s); (5) plans for unanticipated discovery of archaeological resources and human remains; (6) requirements for annual reporting; (7) requirements for regular HPMP review and amendment; and (8) procedures for dispute resolution.

The Yakama Nation, Umatilla Tribe, and Warm Springs Tribes have state that no form of mitigation is acceptable because the archaeological sites and adverse effects to the TCPs are irreplaceable. The Conservation Groups recommend that FFP develop a cultural resources management plan in consultation with and with the approval of all affected Tribes that includes all Tribal recommendations and ensures Tribal member access to the area for gathering purposes is not hindered, encumbered, or otherwise interfered with.

The draft HPMP does not identify the specific measures that would be implemented to mitigate the significant adverse effects to cultural resources that are valued by the Yakama Nation, Umatilla Tribes, Warm Springs Tribes, and Nez Perce Tribe. Instead, it includes general measures that would be implemented during operation to manage cultural sites, including procedures for addressing newly discovered sites. FFP defers to post-licensing the selection of the final mitigation measures and offers some conceptual measures that are intended to facilitate subsequent consultations with the Tribes.

Because site development would result in the complete removal of the five archaeological sites, data recovery and curation would be the only option available to mitigate their loss. Project construction could also uncover previously unknown historic properties within the construction footprint, including burial sites. Using dogs trained in searching for human remains is a non-invasive means of searching for burial sites and has been successively used in several situations. Searching the archaeological sites using trained dogs and handlers as recommended by the Umatilla Tribes would help minimize the potential for inadvertently disturbing or destroying burial sites during project construction and is relatively inexpensive (estimated $25,000 for conducting the survey).

Therefore, staff recommends that FFP revise the HPMP to include specific treatment measures for all affected archaeological sites and TCPs. The treatment plans should include research design and site-specific data recovery or other agreed-upon treatment plans, including analysis, recordation, and curation, and specific plans for construction site monitoring. Construction site monitoring should include (1) identifying the specifies areas that will be monitored during construction; (2) identifying the location of the National Register-eligible cultural sites to be avoided and how they will be marked and avoided where possible; (3) surveying the archaeological sites using specially trained canines for historic and prehistoric human remains detection to minimize the potential for disturbing any undetected burial sites; and (4) protocols for training construction workers on the importance of cultural sites, how to identify cultural sites, the need to avoid damage to cultural sites, and procedures to follow if previously unidentified cultural sites, including Indian graves, are encountered during construction.

Staff further recommends that the revised HPMP be implemented prior to any ground-disturbing actions that would destroy the sites. Revising the HPMP as staff recommends would entail further data recovery and recordation than that proposed by the applicant. We estimate

that the recommended additional field testing and curation and construction monitoring recommended by staff would have a levelized annual cost of $53,060 and find that these efforts would be needed to mitigate for adverse effects to the archaeological sites eligible for the National Register.

Staff also recommend that the HPMP be developed in consultation with the Washington SHPO, Advisory Council on Historic Preservation, the Corps, and affected Tribes. While FFP might develop additional measures to address adverse effects on the TCPs, there is insufficient information to determine what those measures might be or if any would be acceptable to the Tribes. Therefore, we cannot evaluate their benefit or costs. Consequently, we do not recommend that the plan include all the measures recommended by the affected Tribes as suggested by the Conservation Groups.

Measures Not Recommended by Staff

Some of the measures recommended by Interior, NMFS, Washington DFW, TID, Yakama Nation, and the Environmental Groups would not contribute to the best comprehensive use of the Columbia River water resources, do not exhibit sufficient nexus to project environmental effects, or would not result in benefits to non-power resources that would be worth their cost. The following discusses the basis for staff's conclusion not to recommend the measures.

Post-licensing Adaptive Management Plan

The Environmental Groups recommend that FFP develop an adaptive management plan that coordinates post-licensing monitoring and adaptive management measures as necessary to ensure license conditions are meeting previously established measurable objectives and otherwise performing as forecasted over the term of the new license. Such a plan must include specific provisions for reopening the license in the event the project is not meeting measurable objectives as intended.

The Environmental Groups recommendation is vague. FFP's proposed plans already include monitoring efforts that provide a mechanism to review the results and implement additional measures if warranted. Where they are not all specific, we recommend including in the monitoring plans specific metrics to evaluate the effectiveness of the protection measures.

Moreover, should the resource agencies become aware of an unforeseen circumstance regarding project effects on fishery or wildlife resources during the term of any license issued for the project, Commission licenses include a standard license article that provides the agencies the opportunity to petition the Commission to reopen the license to consider additional mitigation measures, after notice and opportunity for hearing. For these reasons, we have no basis for recommending a post-license monitoring and adaptive management plan.

Effluent Discharges

To control erosion and sedimentation, manage stormwater and hazardous materials during construction, and manage non-stormwater discharges (i.e., dewatering activities and groundwater) during construction, FFP proposes to develop a soil erosion and sediment control

plan and implement its draft Spill Prevention Plan, draft Stormwater Management Plan, and draft Dewatering Plan. The plans would contain specific measures and protocols to prevent discharges to the Columbia River and other surface waters during construction. Further, FFP would monitor and report water quality conditions in project reservoirs to determine the need for additional measures to protect water quality during operation as part of its proposed draft Reservoir Water Quality Monitoring Plan.

NMFS recommends pursuant to section 10(a) that the license prohibit FFP from releasing any effluent discharge into the Columbia River at any point during project construction or operation and, if discharges are necessary, that NMFS be consulted. FFP states that it does not anticipate the need to release effluent discharge into the Columbia River, as the project has been designed to avoid the need for these types of discharges.

FFP does not intend to discharge effluents into the Columbia River during project construction. Standard BMPs that would be implemented under FFP's plans are routinely implemented at projects requiring new construction and would be adequate at preventing unintended discharges to the Columbia River during construction to the extent practicable. Further, because the project would be operated as a closed-loop pumped storage project, no discharges to the Columbia River are anticipated during project operation. Therefore, it is not necessary to include a license condition expressly prohibiting effluent discharges.

Culvert Screening, Anadromous Fish Survey, and Water Flow and Smolt Monitoring Plan

The project would use water purchased from Klickitat PUD's water supply system to fill and refill the reservoirs. That water would be pumped to the project from an "intake pool," a backwater slough separated from the Columbia River by a railroad embankment berm. Water is drawn into the "intake pool" from the Columbia River via seepage through the rock- and gravel-filled railroad embankment owned and controlled by the BNSF railroad company. There is at least one unscreened 120-foot-long, 42-inch-diameter culvert, possibly two, running through the railroad embankment that is hydrologically connected to the Columbia River and may provide periodic fish passage into the intake pool from the Columbia River. The culvert opening on the intake pool side is believed to be at 265 mean sea level (MSL). Because John Day Dam operates to maintain the forebay on the river side of the berm between 260 and 265 feet MSL from November to June and between 265 and 268 feet MSL from July to October, fluctuating water levels in the intake pool may cause the culvert opening on the intake pool side to become dewatered, trapping any fish that passed through the culvert. This scenario is more likely to occur during the months of November through June when John Day forebay water levels typically fluctuate between 260 to 265 feet.

In its revised 10(j) recommendations, NMFS and Interior recommend that FFP and/or Klickitat PUD file a written commitment to screen the known culvert in a manner consistent with NMFS' fish screening criteria prior to filling the reservoirs. NMFS states that while it has no evidence that ESA-listed salmon are regularly entering the intake pool from the Columbia River, the known culvert is likely submerged during the juvenile salmon smolt migration window and thus may provide passage for some ESA-listed fish to enter and subsequently become entrained within the intake pool. NMFS states that because the intake pool is known to support

piscivorous fish species, any juvenile salmon entering the pool would be lost to predation. If a written agreement to screen the culvert cannot be filed, NMFS and Interior recommend FFP conduct an anadromous fish survey in the intake pool to determine whether salmon smolts are using the intake pool and to inform the need for further screening. Interior also recommends that if FFP is permitted to withdraw water to refill the reservoirs during the April 1 through August 31 smolt migration period, that FFP develop and file a water flow and smolt monitoring plan that contains methods for monitoring flow rate through the railroad culverts prior to and during the refill period, a provision to document any smolts observed on each end of the culvert(s), and a provision to report results to the resource agencies. Interior states the need for the plan and subsequent monitoring would be contingent on: (1) whether any refill withdrawals are planned to occur within the April 1 through August 31 salmon migration window; (2) the railroad culverts that connects the intake pool to the Columbia River are not already screened in a manner consistent with NMFS' fish screening criteria; and (3) no fry or juvenile salmonid surveys have been conducted in the intake pool. In comments on the draft EIS, American Rivers and the Yakama Nation support the need for a fry and juvenile entrainment survey within the intake pool.

In comments submitted on the draft EIS, Klickitat PUD expressed a willingness to voluntarily work with BNSF to screen the culvert to prevent fish entrainment into the intake pool.

As discussed in section 3.3.3.2, we do not know what the infiltration rate into the pool is through the railway berm or how Klickitat PUD's withdrawal of up to 35 cfs to fill the project reservoirs might affect pool levels. However, given the John Day reservoir operation levels, it is reasonable to conclude that any salmonid smolts that enter the culvert could become trapped in the intake pool and likely lost to predation.

Installing screens on the culvert that meet agency criteria would minimize or prevent ESA-listed smolts from entering the intake pool throughout the year. We do not have sufficient information to estimate the cost of screening the culvert. However, as discussed previously, restricting the fill and refill timing to avoid the peak smolt migration months of April through August would reduce the likelihood of outmigrating salmonids from becoming entrained within the intake pool due to project-related water withdrawals regardless of whether the culvert is screened. Because implementing the restrictions of filling and refilling the reservoirs would be sufficient to prevent project-related withdrawals from entraining ESA-listed salmon smolts, we do not recommend requiring FFP to screen the culvert, conduct a survey of the intake pool at an annualized cost of $4,078, or develop a water flow and smolt monitoring plan to inform the need for further screening at an annualized cost of $1,359.

Intake Fish Screen

Klickitat PUD's pump station and infiltration gallery is located on the northwest corner of the intake pool (approximately 400 feet from the railway embankment berm). Water flows about 30 feet through the infiltration gallery containing 2,400 cubic yards of clean gravel to six vertical pumps installed 20 to 30 feet deep and in 48-inch diameter perforated casings. Water infiltrating the gravel is pumped up and enters Klickitat PUD's water conveyance pipes that currently service the former smelter cleanup site. When filling the reservoir, FFP would

purchase water from Klickitat PUD who in turn would utilize its existing facilities to convey water from the infiltration gallery to a water supply vault approximately 2 miles north and west of the intake infiltration gallery where it would be conveyed to the project's lower reservoir via a new reservoir fill line.

The Environmental Groups recommend installing fish screens on Klickitat PUD's intake that meet or exceed NMFS and Washington DFW screening requirements. In its revised 10(j) recommendations, Interior as well as Washington DFW recommend that if Klickitat PUD's infiltration gallery fails or needs repair, FFP should consult with the resource agencies and make the infiltration gallery conform to NMFS's and Washington DFW fish screen criteria. Additionally, Interior recommends in comments on the draft EIS that FFP develop a plan to monitor the effectiveness of the existing infiltration gallery and any screens installed on the culverts within the railroad berm and that the plan include corrective actions in the event these structures fail.

Both FFP and Klickitat PUD state that the infiltration gallery prevents fish entrainment from the intake pool into the pump station; thus, additional pump intake screening is not warranted.

If the Commission issues a license and determines that the infiltration gallery, pumping station, and culvert should be included as licensed project facilities, then FFP could be required to ensure that they are maintained. However, there is no information in the record that suggests that Klickitat PUD's infiltration gallery is not operating as intended or would require repairs or modifications in the future. Regardless, our analysis shows that fry and juvenile anadromous fish that enter the intake pool are unlikely to become entrained into the project's reservoirs because fry would have to pass through about 30 feet of gravel in Klickitat PUD's infiltration gallery which should be impenetrable to fry. In addition, we note that Interior states in its June 6, 2023, letter commenting on the draft EIS that "while [an] infiltration gallery is not the preferred method of fish screening, the FWS acknowledges that it has been reviewed by engineers and deemed sufficient to mitigate entrainment concerns, in this case." There is not enough design information on the Klickitat PUD's existing pumping station to estimate how much it would cost to add fish screens to the existing infiltration gallery to further minimize the possibility of entrainment. Nevertheless, for the reasons explained above, we do not have a sufficient reason to recommend screening these structures or to recommend modifying Klickitat PUD's existing pump station to meet agency screening criteria.

Wind Study

TID asserts that construction and operation of the proposed project could interfere with or reduce the output of its wind turbines. TID believes that the change in topography following the construction of the project reservoirs would cause a change in wind patterns, speed, and turbulence that could reduce the output of the turbines and damage the turbines. TID recommends that FFP conduct a more robust wind analysis study that comports with industry practices and uses a multiple year data set to examine how the project would affect wind direction and stresses on its turbines.

FFP states that its wind analysis study reasonably demonstrates that project operation would not substantially alter wind patterns and opposes conducting further studies.

FFP contracted ERM (2021b) to evaluate the changes in wind speed, direction, and turbulence that would result from constructing the upper reservoir on the operation of the 15 turbines closest to the proposed upper reservoir, with a focus on the two closest to the upper reservoir (turbines 17A and 17B). The model shows some increases and decreases in wind and turbulent kinetic energy (TKE), but the average change would be near zero. Wind speed and direction changes, on average, are also close to zero at the locations of all turbines (ERM, 2021b). The WRF model suggests, with reasonable certainty, that there would be only minor changes in wind and turbulence due to the presence of the upper reservoir.

For these reasons, we believe that construction and operation of the pumped storage project would have a negligible effect on the adjoining wind farm's operation and do not recommend further studies at an annualized cost of $63,806.

APPENDIX H – FISH AND WILDLIFE AGENCY SECTION 10(J) RECOMMENDATIONS

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As discussed in Section 5.3, *Fish and Wildlife Agency Recommendations*, the following section addresses the revised recommendations filed pursuant to section 10(j), summarizes the outcomes of the 10(j) meeting held between Commission staff and the National Marine Fisheries Service (NMFS) on May 3, 2023, indicates whether the recommendations are included in the staff alternative, and includes the specifics of any inconsistencies that remain and our determinations. Recommendations that we consider outside the scope of section 10(j) have been considered under section 10(a) of the Federal Power Act (FPA) and are addressed in the specific resource sections of Section 3.0, *Environmental Analysis*, in Section 5.1, *Comprehensive Development and Recommended Alternative* and in Appendix G.

Maintain the Existing Infiltration Gallery within the Intake Pool to Prevent Fish Entrainment

In the draft environmental impact statement (EIS), staff did not adopt the U.S. Department of the Interior's (Interior) 10(j) recommendation that FFP Project 101, LLC (FFP) install and maintain new fish screens on Klickitat Public Utility District's (Klickitat PUD) intake or Washington Department of Fish and Wildlife's (Washington DFW) 10(j) recommendation that FFP maintain the infiltration gallery and modify the structure to make it conform to NMFS and Washington DFW fish screen criteria if the infiltration gallery fails. Staff reasoned that the 30 feet of gravel in front of the existing infiltration gallery would be nearly impenetrable to fry and juvenile fish and thus staff did not have a sufficient reason to recommend that FFP add fish screens or modify Klickitat PUD's existing pump station to meet agency screening criteria.

In its June 6 and August 4, 2023 comment letters, Interior states that it now considers the existing infiltration gallery sufficient at preventing fish entrainment within Klickitat PUD's water delivery system and thus Interior no longer recommends adding new screens on Klickitat PUD's intake facilities at this time. Therefore, the inconsistency is resolved.

On a related matter, when Interior withdrew its prior fish screen recommendation, it submitted a new recommendation that FFP ensure that Klickitat PUD's infiltration gallery be properly maintained. As discussed in in Section 5.1, *Comprehensive Development and Recommended Alternative* and Appendix G, if the Commission decides that Klickitat PUD's infiltration gallery should be a licensed project facility, then FFP could be required to properly maintain the infiltration gallery.

Timing of Water Withdrawals to Minimize Impacts to Salmonid Smolt Migration

In the draft EIS, staff did not adopt NMFS's 10(j) recommendation that FFP not use water withdrawn from the Columbia River for the initial fill any time from March 15 through October 15 and not refill the reservoirs any time from March 1 through November 1 to ensure sufficient flows for outmigrating juvenile salmonids. In the draft EIS, staff found that the proposed withdrawals during the fish passage season would be minor relative to Columbia River flows passing near the project and that NMFS' recommended timing restriction would likely delay filling the reservoirs and commencing commercial operation of the project by approximately 11 months, resulting in a levelized cost of $32,248,410. Staff concluded in the draft EIS that avoiding any project-related withdrawal by Klickitat PUD during the fish passage season would not be worth the costs.

At the 10(j) meeting, NMFS stated that additional consumptive uses of Columbia River water, however small, would contribute to a cumulative impact on the timing and success of salmon migrations in the Columbia River, particularly given the multiple other withdrawals already occurring in the basin. NMFS also argued that the timing restriction would not delay the initial fill of the project reservoirs because the initial fill would need to occur over two calendar years given the constraints of Klickitat PUD's water right that FFP would be operating under. FFP concurred and clarified that filling would begin in the fall and carry over into the following year, which would not lead to an extended delay in completing the fill. Following the meeting, both NMFS and Interior revised their 10(j) recommendation to recommend that FFP not conduct the initial fill or annual refill between April 1 and August 31. The agencies believe this updated measure would reduce the potential effect of project-related consumptive withdrawals on ESA-listed salmon and steelhead migration and should not result in delays for FFP in filling the reservoir and commencing operation.

In its June 6, 2023 filing, FFP agreed not to withdraw water for initial fill any time from April 1 to August 31 consistent with NMFS's and Interior's revised recommendations; however, FFP continues to oppose any seasonal restriction on utilizing Klickitat PUD water for refilling the reservoir each year after the initial fill is completed.

In its application, FFP states that it has some flexibility in the timing of annual refills, indicating that refills could occur once per year, or over multiple, shorter withdrawals per year, depending on site conditions. We estimate that it would take about 8.6 days to refill the reservoir with 360 acre-feet at 21 cfs (projected average annual refill rate). Given FFP's stated flexibility in refilling the reservoirs and the short time that would be needed to complete the refill, avoiding refilling the reservoirs during the peak smolt migration period should not pose a significant problem to project operation and would prevent project-related reductions in Columbia River flows during the peak smolt migration period. For these reasons, staff now recommend FFP limit filling and refilling the project reservoirs between September 1 and March. Therefore, the inconsistency is resolved.

Water Flow and Smolt Monitoring Plan

In its revised 10(j) recommendations filed on August 4, 2023, Interior acknowledges that FFP has not proposed a timing restriction for conducting annual refill like it does for the initial fill. As a result, Interior recommends that prior to FFP withdrawing water during the April 1 through August 31 period, that FFP first develop and file a water flow and smolt monitoring plan that contains methods for monitoring flow rate through the railroad culverts prior to and during the refill period, a provision to document any smolts observed on each end of the culvert(s), and a provision to report results to the resource agencies. Interior states the need for the plan and subsequent monitoring would be contingent on: (1) whether any refill withdrawals are planned to occur within that April 1 through August 31 salmon migration window; (2) whether the railroad culverts that connect the intake pool to the Columbia River not being already screened in a manner consistent with NMFS' fish screening criteria; and (3) if no fry or juvenile salmonid surveys have been conducted in the intake pool.

As discussed previously, staff now recommend that FFP not conduct the initial fill *or annual refill* between April 1 and August 31 to avoid any project-related withdrawals from

contributing to further reductions in the Columbia River flow that could affect migrating listed salmon. Because Interior states that the need for the plan and further monitoring would be contingent on whether any annual withdrawals occur during this migration window, staff now consider the issue to be moot and there is no inconsistency that needs further resolution.

Restrictions on In-channel Project Construction in the Columbia River

In the draft EIS, staff did not adopt NMFS's 10(j) recommendations that FFP not place permanent structures or impoundments in the Columbia River or pile drive in the Columbia River anytime between 1 March and 1 November. NMFS recommended these measures to protect juvenile and adult salmonids from high intensity sounds and predation from new structures that would afford fish predators additional vantage points that would not be there otherwise. At the 10(j) meeting held on May 3, 2023, staff reiterated its findings in the draft EIS that no in-water work or new structures in the Columbia River are being proposed by FFP and thus staff have no basis for recommending a license requirement that restricts placing permanent structures or impoundments in the Columbia River or restricts pile driving. Staff also noted that if any in-water work were to be proposed in the future, FFP would need to file a license amendment application and the issue could be revisited at that time.

In its June 6, 2023 letter, NMFS stated that based on the discussions at the 10(j) meeting, it no longer recommends conditions pertaining to in-water structures or pile driving. Thus, the inconsistency is resolved.

Table H-1. Fish and wildlife agency recommendations for the Goldendale Project (Source: staff).

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
Include the intake pool and Klickitat PUD's water pump station and water conveyance system within the project boundary and file revised project boundary exhibits.	Washington DFW; Interior	No. Filing project boundary exhibits are an administrative matter, not a specific fish and wildlife measure.	$0	No. A project boundary determination will be made in the license order if a license is issued.
Ensure the existing infiltration gallery is properly maintained and operated for project water withdrawals and if it fails and needs repair, then FFP should consult with the resource agencies and make the infiltration gallery conform to NMFS and Washington DFW fish screen criteria.	Washington DFW; Interior	Yes to maintaining the infiltration gallery. However, future modifications to project structures would be a license amendment action and thus would not be within the scope of the licensing action.	Unknown. Costs would depend on engineering details that are not available	Yes, to maintain the gallery, if the gallery is determined by the Commission to be a project facility. No to the recommended future conditional modification, because a decision on the matter is premature.
File a written commitment in coordination with Klickitat PUD to screen any railroad berm culverts that conform to NMFS' fish screening criteria prior to filling the reservoirs. If a written commitment cannot be filed, conduct a fry and juvenile entrainment survey in the intake pool within 12 months of license issuance	NMFS; Interior	No; filing a written commitment is an administrative matter, and the recommended survey is a conditional, future measure	Costs to potentially screen the railway berm culvert(s) consistent with agency criteria would depend on engineering details that are not available. Costs for conducting a fry and juvenile and entrainment survey are estimated to be $4,078	No.[a]

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
Avoid receiving water from Klickitat PUD for initial fill and annual refill any time between April 1 and August 31 to ensure sufficient flows in the Columbia River for outmigrating juvenile salmonids	NMFS; Interior	Yes.	$0	Yes.
If refill is scheduled between April 1 and August 31 and the railroad culverts are not screened and no juvenile salmonid survey has been conducted, develop a water flow and smolt monitoring plan prior to withdrawing water that contains methods for (1) monitoring flow rate of water into the culvert prior to and during withdrawals; (2) documenting smolts observed in and around the culvert; and (3) reporting results to the resource agencies.	Interior	Yes.	$1,359	No.[a]

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
Develop within 1 year of license issuance a bird and bat reservoir deterrent management plan that includes measures such as using shade balls to deter birds from using reservoirs, using acoustic bat deterrents to deter bats from using reservoirs, conducting acoustic monitoring of bats and point count surveys to monitor bird use in reservoirs year-round, and provide an annual report to Washington DFW, FWS, Yakama Nation, and the Commission.	Washington DFW	Yes.	$3,590[c]	Yes.
Develop within 1 year of license issuance a management plan for the conservation of the golden eagle lands that includes the following measures: ensure mitigation lands are located in an area of known golden eagle and prairie falcon nesting habitat and provide forage species that benefit these birds; control noxious weeds; manage public access to avoid disturbing raptors; wildlife mitigation measure such as replanting or burned areas with native species; fencing to protect and improve the habitat; and development of a wildlife water	Washington DFW	Yes.	$7,441	Yes.

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
guzzler if there is an identified need for a water source. Update the plan every 5 years				
Develop and file within 1 year of license issuance and prior to onset of ground-disturbing activities an avian protection plan that includes the following: conducting pre-construction surveys for birds, nests or roosts; establishing buffers for construction activities; constructing transmission structures according to bird protection standards and guidelines; adjusting lighting systems to minimize disruption of nighttime foraging; marking fencing around the reservoirs to prevent avian collisions; ensure adequate insulation and other necessary measures to protect raptors from electrocution hazards; retrofit or rebuild power poles involved in a bird fatality in accordance with the most recent guidelines for avian protection (i.e., APLIC standards) to increase safety for large perching birds; and a provision to install bird flight diverters on any new transmission lines; update the plan as needed through adaptive management in consultation with the agencies.	Interior	Yes.	$2,544	Yes.

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
Modify the proposed Vegetation Management and Monitoring Plan to include the following additional measure: perform two pre-construction surveys (once in the early spring and once in the mid-summer including within upland shrub-steppe and riparian areas) to identify and document any state or federally listed threatened, endangered, or sensitive plants within areas to be disturbed; invite Washington DFW, Oregon DFW, Washington National Heritage Program, and FWS to participate in the pre-construction surveys to assist in identifying botanical resources and plan avoidance measures; revegetate disturbed areas with native seed mix using locally adapted genetic materials and consult with the resource agencies prior to replanting including conducting supplemental plantings in applicable seasons if plants of cultural or spiritual importance are found; monitor all revegetated areas annually for five years and re-treat and re-monitor areas as needed; control Class A noxious weeds using appropriate	Interior	Yes.	$1,087	Yes.

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Adopted?
mechanical, biological, and chemical treatments; and implement fire suppression measures during construction and operation to minimize potential damage to wildlife habitat.				
Include western monarch butterfly and milkweed in pre-construction surveys and if the species or its habitat occurs in the area to be disturbed, then develop a monarch butterfly management plan that includes measures to protect the butterfly's milkweed habitat.	Interior	Yes.	$544[d]	Yes.

[a] Preliminary finding that recommendations found to be within the scope of section 10(j) are inconsistent with the comprehensive planning standard of section 10(a) of the FPA, including the equal consideration provision of section 4(e) of the FPA are based on our determination that the costs of the measures outweigh the expected benefits.

[b] Preliminary finding that recommendations found to be within the scope of section 10(j) are inconsistent with the substantial evidence standard of section 313(b) of the FPA.

[c] Additional levelized cost for conducting bird and bat surveys. Remaining measures are proposed by FFP and included in its costs for implementing the Wildlife Management Plan ($965,846 levelized cost).

[d] Additional levelized cost for developing a monarch butterfly management plan. Remaining measures are proposed by FFP and included in its costs for implementing the Wildlife Management Plan ($965,846 levelized cost) and Vegetation Management Plan ($30,068 levelized cost).

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APPENDIX I – LIST OF COMPREHENSIVE PLANS

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Section 10(a)(2)(A) of the Federal Power Act, 16 U.S.C.§803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with the federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed 71 comprehensive plans for the states of Washington and Oregon that are applicable to the Goldendale Project. No inconsistencies were found. The following plans were reviewed:

Bureau of Land Management. 2015. John Day Basin Record of Decision and Resource Management Plan. Prineville, Oregon. June 2015.

Bureau of Land Management. 1987. Spokane resource area management plan. Department of the Interior, Spokane, Washington. May 1987.

Bureau of Land Management. Forest Service. 1996. Status of the Interior Columbia Basin: Summary of scientific findings. Portland, Oregon. November 1996.

Department of the Army, Corps of Engineers. Portland District. 1993. Water resources development in Oregon. Portland, Oregon.

Hydro Task Force and Strategic Water Management Group. 1988. Oregon comprehensive waterway management plan. Salem, Oregon.

Interagency Committee for Outdoor Recreation. Washington State Comprehensive Outdoor Recreation Planning Document (SCORP). 2002-2007. Olympia, Washington. October 2002.

Interagency Committee for Outdoor Recreation. 1995. Washington State outdoor recreation and habitat: Assessment and policy plan 1995–2001. Tumwater, Washington. November 1995.

Interagency Committee for Outdoor Recreation. 1991. Washington State trails plan: policy and action document. Tumwater, Washington. June 1991.

National Marine Fisheries Service. 2020. A Vision for Salmon And Steelhead: Phase 2 Report of the Columbia Basin Partnership Task Force of the Marine Fisheries Advisory Committee. October 2020.

National Marine Fisheries Service. 2015. ESA Recovery Plan for Snake River Sockeye Salmon. Portland, Oregon. June 2015.

National Marine Fisheries Service. 2011. Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead. Portland, Oregon. January 2011.

National Marine Fisheries Service. 2009. Middle Columbia River steelhead distinct population segment Endangered Species Act recovery plan. Portland, Oregon. November 30, 2009.

National Marine Fisheries Service. 2008. Mainstem Columbia River Hydropower Projects Recovery Plan Module. September 2008.

National Marine Fisheries Service. 2004. Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan. Washington. December 15, 2004.

National Park Service. 1982. Lewis and Clark Trail National Historic Trail: Comprehensive Plan for Management and Use. January 1982.

National Park Service. 1993. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

National Park Service. 2012. Foundation Document: Lewis and Clark National Historic Trail (IL, MO, KS, NE, IA, SD, ND, MT, ID, WA, OR). September 2012.

Northwest Power and Conservation Council. 2014. Columbia River Basin fish and wildlife program. Portland, Oregon. Council Document 2014-12. October 2014.

Northwest Power and Conservation Council. 2016. The Seventh Northwest Conservation and Electric Power Plan. Portland, Oregon. Council Document 2016-02. February 2016.

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APPENDIX J – LITERATURE CITED

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APPENDIX K – LIST OF PREPARERS

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Federal Energy Regulatory Commission

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Steve Byrne—Aquatic Resources (Fisheries Biologist; M.S., Marine and Environmental Biology; B.S., Biology)

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APPENDIX L – COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

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Commission staff issued the draft environmental impact statement (EIS) for the proposed Goldendale Energy Storage Project (No. 14861-002) on March 31, 2023. Comments on the draft EIS were due by June 6, 2023. In addition, Commission staff conducted two public meetings in Goldendale, Washington, on May 3, 2023. Statements made at the meetings were recorded by a court reporter and incorporated into the Commission's public record for the proceeding.[19] The following entities filed comments on the draft EIS:

Commenting Entity	Date Filed
Bryce Campbell	April 24, 2023
Julie (no surname included)	May 2, 2023
Cameron Wilkinson	May 4, 2023
Jessica Metta	May 4, 2023
M.S. Jones	May 4, 2023
Jim Batterberry	May 10, 2023
Leslie Hiebert	May 10, 2023
Dana Peck	May 17, 2023
Seth Worley	May 22, 2023
Kim Clarkin	May 23, 2023
Lach Litwer	May 23, 2023
Mike Bridges	May 23, 2023
Mark Riker	May 24, 2023
Diana Winther	May 26, 2023
Diana Gordon	May 30, 2023
Joe Dabulskis	May 30, 2023
Jonathan Lewis	May 30, 2023
Dave McClure, Klickitat County Natural Resources and Economic Development Department	June 1, 2023
John D. Loranger	June 1, 2023
Matthew Hepner	June 1, 2023
Rebecca Sue Sonniksen	June 4, 2023
American Rivers	June 5, 2023
National Marine Fisheries Service (NMFS)	June 5, 2023; June 6, 2023
Oregon Department of Fish and Wildlife (Oregon DFW)	June 5, 2023
Columbia Riverkeeper, Washington Conservation Action, Sierra Club, and Friends of the White Salmon River (collectively, Environmental Groups)	June 6, 2023
Columbia Riverkeeper	June 6, 2023
Bob Carroll	June 6, 2023
Brent Stephens	June 6, 2023
Mayor Mike Canon, City of Goldendale	June 6, 2023

[19] *See* transcripts of the May 3, 2023 draft EIS public meetings issued on June 1, 2023.

Commenting Entity	Date Filed
Cynthia M. George	June 6, 2023
David A. Myers	June 6, 2023
U.S. Department of the Interior (Interior)	June 6, 2023; August 4, 2023
U.S. Environmental Protection Agency (EPA)	June 6, 2023
Garth Bachman	June 6, 2023
James Oliver	June 6, 2023
Joseph Clare	June 6, 2023
Joseph Bond	June 6, 2023
Klickitat County Public Works Department	June 6, 2023
Marshall Wilson McGrady	June 6, 2023
Matthew Nosack	June 6, 2023
Michelle Murphy	June 6, 2023
Nate Stokes	June 6, 2023
Rye Development (on behalf of FFP Project 101, LLC)	June 6, 2023; August 11, 2023
Steve Hussey	June 6, 2023
Travis Swayze	June 6, 2023
Turlock Irrigation District (TID)	June 6, 2023
Uriah J. Chipman	June 6, 2023
Wayne Tanner	June 6, 2023
Washington Department of Fish and Wildlife (Washington DFW)	June 6, 2023
William Hodges	June 6, 2023
Public Utility District No. 1 of Klickitat County (Klickitat PUD)	June 7. 2023
Larry O. Moser	June 7, 2023
Les Perkins	June 7, 2023
Marcy Grail	June 7, 2023
Matt Smyth	June 7, 2023
Mike McArthur	June 7, 2023
Peter Ullrey	June 7, 2023
Rylan M. Grimes	June 7, 2023
Theone Wheeler	June 7, 2023
Confederated Tribes and Bands of the Yakama Nation (Yakama Nation)	June 7, 2023
Confederated Tribes of the Umatilla Indian Reservation (Umatilla Tribes)	June 16, 2023; January 23, 2024

Comments supporting (81 submittals) and opposing (41 submittals) the project were filed or made at the draft EIS public meetings. We do not address general comments supporting or objecting to the project, minor editorial changes, requests for a legal determination (e.g., recommendations for facilities to be considered licensed project works and enclosed within the project boundary, etc.), or reiterate a stakeholder's position or recommendation that has been previously provided. Rather, we

summarize the comments received on the draft EIS that pertain to the analyses; provide responses to those comments; and indicate, where appropriate, how we modified the final EIS. Below, we group the comment summaries and responses by topic for convenience.

GENERAL COMMENTS

Comment: The Environmental Groups state that the Commission should apply the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations that were in effect prior to the CEQ's July 16, 2020 final rule to revise the EIS.

Response: We prepared this EIS in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA),[20] the Council on Environmental Quality (CEQ) regulations for implementing NEPA,[21] and the Commission's implementing regulations. [22]

Comment: Jessica Metta, on behalf of the Mid-Columbia Economic Development District, states that the draft EIS should "consider the positive environmental impacts of cleaning up a very contaminated industrial site and utilizing it in a way that will help the region meet its clean energy goals over the next century."

Response: No modification to the EIS is required because the EIS already addresses these potential benefits.

Comment: EPA recommends the final EIS summarize and incorporate the section 401 Water Quality Certification conditions and commit to the conditions.

Response: The final EIS incorporates the Water Quality Certification (WQC) conditions. As a general matter, although the conditions of a valid Water Quality Certification are mandatory, we must still weigh the benefits and costs of these conditions as required by sections 4(e) and 10(a)(1) of the Federal Power Act (FPA). As we discuss in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix G, the recommended Staff Alternative includes all of the Water Quality Certification conditions.

Comment: EPA suggests that the EIS summarize the status of all permits or approvals needed by the project to help the public and responsible agencies understand the scope of work and assist with construction planning and scheduling, as well as measures to reduce risks to environmental resources.

Response: Appendix C of the final EIS describes the status of those statutory and federal regulatory requirements needed for the Commission to issue a licensing decision (e.g., FPA, Clean Water Act, Endangered Species Act (ESA), National Historic Preservation Act (NHPA),

[20] National Environmental Policy Act of 1969 amended (Pub. L. 91-190. 42 U.S.C. §§ 4321–4347, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, Pub. L. 97-258, §4(b), September 13, 1982, Pub. L. 118-5, June 3, 2023).

[21] 40 CFR Parts 1500-1508

[22] 18 CFR Part 380.

etc.). Any other regulatory requirements that do not relate to the Commission's licensing jurisdiction are beyond the scope of this EIS.

Comment: TID states that the Commission should hold the EIS process in abeyance until FFP demonstrates that it has: (1) secured the requisite property rights to construct the upper reservoir on property currently leased by Tuolumne Wind Project Authority (TWPA), which would include FFP obtaining TWPA's written consent to the construction of the project, as the proposed location for the project could change without such consent; (2) mitigated the adverse impacts on TWPA's wind farm caused by the project and TWPA has approved the mitigation measures; and (3) entered into an agreement with TWPA to compensate TWPA and other stakeholders for any adverse impacts that the project causes to the wind farm that are not mitigated, so that TID's ratepayers are not stuck paying the costs of such adverse impacts.

Response: Securing all the property rights needed to develop a project is not a prerequisite to receive a license. However, if a license is issued for the project, Standard License Article 5 requires that the licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project.

Regarding property damage mitigation, the Commission does not have authority to adjudicate claims for, or to require payment of damages for the project-induced adverse effects to property of others.[23] Should the project be licensed and constructed and TID believes that adverse project-related effects are occurring to its wind farms, they can seek redress with FFP in state court.[24]

Regarding the potential for the proposed project to adversely affect operation of the wind farm, the EIS analyzes the compatibility of the proposed project with existing land uses (i.e., existing wind farms located adjacent to and near the project). The analysis in section 3.3.6.2, *Recreation and Land Use, Environmental Effects*, concludes that construction and operation of the project should not be incompatible with the adjoining wind farm's operation.

Comment: Columbia Riverkeeper requests that the response to comments section of the final EIS include a chart summarizing "each alternative and the impacts to endangered species, cultural resources, wetlands, air quality, water quality, drinking water, environmental justice, and wild and scenic rivers."

Response: The effects of constructing the project on environmental resources is discussed in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix G. Therefore, a summary table is not needed or required.

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[23] *See, e.g.*, *Ohio Power Co*., 71 FERC ¶ 61,092, at 61,312 (1995) (citing *S.C. Pub. Serv. Auth. v. FERC*, 850 F.2d 788, 795 (D.C. Cir. 1988)).

[24] *See PacifiCorp*, 133 FERC ¶ 61,232, at P 163 (2010), *order on reh'g*, 135 FERC ¶ 61,064 (2011); *Portland Gen. Elec. Co.*, 107 FERC ¶ 61,158, at PP 27-33 (2004); *FPL Energy Maine Hydro, LLC*, 106 FERC ¶ 61,038, at PP 53-55 (2004).

PROJECT FACILITIES

Comment: Interior states that the Commission should determine and state in the EIS whether the intake pool and Klickitat PUD's existing pump station and two-mile-long water conveyance line should be project facilities and included in the project boundary because "delaying the definition of the project boundary affects the FWS's ability to adequately analyze the project impacts and provide meaningful protection, mitigation, and enhancement measures associated with the facilities' use and maintenance during the duration of the license." Interior states that FFP has not proposed any other alternative source of supply of water to fill and maintain the reservoirs; therefore, Klickitat PUD's facilities as well as the culvert within the railroad berm are clearly necessary for the operation and maintenance of the project. In addition, Interior and other commenters assert that the EIS must address the environmental effects of these facilities. Interior adds that the Commission has previously included within pumped storage project boundaries the lands on which water fill and conveyance systems occur, even if not owned by the applicant (citing *GB Energy Park LLC*, 157 FERC 62,196 (2016) (licensing order for the Gordon Butte Pumped Storage Project No. 13642, including within the project boundary the irrigation facilities of the private ranch used to obtain the water for the project). NMFS states that the Commission should "(1) clearly state that two iterations of the project boundary are being considered and (2) develop project alternatives that analyze both boundary iterations."

Response: As stated previously, a determination on whether certain facilities are considered licensed project works and enclosed within the project boundary will be made in the license order. In the final EIS, however, we evaluate the benefits and costs of measures recommended for the facilities in question (i.e., the culvert within the railway berm, intake pool, and Klickitat PUD's municipal intake, pump station, and water conveyance line) and provide staff recommendations, with certain caveats related to a project boundary determination. For example, section 5.1, *Comprehensive Development and Recommended Alternative*, and Appendix G state that if Klickitat PUD's existing water pump station, infiltration gallery, and conveyance pipe are determined by the Commission to be licensed project works, then FFP could be required to enclose these facilities within the project boundary, file updated project boundary exhibits, and maintain these facilities for the term of any license issued.

Comment: In comments provided at the draft EIS public meetings, Klickitat PUD clarified that Klickitat PUD currently draws water from the intake pool to serve three customers (one agricultural customer and two industrial customers including FFP).

Response: We have revised the final EIS accordingly.

Comment: Klickitat PUD and Klickitat County Natural Resources and Economic Development Department state that the intake pool is not owned or controlled by Klickitat PUD; rather, the intake pool is a "backwater slough formed as a result of a railroad berm being constructed to bridge a land feature and [to] support Burlington Northern Sante Fe Railway's (BNSF) railroad." state that the railway berm containing the culvert is not owned by or under the control of Klickitat PUD but is instead owned by BNSF.

Response: We have revised the final EIS accordingly.

Comment: Interior states that the draft EIS does not appear to indicate how the water used to supply the project would be conveyed.

Response: Section 2.2.1, *Existing Facilities to be used by the Project*, states that water for the project would be pumped up from the infiltration gallery at the intake pool and conveyed via an existing 2-mile-long industrial water conveyance line to a water supply vault at the former aluminum smelter site. Section 2.2.4.1, *Initial Reservoir Fill*, explains that FFP's new water fill line would connect through a shut-off and throttling valve to a new flanged water supply service connection in Klickitat PUD's municipal water supply vault. No modification to the EIS is required.

PURPOSE OF ACTION AND NEED FOR POWER

Comment: The Environmental Groups state that the Commission has failed to properly define the project's purpose and need and suggests that the true purpose of the project is to "facilitate the transition to Washington's clean energy future." The Environmental Groups also state that the Commission must assess all reasonable alternatives that will support this goal and that "to do less would be to artificially restrict the purpose and need for this project to no other end than to prevent the consideration of reasonable alternatives." Columbia Riverkeeper added that "we do not need the Goldendale Pumped Storage Project to meet the Northwest clean energy goal. Instead, we should look to the Columbia River Intertribal Fish Commission's Energy Vision Report, which provides an in-depth look at how to meet the region's clean energy goals while accounting for the rights of tribal nations."

In contrast, the Mayor of the City of Goldendale stated that the State of Washington's Clean Energy Transformation Act requires that all the state's 19 utilities supply non-global greenhouse electricity by 2045 and that it will be necessary to build new infrastructure like the Goldendale Project to supply this green energy.

Response: Section 1.2.1, *Purpose of Action*, explains that the purpose of the proposed project is to provide a new source of hydroelectric power that would be used to meet peak energy demands and provide ancillary services to the electrical grid, such as balancing load when power from renewables is not available. Section 1.2.2, *Need for Power*, acknowledges that pumped storage would also play a role in meeting the State of Washington's goal of transitioning to 100 percent clean electricity by 2045; however, the EIS also considers the needs in the operating region in which the project would be located and finds that power from the project would help meet demand for power for the region in both the short- and long-term, regardless of the State's renewable energy goal. If the Commission denies the license, the proposed services that the project would provide to the grid, including peaking generation and black-start capability, would need to be provided by other existing projects or in some other fashion by the system operator. No modification of the EIS is required. We address alternative technologies that might be used to meet the state's goals below under the Proposed Action and Alternatives comment section.

Comment: EPA states the agency appreciates that section 1.2.2, *Need for Power*, discusses the regional energy needs but that it "would be useful to the public for the FEIS to address the potential impacts across the full temporal scope of the proposed license term (also, please clarify whether it is 30 or 50 years) in addition to the provided 10-year analysis."

Response: The North American Electric Reliability Corporation (NERC) annually forecasts electricity supply and demand nationally and regionally for a 10-year period. Trying to estimate supply and demand beyond these 10-year projections would be speculative. Regarding the temporal scope of a potential license term, the Commission established a 40-year default license term policy for original and new licenses, effective October 26, 2017. A decision on the term of the license would be discussed in the license order, should the project be licensed.

PROPOSED ACTION AND ALTERNATIVES

Comment: Jack Compton states that it seems illogical to license a project that would use 4.3 million megawatt-hours (MWh) annually to pump water to the upper reservoir but would generate for only 8 hours per day and produce only 3.5 million MWh per year.

EPA states it would also be useful to the public for the final EIS to "explain the functionality of the proposed project with additional context describing how this project will be integrated into the regional electrical grid (i.e., the local wind and solar facilities)."

Response: As described in section 4.0, *Developmental Analysis*, pumped storage projects are generally net energy consumers because they require more energy to pump water to the upper reservoir than is produced when generating. However, pumped storage projects have other benefits that help offset the higher costs of pumping including meeting peak energy needs and providing ancillary services to the transmission grid (such as spinning reserves, grid frequency regulation, voltage support and regulation, load following capability, peak shaving, and black-start capability). Currently, the electrical grid is balanced by regulating the various sources of power to provide additional power within a few minutes such that the need for electricity is met and both voltage and frequency of the electrical grid are kept constant. With the increased percentage of wind and solar power, which are intermittent and variable sources of power, there is a greater need for balancing power. The EIS already explains that power generated from pumped storage projects help stabilize power demand and grid stability when these intermittent resources are unavailable. Therefore, no modifications to the EIS are needed.

Comment: John D. Loranger states that "storage options that are less invasive like gravity storage should be explored." The Environmental Groups state that the applicant admits that there are "other viable, least-cost energy storage options available" in addition to its preferred pumped storage technology; therefore, the Environmental Groups believe that the Commission is obligated to identify these alternatives (such as lithium-ion (Li-ion) batteries) and explore the relative environmental impacts of implementing these technologies to meet Washington's goal of moving to all renewable electricity generation.

Eric Strid states that pumped storage directly competes with new battery technologies that are getting cheaper. Mr. Strid states that the "total cost of this type of project is around $200 per kilowatt hour of energy stored. While lithium-ion batteries now cost about $130 per kilowatt hour, it will be less than $100 per kilowatt hour by 2030, when this project might be done."

Response: Under NEPA, a federal agency may use the proposed project purpose and need of an applicant as the basis for evaluating alternatives. However, the purpose and need may not be tailored so narrowly as to preclude the consideration of an alternative, but an agency need only

consider alternatives that will bring about the ends of the proposed action, and the evaluation is "shaped by the application at issue and by the function that agency plays in the decisional process." *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 199 (D.C. Cir. 1991). Further, alternatives may be eliminated if they will not achieve a project's goals or are otherwise unreasonable. 42 U.S.C. § 4332(2)(C)(iii). As the Li-ion battery storage facility and other technologies are energy alternatives outside of the Commission's jurisdiction, analyzing such alternatives go beyond NEPA's "rule of reason" for an agency to identify and analyze technically and economically feasible alternatives and is not necessary to analyze the present proposal. Similarly, when analyzing the proposed project, we need not develop and analyze every potential location for the proposed action as they are not proposed by the applicant.

Regardless, as discussed in section 6.0 of Exhibit D of FFP's license application, Li-ion batteries generally have excellent energy and power densities and round-trip efficiency; however, the average duration of Li-ion batteries is 4 hours, which limits their ability to support the integration of high percentages of renewable energy. FFP also points out that the relatively short cycle life of Li-ion batteries, which can range from 500 to 10,000 cycles depending on usage and the specific Li-ion chemistry used, translates into a 3- to 15-year lifespan, making Li-ion batteries an expensive choice for long-term grid applications. Whereas a pumped storage project can have a life of 100 years. There is insufficient information to determine whether the other technologies represent reasonable, technically, and economically feasible alternatives to a closed-loop pump storage project. Further, to adequately compare the environmental effects of the other technologies to the specifics of the Goldendale Project requires site-specific information about those technologies and their siting, which is not available for analysis. For these reasons, the EIS continues to decline to assess these technologies further (see Appendix D).

Comment: Several commenters request that the Commission include an alternative site location analysis in the final EIS.

Response: As stated in Appendix D, *Alternatives Considered But Eliminated From Detailed Analysis*, the Commission does not design or site projects. Rather, it determines whether a project as proposed by an applicant can be constructed and operated in a fashion that is in the public interest. No other specific alternative sites or locations for the proposed project are being considered by FFP; therefore, there is no basis on which to evaluate alternative site locations in the EIS. Our environmental analysis considered FFP's proposal as well as measures recommended by stakeholders, including those that recommended operational design changes, or other measures designed to avoid or minimize impacts to specific resources.

Comment: The Environmental Groups state that "FERC neglected to analyze an alternative that would have powered the project exclusively with renewable energy. Such an alternative could include a power purchase agreement or other mechanism to ensure the project draws its power solely from renewable energy operations. At the minimum, FERC must explain why such an alternative is not feasible—particularly when this project touts itself as one that promotes renewable energy."

Response: As stated in section 1.2.2, *Need for Power*, FFP proposes to use surplus renewable power for the project to pump water from the lower-elevation reservoir to the higher reservoir during low demand periods and generate power when grid operators need more energy to meet

demand or to balance sudden drop-offs in solar or wind production. Renewable power can include hydropower, wind, and solar. We have no reason to believe that FFP will not use renewable power. Given the project's design, renewables will make up the bulk if not all of that power, particularly as the state reduces its reliance of fossil fuels.

GEOLOGIC AND SOIL RESOURCES

Comment: American Rivers states that the removal of soils within the West Surface Impoundment (WSI) without an exhaustive cleanup plan for the WSI could have significant adverse impacts on Columbia River surface water and groundwater.

Response: As discussed in section 3.3.1, *Geology and Soils, Affected Environment*, the contents of the WSI have been determined not to be hazardous or dangerous. Therefore, it is reasonable to conclude that implementing FFP's proposed Draft Cleanup Action Plan (which includes methods for excavating and disposing of the site contents and addresses monitoring wells associated with the cleanup activities) and FFP's best management practices (BMPs) to control erosion, stormwater, and hazardous spills is sufficient to prevent adverse effects to surface and groundwater resources. A more "exhaustive and final cleanup plan" is not required at this time. As noted in the EIS, FFP will continue to coordinate with Washington DOE as part of the RCRA process to clean up the smelter site to ensure that the project's final construction plans do not interfere with cleanup of the site. This includes negotiating with Washington DOE to develop a Prospective Purchaser Consent Decree and a Revised Remedial Investigation and Feasibility Study to remediate contamination within the proposed project footprint.

Comment: Klickitat County Public Works Department states that FFP must do the following: (1) evaluate roads and bridges used for haul routes using Klickitat County's "Geotechnical Guidelines"; (2) prepare a "Bridge Load Rating Analysis" for any county bridges used as haul routes; (3) prepare a report of the findings that identifies the time of year that hauling for construction can occur and mitigation if the roads or bridges are not adequate to support construction loads; (4) complete a formal "Haul Route Agreement" with Klickitat County prior to the start of construction; (5) meet requirements of the most current versions of the "Washington State Department of Transportation, WSDOT, Standard Specifications for Road, Bridge, and Municipal Construction" for all materials placed on county roads; (5) obtain access permits prior to construction for any new driveways or intersections that access onto county roads; (6) obtain final security and a "Road Haul Agreement" prior to construction to address road maintenance issues and potentials damages that arise during construction; and (7) address dust concerns on their haul routes.

Response: As described in section 3.3.9.2, *Socioeconomics, Environmental Effects*, FFP proposes to work with Klickitat County to obtain an agreement for haul routes and other road use actions as needed for construction. FFP also proposes to develop a construction traffic management plan containing applicable traffic control measures and protocols for coordinating construction schedules, any temporary road or lane closures, and any traffic control measures with Washington Department of Transportation and Klickitat County to minimize disruption of traffic on public roads. However, the level of analysis for the bridges and haul roads recommended by Klickitat County Public Works is not necessary here because that level of

detail will depend on the project's final design. FFP will have to provide the requested information to obtain specific local permits from Klickitat County and the state.

Comment: Dan Hopter expressed concern with the existing fault lines near the project and the potential for flooding of farmers' and ranchers' homes from uncontrolled spill from the reservoirs.

Response: As discussed in section 3.3.1.1, *Geology and Soils, Environmental Effects*, previous geotechnical studies show that the faults in the vicinity of the proposed project are not capable of producing earthquakes that could lead to soil liquefaction or lateral spreading around the reservoirs. Further, FFP's proposal to conduct further geotechnical studies, incorporate those findings into the final design of the reservoirs, and construct the project consistent with the Commission's dam safety requirements would mitigate the risk of dam failure and any subsequent adverse effects on the land and waters.

Comment: FFP clarified that 169,700 cubic yards of materials (rather than the 145,550 cubic yards reported in the draft EIS) would need to be removed from the West Surface Impoundment Site. FFP also states that it is preparing a Revised Remedial Investigation and Feasibility Study in cooperation with Washington DOE and parties involved in cleanup of the CGA smelter site, which is to be completed prior to mobilizing any equipment or personnel to the site.

Response: We revised the final EIS accordingly.

AQUATIC RESOURCES

Comment: FFP clarified that only 10 of the 15 groundwater monitoring wells associated with the rehabilitation of the closed smelter site would need to be decommissioned and replaced.

Response: We have revised the final EIS accordingly.

Comment: NMFS question's staff analysis in the draft EIS that states restricting the timing of water withdrawals would delay the initial fill. NMFS states that the EIS analysis should consider the consumptive water right limit that FFP would be operating under (i.e., 4,137 acre-feet per year) and the fact that FFP proposes to conduct the initial fill over two calendar years. NMFS states its current recommendation for FFP not to withdraw water for project purposes between April 1 and August 31 would still provide a seven-month window for FFP to complete its initial fill (September through March) and would straddle two calendar years. Therefore, NMFS believes its revised 10(j) recommendation to not withdraw water from the Columbia River for the initial fill or periodic make up water between April 1 and August 31 would not delay the initial fill. NMFS also clarifies that the agency is less concerned with the relatively small withdrawals needed for construction activities and is mainly concerned that the applicant avoids the larger withdrawals needed for filling the reservoirs (i.e., the initial fill and annual makeup fill) during salmon migration periods. Interior, American Rivers, and Washington DFW support the revised seasonal water withdraw restriction as recommended by NMFS.

Since issuance of the draft EIS, FFP has agreed not to withdraw water for initial fill any time from April 1 to August 31 consistent with NMFS's recommendation; however, it continues

to oppose any seasonal restriction on utilizing Klickitat PUD water for construction purposes or for refilling the reservoir each year.

Klickitat PUD and Dave McClure from Klickitat County Natural Resources and Economic Development Department state that water for the project will be provided by a service connection to Klickitat PUD's municipal water system and "curtailing use of Klickitat PUD's water right based on the purpose of use instead of priority date would be inconsistent with Washington State's water right framework, which is based on the doctrine of prior appropriation, first in time first in right." Further, Klickitat PUD and FFP state that Klickitat PUD's diversion of water from the Columbia River and exercise of its existing water right are not attributable to the proposed project, and as such they cannot be considered effects of the proposed project.

Response: We revised the final EIS to reflect NMFS's modified recommendations as well as FFP's proposal to adhere to the timing restriction for the initial fill only. As discussed in section 5.1, *Comprehensive Development and Recommended Alternative*, staff now recommends restricting the timing of Columbia River withdrawals for the initial fill to September 1 to March 31 as recommended by NMFS and agreed to by FFP because the restriction would prevent the project's withdrawal from contributing to further reductions in the Columbia River flow that could affect migrating listed salmon and, given FFP's agreement, would not unduly delay the initial fill. However, we also recommend refilling the reservoir outside the migration season to prevent further reductions in the Columbia River flows during the migration season. Accommodating the smaller amounts needed to refill the impoundment should be easier to achieve over the allotted seven-month timeframe than the initial fill. Restricting when the project can withdraw water to fill the reservoir does not affect Klickitat PUD's water right because Klickitat PUD would be free to continue to withdraw water to service its other customers.

Comment: Interior recommends that the final EIS include sufficient detail regarding the amount, timing, and duration of water withdrawals needed for construction activities, initial fill, and make-up water each year.

Response: FFP estimates that it will need 7,640 acre-feet to complete the initial fill, which it now proposes to complete over two calendar years from September 1 through March 31. FFP expects to need 360 acre-feet of water each year to replenish water lost through evaporation and seepage and proposes to maintain flexibility to withdraw that amount when needed (no timing restriction on annual make-up water). While the final EIS does not speculate as to the amount of water needed for construction activities, the amount is typically small and temporary such that it would have a negligible effect on Columbia River flows. In addition, NMFS notes in its June 6, 2023, comment letter that the smaller withdrawals for construction activities are not a major concern to NMFS.

Comment: NMFS states that because FFP does not propose to conduct any in-water work in the Columbia River, it no longer recommends a condition to restrict FFP from placing permanent structures or impoundments in the Columbia River or restrict pile driving.

Response: We have revised the final EIS accordingly. Because the basis of NMFS's initial recommendation to avoid in-water work and installing permanent structures in the Columbia

River was to prevent noise disturbance and predation of listed salmon, we removed the discussion of predation and noise effects from the final EIS.

Comment: NMFS states it recommended an intake pool entrainment study back in 2015 under a prior proposal in the same project area (i.e., filed under the John Day Pumped Storage Hydroelectric Project No. 13333). Therefore, NMFS believes Commission staff's determination in the draft EIS that NMFS's recommendation for an intake pool entrainment study is outside the scope of 10(j) of the FPA because the study should have been requested earlier is "invalid."

Response: NMFS' recommended intake pool entrainment study does not fall within the scope of section 10j, because it is a study that can be physically conducted prior to license issuance without the need for a licensing authorization to complete. Although the recommendation does not fall within the scope of section 10(j), the final EIS still considers NMFS's recommendation under the broad public interest standard of section 10(a)(1) of the FPA. In the final EIS, staff recommends that project water withdrawals occur outside of the peak smolt migration period, and therefore, the project is not likely to contribute to entrainment of smolts into the intake pool. Therefore, we conclude in Appendix G that we have no need for the information that would be generated from the recommended survey and do not recommend it.

Comment: NMFS states that the intake pool will be included in NMFS's action area for an ESA consultation regardless of whether the Commission decides it should be within the project boundary and continues to recommend in its revised 10(j) recommendations that FFP conduct a smolt entrainment study in the intake pool unless FFP and/or Klickitat PUD file a written commitment to screen the known culvert to NMFS's criteria. In its revised 10(j) recommendations, Interior recommends that FFP develop and file with the Commission a water flow and smolt monitoring plan that includes methods for monitoring the water flow rate through the culvert prior to and during water withdrawals, document smolt presence on the river side and intake pool side of the culvert, and provide reports to the agencies. Interior states this plan would be required in years when FFP needs to withdraw water within the smolt migration period (April 1 through August 31) and the culvert has not been screened in a manner consistent with NMFS's screening criteria and no fry and juvenile salmonid surveys have been conducted within the intake pool. American Rivers and the Yakama Nation also recommend that FFP conduct an intake pool entrainment study.

Washington DFW supports a plan to screen the culvert consistent with NMFS's screening criteria and states that this measure "would be sufficient to mitigate some project impacts to salmonid species." Further, Washington DFW states that "fish species documented within the intake pool include piscivorous species that could prey on smolts that become entrained by the culvert and would likely preclude the ability to document any present salmonids."

Klickitat County Natural Resources and Economic Development Department and Klickitat PUD state that they are not aware of any evidence that anadromous salmon are being entrained into the intake pool adjacent to the Columbia River. The County and Klickitat PUD also note that neither the intake pool nor the culvert between the intake pool and Columbia River are owned or controlled by Klickitat PUD. The culvert is potentially owned by the Burlington National Santa Fe Railway, which owns the berm which it penetrates. However, Klickitat PUD also expressed willingness to work with the BNSF Railway company to screen the culvert.

Response: We have revised the final EIS to indicate that Klickitat PUD does not own or control the intake pool or the culvert. Regardless, because we are now recommending that FFP not withdraw water to fill or refill the impoundment during the peak salmon migration period, any salmon that enter the pool and that might be lost to predators would not likely be the result of project operation. Consequently, we conclude in Appendix G that we have no basis for recommending the screening of the culvert, salmon smolt surveys within the pool, or development of a water flow and smolt monitoring plan.

Comment: Interior states that it assumes that Klickitat PUD has conducted periodic maintenance checks of its intake pump station, but that the final EIS should "directly address this assumption." NMFS, Interior, and American Rivers recommend that FFP ensure that Klickitat PUD's infiltration gallery is properly maintained and if operational issues are discovered or develop over time, Klickitat PUD and FFP should coordinate with the agencies to improve and/or replace the infiltration gallery with NMFS's preferred screening methods outlined in NMFS's 2023 Anadromous Salmonid Passage Facility Design Manual. Interior further recommends that FFP, in conjunction with Klickitat PUD, develop a plan for monitoring the effectiveness of the existing intake screen as well as any screens installed on the culverts within the railway berm over the license term.

The Environmental Groups state that the draft EIS does not adequately address potential impacts to fish species and that the Commission failed to gather "knowable information" such as potential presence of fish species entering the intake pool and potential for entrainment within the intake. They also state that because both FWS and Washington DFW have stated that Klickitat PUD's intake does not meet NMFS's criteria, the design "likely is not sufficient to ensure native fish are not entrained or impinged at the facility." They also comment that "FERC's approach to assume there is no impact runs counter to the goal of NEPA, which is to disclose the potential impacts and allow for the meaningful consideration of what the project will do to the environment, in contrast to other alternative courses of action."

The Yakama Nation states that it will "not accept unenforceable promises of future intake screening or limited withdrawals during juvenile salmonid migration season as a fictional environmental evaluation for the purposes of expediting this DEIS with incomplete or inaccurate information."

Response: As stated in the draft EIS and as a general matter, if a license is issued, the Commission will determine what facilities should be licensed and included within the project boundary. Appendix G states that if the Commission determines that Klickitat PUD's infiltration gallery, pumping station, and the BNSF-owned culvert should not be included in the license as project facilities, the Commission would have no basis for requiring FFP to coordinate with the agencies to ensure that the infiltration gallery is maintained and meets NMFS's screening criteria or to recommend a plan for monitoring the effectiveness of the existing infiltration gallery and any screens installed on the culvert. If the Commission determines that the infiltration gallery, pumping station, and culvert should be included as licensed project facilities, then FFP could be required to ensure that they are maintained. However, there is no information in the record that suggests that Klickitat PUD's infiltration gallery is not operating as intended or would require repairs or modifications in the future. Regardless, fry and juvenile anadromous fish that enter the intake pool are unlikely to become entrained into the project's reservoirs because fry would

have to pass through about 30 feet of gravel in Klickitat PUD's infiltration gallery which should be impenetrable to fry. In addition, we note that Interior states in its letter commenting on the draft EIS that "while [an] infiltration gallery is not the preferred method of fish screening, the FWS acknowledges that it has been reviewed by engineers and deemed sufficient to mitigate entrainment concerns, in this case." Therefore, we have no basis for recommending that the FFP modify Klickitat PUD's intake and infiltration gallery.

Comment: NMFS disagrees with the draft EIS's assertion that smolts that enter the intake pool would only be lost when the hydrologic connection between the pool and Columbia River is lost (i.e., when intake pool water level drops below the culvert elevation on the intake pool side). NMFS states that any smolts that enter the intake pool would likely be lost to predation, which it considers to be "take."

Response: Staff agree that any fish that enter the intake pool may be vulnerable to predation by piscivorous fish and birds and have revised the final EIS accordingly. However, that predation would likely occur regardless of whether the proposed project is constructed because Klickitat PUD is serving other customers from this facility, and it is reasonable to conclude that it will continue to seek other customers for its available water right regardless of whether the project is built. As discussed above, staff is now recommending that the initial fill and refill of the project reservoirs occur outside the peak juvenile salmon migration period; therefore, project operation would not likely contribute to entrainment of smolts within the intake pool.

Comment: NMFS requests that the Commission provide a source for the following statement: "FFP states that while some resident fish species have been observed in the intake pool, it's unclear if their presence is the result of entrainment through the culvert within the railway berm, introduction from anglers, or predatory wildlife dropping their prey."

Response: As stated in 3.3.3.1, *Aquatic Resources, Affected Environment*, FFP described the existing fish community in the intake pool in its Pre-Application Document which was based on an aquatic reconnaissance survey it conducted on May 4, 2015, and anecdotal angling information. The EIS has been revised to clarify that how these fish enter the pool is unknown.

Comment: NMFS and Interior state that while there is one confirmed submerged culvert between the Columbia River and the intake pool, there is potentially a second submerged culvert that also provides a hydrologic connection between these two bodies of water. The agencies state that the EIS should be revised to clarify the potential existence of the second submerged culvert and the culvert diameter should be given along with the culvert length.

Response: Section 3.3.3.2, *Fisheries Resources, Environmental Effects*, clearly states that historical information from the BNSF railway company suggests the potential presence of two 42-inch culverts within the railway berm; however, FFP's visual inspections and an investigation with an underwater remotely operated vehicle could only locate one culvert in the railway berm. However, we have revised the final EIS to indicate that the diameter of the known culvert is 42 inches and that the approximate length of that culvert is 120 feet from end to end.

Comment: NMFS states that the minimum flow targets for the Columbia River system near the project are not set annually by the Technical Management Team as stated in section 3.3.3.2,

Fisheries Resources, Environmental Effects, but are instead set by the water supply forecast (i.e., the projected runoff volume).

Response: We have revised section 3.3.3.2 of the final EIS accordingly.

Comment: NMFS states that "FERC's argument that NMFS has already accounted for the project's consumptive use impacts on ESA-listed salmon and steelhead in the Columbia River because flow objectives were developed after KPUD's water right priority date (2008 and 1969, respectively) is flawed and should be amended." NMFS clarifies that the flow objectives for the Columbia River should be interpreted as a "minimum biological guideline" based on the biological response of juvenile salmon and steelhead to river flows and should not be interpreted as baseline conditions for the Columbia River system. Further, NMFS states that the flow guidelines are "designed to guide pre-season reservoir planning and in-season flow management decisions, not to justify the continued diminution of flows until thresholds are reached."

Response: Section 3.3.3.2, *Fisheries Resources, Environmental Effects*, states that the water for the project would be purchased from Klickitat PUD under its existing water right that was in place prior to the minimum flow targets being established for the Columbia River. The purpose of this statement is to provide context showing that the project would not result in any new water appropriation, meaning that the water can be withdrawn by Klickitat PUD with or without the project. When analyzing the potential effects of project water withdrawals on Columbia River water quantity, staff compared the rate and volume of water needed for project purposes with the baseline conditions expected in the Columbia River using flow data from the nearest USGS gage, not minimum flow targets. Our analysis continues to find that even though the withdrawals would add to ongoing losses occurring from irrigation and other withdrawals in the basin, the project withdrawals are relatively small temporary withdrawals. Nonetheless, because, as discussed above, we are now recommending that FFP not fill or refill the impoundment between April 1 and August 31, project operation would not contribute to Columbia River flow reductions during the peak salmonid smolt migration period and thus would not impede ESA-listed salmon smolt migration.

Comment: NMFS states that the project will "further exacerbate the already substantial flow reductions" in the Columbia River and that the Commission's analysis should be expanded to address the project's impacts when added to the other existing water withdrawals. NMFS notes that there are many tools and resources available to help better understand, and even estimate, the impacts of Columbia River water withdrawals on salmon and steelhead smolt travel times and survival such as the Comprehensive Passage (COMPASS) Model developed by NMFS's Northwest Fisheries Science Center. NMFS states that reduced spring/summer Columbia River flows increases the time and energy it takes juvenile salmonids to travel from their natal to ocean habitat, which increases their exposure to native and nonnative predators and reduces their survival rates (lower smolt-to-adult returns). Additionally, NMFS comments that reduced spring/summer flows can decrease access to shallow water habitat along the riverbank, decrease shoreline invertebrate prey availability, decrease turbidity which further increases vulnerability to visual predators, and decrease the size of the Columbia River plume, a key transitional habitat from the river to the nearshore oceanic environment. Further, NMFS states that because the intake pool is hydraulically connected to the Columbia River, a drawdown of the intake pool water level would "result in an increase in flow out of the Columbia River and into the KPUD

intake pool until the two bodies of water equilibrate" which would increase the likelihood of smolts entering the intake pool, particularly during periods when smolts are likely migrating. NMFS notes that "a daily average of 32,709 salmon and steelhead smolts are estimated to pass the section of the Columbia River immediately adjacent to the KPUD intake pool from 1 April to 31 August. This value can be as high as 445,165 smolts on a single day during this period of time." NMFS also states that if the Commission were to adopt its recommendation to limit the timing of project water withdrawals, the project "would not contribute to the cumulative reduction in spring and summer flows in the lower Columbia River and additional, expanded analysis of this issue would not be necessary."

The Yakama Nation also express concern with the 7,640 acre-feet of water that would be taken from the Columbia River "during periods of annual low water level where multiple ESA-listed species are already subject to unacceptably high mortality due to cumulative effects of higher water temperature, lower stream connectivity and available habitat, greater predation, and man-made migration obstacles."

Response: For the reasons already discussed, we have adopted NMFS's recommendation to limit the timing of withdrawal to fill and refill the reservoirs; therefore, the project would not contribute to flow reductions during the peak salmonid smolt migration period and no further analysis needed.

Comment: American Rivers and several citizens expressed concern with the release of turbid, nutrient-rich, warm, and potentially hazardous effluent into the river. American Rivers supports NMFS's prior recommendation that FFP not be permitted to release any effluent discharge into the Columbia River during construction or operation. Further, American Rivers recommends that FFP "have an emergency plan in place to ensure that the project construction and operation does not result in discharge to the Columbia River."

Interior states that the draft EIS does not appear to indicate how or where spilled water would be directed to the Columbia River.

Bryce Campbell states that the draft EIS did not appropriately address "mass releases of water from the storage pool" which he states could cause changes in downstream flow rates and affect turbidity in the Columbia River.

Response: Section 3.3.2.2, *Aquatic Resources, Environmental Effects*, addresses potential project effects on water quality. While FFP does not propose to discharge water in the Columbia River during the construction or operation phases, we cannot completely rule out the potential for an unanticipated discharge from occurring. However, FFP's proposed standard erosion control, stormwater pollution prevention, and hazardous spill control measures during construction should minimize potential effects on water quality in the Columbia River and other surface waters. FFP's proposed Dewatering Plan would allow FFP to collect and monitor groundwater during construction and ensure that its contents are not contaminated, and the proposed reservoir liners would minimize leakage and ensure that project contents do not degrade groundwater quality. Further, FFP's proposed Reservoir Water Quality Monitoring and Management Plan would ensure that any deterioration in water quality in the reservoirs is detected and measures are identified to protect wildlife that may incidentally encounter project

waters. Regarding American Rivers' recommendation that FFP develop an emergency plan, we note that Emergency Action Plans (EAPs) are an integral part of the Commission's dam safety program and thus would be required to be filed prior to operation. Filing requirements for EAPs are described in Part 12, Subpart C of the Commission's regulations (*see also* https://www.ferc.gov/industries-data/hydropower/dam-safety-and-inspections/eng-guidelines). Therefore, no revisions to the final EIS are needed.

Comment: Delmar Elthad is concerned about the ecological effects of installing large pumps in the Columbia River for filling the reservoirs and the fact that there will likely be "massive water evaporation" in the summer months that would reduce generation in those months.

Theone Wheeler states that the draft EIS "does not fully consider the impacts of the pipeline going into the Columbia River and how that will affect all the endangered aquatic life."

Response: As discussed in section 2.2, *Applicant's Proposal*, FFP does not propose to install any new water pumps or water lines in the Columbia River but would instead utilize existing infrastructure owned and operated by Klickitat PUD to complete the initial fill and to replace water lost due to evaporation and seepage. Regarding make-up water, FFP anticipates needing approximately 360 acre-feet annually to replace reservoir water lost due to evaporation and/or seepage. Therefore, FFP does not anticipate losing the potential to generate during the warm summer months when evaporation rates are higher.

Comment: Interior recommends that Commission staff include a "robust analysis" of cumulative effects to water resources (including groundwater, water quantity, and water quality) in the final EIS.

Response: Staff addressed the potential effects of the proposed project on water quality, water quantity, and groundwater in section 3.3.2, *Aquatic Resources*. As discussed previously, the proposed project would not result in any new water appropriation, meaning that the water can be withdrawn by Klickitat PUD with or without the project. Staff's analysis of both the rate and volume of water needed for project purposes found that even though the withdrawals would add to ongoing losses occurring from irrigation and other withdrawals in the basin, the project withdrawals are relatively small, temporary withdrawals. However, as discussed above, FFP has agreed not to withdraw water for the initial fill during the salmon migration season and staff is now recommending that any water needed to refill the reservoirs also not be withdrawn during the salmon migration season. This will prevent project operation from contributing to flow reductions in the Columbia River when salmon are migrating and any concomitant cumulative effects on water quality. In addition, FFP's proposals to collect and monitor groundwater during construction and ensure that its contents are not contaminated as well as sealing and lining the reservoirs would prevent seepage into the groundwater and ensure that project contents do not degrade groundwater quality. FFP's proposed Reservoir Water Quality Monitoring and Management Plan would ensure that any deterioration in water quality in the reservoirs is detected and measures are identified to protect wildlife that may incidentally encounter project waters. Thus, no changes to the final EIS are needed.

TERRESTRIAL RESOURCES

Comment: The Environmental Groups comment that the project would permanently destroy large segments of unique waterbodies (including waters of the U.S.) and cause downstream impacts to perennial waterbodies.

Response: We do not reach this conclusion in the final EIS. Potential effects of the project on wetlands and other surface waters are discussed in section 3.3.2.2, *Aquatic Resources, Environmental Effects*, and section 3.3.4.2, *Terrestrial Resources, Environmental Effects*. Construction of the upper and lower reservoirs would result in the filling and permanent loss of approximately 1.15 acres of ephemeral streams and associated stream buffers; however, FFP's proposed wetland mitigation measures such as establishing and rehabilitating a new stream course if possible and using construction BMPs to minimize adverse effects on downstream wetland functions and aquatic habitats would minimize adverse effects on streams and wetlands. Further, FFP's proposed erosion and sediment control plan, Spill Prevention Plan, and Stormwater Pollution Prevention Plan would contain standard provisions known to minimize construction-related effects on surface waters.

Comment: FFP states that the draft EIS contains outdated and/or inaccurate descriptions of Wetland A, Wetland B, Stream 1, and Stream 2. FFP's states that all references to these wetland and stream features should be removed from the EIS and recommends adding a footnote that says the following: "FFP states that while Wetland A, Wetland B, Stream S1 (also noted as Stream 1) and S2 (also noted as Stream 2) were resources contained in the original source material, they were later confirmed by additional studies including the USACE Jurisdictional Determination and the Washington DOE-approved Wetlands and Waters Delineation Report Rev 3 not to exist. The Applicant's consultant ERM's Wetlands and Waters Delineation Report Rev 3 as approved by the Washington DOE represents the most current and accurate descriptions of wetlands and waters within the project boundary."

Response: After reviewing FFP's Wetlands and Waters Delineation Report Rev 3 and updated jurisdictional wetland determination forms filed on October 10, 2023, we have revised the final EIS text to remove references to Wetland A, Wetland B, Stream 1, and Stream 2 and adjusted the numbers of project area wetlands and streams accordingly. However, because we used figures from Washington DOE's Final EIS that we could not modify, they still show the wetlands/streams determined not be jurisdictional.

Comment: Rebecca Sue Sonniksen states that, to mitigate wildfire risk, FFP must be required to have on-site firefighting equipment and pump trucks.

Response: Staff recommend in section 5.1, *Comprehensive Development and Recommended Alternative*, that FFP modify its proposed Vegetation Management Plan to include protocols for preventing and controlling wildfires during project construction and operation. The focus of such efforts is to ensure sufficient transmission line clearance, reduce wildfire fuel loads, and minimize potential for wildfire ignition. Licensees keep standard firefighting equipment (e.g, fire extinguishers) readily available during construction and operation. Pump trucks are specialized equipment that are not necessary to be kept on-site. Rather, licensees would

coordinate and timely notify local fire departments when such equipment is needed. Therefore, no changes to the EIS are needed.

Comment: American Rivers states that special status and culturally important plants described in section 3.3.4.1, *Terrestrial Resources, Affected Environment*, (such as smooth desert parsley, biscuitroot, and serviceberry important to the Yakama Nation) should also be analyzed in section 3.3.4.2, *Terrestrial Resources, Environmental Effects*. American Rivers also recommends that FFP be required to consult with affected Tribes during the development of the Vegetation Management and Monitoring Plan.

Response: Potential effects of the project construction and operation on vegetation (including special status and cultural significant plants) is described in section 3.3.4.2, *Terrestrial Resources, Environmental Effects*. Project construction would temporarily disturb 54.3 acres of vegetation and remove 193.6 acres of habitat, some of which could support culturally significant plants traditionally collected by Tribes for food and medicine gathering activities. Staff recommends in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix G that the Vegetation Management and Monitoring Plan include a provision to survey for state and federal listed plants in the spring and in the summer prior to beginning construction and to include shrubs and species of traditional cultural importance in the revegetation seed mix if they are available. We revised our recommendation to require FFP to develop the plan in consultation with the affected Tribes.

Comment: The Yakama Nation states that the EIS fails to address effects on ferruginous hawks. The Yakama Nation states that the project site is preferred habitat for ferruginous hawks and that these hawks could be directly impacted from wind turbine strikes and could be displaced by project construction if they nest in the area.

Response: The EIS identifies ferruginous hawks as a raptor species known to inhabit lands in the project vicinity and analyzes potential project effects to this species and other raptors. The effects on ferruginous hawks would be like those described for other raptors. Regardless, we revised our recommendation to specifically include pre-construction surveys for ferruginous hawks (in addition to surveying for peregrine falcons and other raptor species already identified in the plan) and to take steps to avoid disturbing nesting ferruginous hawks during construction if they are found. Further, monitoring the effectiveness of the wildlife deterrents and developing an avian protection plan for the project transmission line that includes procedures for monitoring bird fatalities and addressing problem poles would minimize adverse effects on ferruginous hawks and other raptors.

Comment: The Environmental Groups, the Yakama Nation, and TID comment that the draft EIS does not adequately address impacts to birds (e.g., peregrine falcons, golden eagles, prairie falcon) and bats. Columbia Riverkeeper states that "a thorough environmental study should be required to inventory all bird species, bats, mammals, reptiles, amphibians, and plant life." The Environmental Groups state there is no analysis of the potential impact to bat and bat populations from construction activities and that the draft EIS is "devoid of any analysis of the scope or extent of the potential impacts on individual bats or the populations as a whole."

Response: The EIS discusses potential project impacts to birds, raptors, bats, and other wildlife in section 3.3.4.2, *Terrestrial Resources, Environmental Effects*. The analysis acknowledges that project construction would remove habitat that could be used by raptors and bats, displace nesting raptors, and create habitat that could attract raptors and bats that could potentially expose them to wind turbine strikes and barotrauma. The EIS also recommends a suite of measures to minimize the effects (e.g., pre-construction surveys and avoidance measures, use of shade balls on the reservoirs, avian protection plan, etc.). NEPA does not require a complete inventory of all plants and animals to identify and analyze the potential effects on wildlife. Rather, it requires that the analysis take a hard look at the project effects, which the EIS does. The commenters do not propose any specific effects or measures to birds, raptors, bats, and other wildlife that have not already been considered. Therefore, no changes to the final EIS are needed.

Comment: The Umatilla Tribes states that the wildlife protection measures for the project are important to the Tribe and request that the Tribe receive any monitoring reports of wildlife mortalities, and accounts of successes, failures, and any changes to the mitigation efforts.

Response: The final EIS recommends that the annual monitoring reports be provided FWS, Washington DFW, Oregon DFW, Yakama Nation, Umatilla Tribes, the Warm Springs Tribes, and Nez Perce Tribe;

Comment: TID states the increased presence of avian species and their prey due to the project reservoirs would increase bird and bat deaths leading to fines for TWPA, damage to the turbines, and likely cause TWPA to reduce or cease its operation of one or more turbines due to avian strikes. TID reiterates its recommendation that FFP be required to conduct a baseline and annual study investigating raptor and bird strikes and also recommends that the Commission require FFP to enter into an agreement with TWPA providing that, if the project reservoirs cause an increase in golden eagle strikes above the average that TWPA has experienced under the relevant baseline study data, FFP would be required to implement proactive measures to prevent these strikes from continuing to occur and "compensate TWPA for any losses, penalties, costs, or damages that TWPA experiences due to such strikes."

Response: As discussed previously, the EIS already addresses potential effects of bird and bat attraction to the reservoirs and interaction with nearby wind turbines as well as appropriateness of FFP's proposed wildlife deterrent measures. We continue to find that requiring FFP to revise the Wildlife Management Plan to include methods for monitoring and documenting bird and bat use before and after constructing and filling the reservoirs, metrics for evaluating the effectiveness of the FFP's proposed deterrents (such as installing fences, shade balls in the reservoirs, etc.), criteria for deciding whether additional deterrents or modifications to the project are needed, and consulting with TID on any bird and bat fatality observed at the wind farm should be sufficient to determine whether the project is causing an increase in risk to eagles without requiring a baseline study and conducting annual monitoring for the life of the license as recommended by TID at an annualized cost of $21,087. Therefore, no changes to the final EIS are needed. Regarding TID's recommendation that FFP be required to "compensate TWPA for any losses, penalties, costs, or damages that TWPA experiences due to such strikes," as stated previously, the Commission does not have authority to adjudicate claims, or to require payment of damages, for project-induced adverse effects to property of others. Rather, if TID or TWPA

believe that their turbines are being adversely affected by operation of the Goldendale Project, they can seek redress with FFP in state court.

Comment: Oregon DFW states it recommends FFP's measures to minimize avian electrocution and collision hazards with the project transmission line and staff's measure to develop an avian protection plan.

Response: We have revised the final EIS to indicate that Oregon DFW recommends these measures.

Comment: Rebecca Sue Sonniksen recommends that FFP arrange with Dr. Jean Cypher of Rowena Wildlife Clinic in Oregon for the emergency care of injured birds and wildlife.

Response: FFP proposes as part of its Wildlife Management Plan to develop a reporting system to document wildlife mortalities, injuries, nuisance activity, and other wildlife interactions. In addition, staff recommends that FFP develop an avian protection plan that includes procedures for documenting and reporting bird mortalities and problem transmission line poles consistent with APLIC guidelines. We recommend that FFP consult with Washington DFW, FWS, and Oregon DFW to revise the Wildlife Management Plan and to develop the avian protection plan. That consultation should identify the appropriate parties to notify when injured wildlife are encountered.

Comment: Friends of the White Salmon River state that FFP's proposal to acquire and manage 277 acres of off-site land for the benefit of golden eagles is "theoretical" because the acres have not been identified or purchased yet and, thus, there is no certainty that this mitigation will even happen. Similarly, the Environmental Groups state that any benefits from an undefined mitigation project that the applicant possibly may undertake for offsetting impacts are "purely speculative."

Response: As stated in section 3.3.4.2, *Terrestrial Resources, Environmental Effects*, FFP is working with Washington DFW and FWS to identify suitable lands and would select parcels to offset impacts to golden eagle habitat that would include a golden eagle nest and/or foraging habitat within 6 kilometers of a known nest, exhibit a mix of foraging habitat characteristics such as topographic variation (big cliffs or slopes) and lower elevations intermixed with ponderosa pine, and ideally would be located adjacent to Washington DFW lands. The project record indicates that such lands exist near the project. In section 5.1, *Comprehensive Development and Recommended Alternative* and in Appendix G, staff recommend that FFP develop a management plan for the mitigation land that would identify the parcels to be acquired, the habitat values of the land, and the habitat improvements that would be implemented on each parcel. Should these measures become conditions of any license issued for the project, then FFP would be required to acquire the rights to these lands and develop the management plan before it could begin construction. Therefore, the measures are not "theoretical" or "speculative."

Comment: The Environmental Groups comment that the draft EIS does not contain a meaningful analysis of impacts to terrestrial mammals (e.g., western gray squirrel). They state that the project has the potential to increase key identified threats to western gray squirrels in Washington State, including habitat destruction and degradation from development and forest

management, roadkill mortality, and wildfire risk. The Environmental Groups also state that the planned construction will occur during western gray squirrel breeding seasons and when juveniles are emerging from nests and that "such disturbance during these key periods in the squirrels' life cycles could have significant impacts on the squirrel population in the region."

Response: Section 3.3.4.2, *Terrestrial Resources, Environmental Effects*, describes potential project effects on terrestrial mammals. As indicated in table 3.3.4-4 in Appendix B, populations of western gray squirrel are known to exist in the oak woodlands northeast of the project; however, as recently reported in Washington DOE's EIS for the Goldendale Project, the Washington DFW states that the western gray squirrel is unlikely to occur in the project area because its habitat is not present. We concur. Because the western gray squirrel's habitat is not present, project construction would not affect the western gray squirrel or contribute to its habitat destruction. We revised table 3.3.4-4 accordingly. No further analysis is needed.

Comment: Interior recommends the final EIS include a "cumulative effects discussion associated with direct, indirect, and cumulative impacts of adding transmission lines in the Columbia Basin and in the project vicinity."

Response: The majority of the overhead project transmission line (3.13 miles of the 3.4 total) would use existing and available circuits on the existing Bonneville Power Administration (BPA) towers within an existing BPA right-of-way rather than installing new towers. As discussed in section 3.3.4.1, *Terrestrial Resources, Affected Environment*, most of the proposed transmission lines would be located within previously developed or disturbed land, including lands occupied by former Columbia Gorge Aluminum (CGA) smelter operations and crossed by major roads such as SR 14. We discuss the cumulative effects of the addition of the project transmission lines on raptors in section 3.3.4.3, *Terrestrial Resources, Cumulative Effects*. The discussion focuses on the adverse effects on raptors because of the additional electrocution and collision hazards for raptors. While the project would add additional conductors in the immediate project area, it would not significantly contribute to adverse effects of existing transmission lines for the reasons noted above. Interior's comments do not explain what other effects should be considered. Thus, no changes to the final EIS are needed.

THREATENED AND ENDANGERED SPECIES

Comment: Interior states that the project is within the spring and summer occupancy zone for the western monarch butterfly, a candidate species under the ESA, which migrates to the Pacific Northwest to nectar, breed, and lay eggs on their host plant (milkweed). Interior notes that two milkweed species utilized as habitat for the butterfly (i.e., narrow-leaved milkweed and showy milkweed), are found along waterways in Klickitat County. Interior recommends that FFP conduct pre-construction surveys for the species and its habitat and if individual butterflies or milkweed habitat are found, the licensee work with the FWS and any other relevant resource agencies to develop a "monarch management plan" that includes mitigation for impacts to milkweed habitat.

Response: The EIS addresses potential project effects on the candidate monarch butterfly in section 3.3.5.2, *Threatened and Endangered Species, Environmental Effects*. The analysis acknowledges that it is unknown whether the project site contains the butterfly or milkweed that

would support the butterfly. Because the presence of the butterfly and milkweed can change annually, staff recommends that FFP survey for the butterfly and milkweed prior to construction. We also revised section 5.1, *Comprehensive Development and Recommended Alternative* and Appendix G to recommend that FFP develop a monarch butterfly management plan that includes steps to protect the butterfly's habitat if it occurs in the area to be disturbed, such as fencing off occupied areas or including milkweed in its revegetation seed mix.

RECREATION, LAND USE, AND AESTHETICS

Comment: Interior states that the project is located along and crosses portions of the Lewis and Clark National Historic Trail and the "Auto-Tour Route" for the trail (specifically State Route 14 in Washington along the north side of the Columbia River and Interstate 84 in Oregon along the south side of the Columbia River). To minimize potential visual and recreational impacts to the trail, Interior recommends that a copy of FFP's visual and recreation resource management plan be provided to the National Park Service for review and comment. Interior states that park service staff can advise FFP on textures, lines, colors, and forms of project components to minimize negative impacts to the Lewis and Clark National Historic Trail and has expertise with respect to location and content of interpretive signage and communications with the public/visitors.

Rebecca Sue Sonniksen states that FFP needs to provide details regarding its proposed interpretive facility and consult with Tribes on its content to ensure it communicates the "cultural heritage and significance of the area."

Response: Because the National Park Service and Tribes have unique expertise and experience that could further minimize the project's effects on the trail and improve public awareness of the Tribes, we have revised section 5.1, *Comprehensive Development and Recommended Alternative,* and Appendix G to recommend that FFP consult with the National Park Service and the Tribes in developing its visual and recreation resource management plan.

Comment: TID contends that the analysis in the draft EIS regarding compatibility of the project with existing wind energy development is "inaccurate because it inappropriately accepts the findings of 2021 WREA Study Report, which is fundamentally flawed." TID contends that FFP's wind resources effects analysis study report relies on "insufficient and inapplicable data," relies on "insufficient turbine generation data," and does not incorporate an uncertainty analysis, all of which lead to the report underestimating the anticipated effects of the project on wind patterns and wind turbine output. TID states "because the WRF model only used one year (2014) of 80-meter Met Tower data, and because the Met Tower is located at an elevation that is 100 meters or more below all but two of the turbines near the upper reservoir, this Met Tower data is worthless and cannot be relied upon." TID also states that had the study incorporated a larger dataset (rather than only two higher generation years), then average assumed wind speeds would have been much lower and the wind speed and wind direction changes identified in the model would have demonstrated a "more significant effect on these wind patterns" than what was presented in the study. Further, TID states "when the 2021 WREA Study Report's findings are applied to the power curves for TWPA's turbines, it is apparent that the GES Project will significantly reduce their energy output" and that the "2021 WREA Study Report's findings significantly understate the effects that the GES Project will have on TWPA's turbines because

these findings are based on extremely limited, 'cherry picked' and erroneous data, as well as faulty assumptions and unproven study methodologies." For these reasons, TID states that the Commission should reject the 2021 wind resources effects analysis study report and require FFP to conduct a new, independent study. Additionally, TID states that when it applies the root mean square error identified in the report to the power curves for TWPA's turbines, the reduction in wind speed caused by the upper reservoir would "reduce each affected turbine's output by thousands of megawatt hours resulting in each experiencing hundreds of thousands of dollars in lost generation revenues."

In reply comments, FFP states the wind and turbulence data sets showed some clear impacts on the winds near and below 40 meters with the greatest impacts occurring directly over the proposed reservoir and that these impacts on both wind and turbulence decreased with height and horizontal distance with minimal impacts found over the adjacent wind farm. FFP states that TID offers no new or different evidence or legal arguments for its assertion that the Commission should require FFP to conduct the new modeling study by a third party chosen by TID.

Response: The draft EIS considered the results of FFP's Wind Effects Analysis Report as well as TID's comments in the analysis of whether constructing and operating the project would result in changes to wind patterns (i.e., wind speed, direction, and turbulence) to a degree that adjacent areas would no longer support wind farm operation. The analysis in section 3.3.6.2, *Recreation and Land Use, Environmental Effects*, acknowledges that some increases and decreases in wind speeds and turbulence are likely due to the presence of the upper reservoir, but on average the changes are close to zero and would be confined to near the ground surface (below the elevation of the existing wind turbines) and that these changes are expected to decrease with height. While some changes to individual wind turbine output and/or efficiency cannot be completely ruled out (particularly for the two turbines located closest to where the upper reservoir would be built), it is reasonable to assume the project would not impact wind conditions to a degree that would make the project incompatible with the adjoining wind farm operation. For these reasons, we do not recommend further studies as recommended by TID.

Comment: TID states that the 2021 Wind Effects Analysis Report does not adequately analyze the project's effects on golden eagles.

Response: These issues are addressed in in section 3.3.4.2, *Terrestrial Resources, Environmental Effects*, and further discussed above.

Comment: TID reiterates its concerns that the project reservoirs could saturate the foundations of the wind turbines which could damage the turbines, increase the need for maintenance and repairs, reduce the turbines' design and service lives, and invalidate TWPA's warranties on the turbines.

Response: As described in 3.3.2.2, *Aquatic Resources, Environmental Effects*, FFP would use a geosynthetic layer and a waterproof concrete liner on the lower reservoir and a hydraulic asphalt concrete (HAC) layer overlying an asphaltic base layer (ABL) on the upper reservoir to minimize leakage. The HAC layer would be protected by a mastic coating to provide ultraviolet protection and increase the service life of the facility. The ABL would serve as the inner leakage collection system, which would drain leakage from the HAC layer to sumps located at the low

points of the reservoir, where the water would be monitored and pumped back into the reservoir. Furthermore, FFP proposes to develop a construction monitoring program during the project's final design in consultation with TID. These measures should minimize the potential for leakage that could damage wind turbine foundations. As discussed previously, if TID believes that adverse effects are occurring to its wind turbines, they can seek redress with FFP in state court.

Comment: TID recommends that the Commission require "one or more independent studies" that consider the potential damage to its existing wind turbines that could result from vibrations produced by the project's construction. TID states that construction vibrations could damage or interfere with the operations or output of the turbines during excavation or drilling. TID also recommends a process to be compensated if the mitigation measures identified in the new studies fail, causing them to suffer losses or other damages.

Response: As discussed in section 3.3.6.2, *Recreation and Land Use, Environmental Effects*, project construction would require drilling and blasting, which would create underground vibrations near some of the existing wind turbines, particularly one turbine that is currently located immediately above where the proposed headrace tunnel would be constructed. Much of the geotechnical information needed to determine at what level vibrations created during construction may affect nearby wind turbine foundations would be gathered during final design. Regardless, FFP's proposed construction vibration monitoring program would include a baseline survey and assessment of existing utilities, a map of existing utilities, vibration monitoring methods, criteria for evaluating vibration levels, and identifying potential mitigation measures based on the monitoring results. These measures should minimize vibration effects on nearby wind turbine foundations and would likely achieve the same outcomes of requiring TID's recommended study. For these reasons, we do not recommend a separate or duplicative vibration study in section 5.1, *Comprehensive Development and Recommended Alternative* and in Appendix G. As discussed previously, if TID believes that adverse effects are occurring to its wind turbines, they can seek redress with FFP in state court

Comment: TID states that the draft EIS should be modified "to make construction of the project contingent on: (1) TWPA consenting to the project proceeding; (2) FFP demonstrating that it has taken the necessary actions identified by TID, TWPA, and Siemens to prevent the GES Project from invalidating Siemens' warranties on TWPA's turbines; and (3) FFP entering into an agreement with TWPA that would make FFP and the project liable for any damages or other losses resulting from the invalidation of Siemens' warranties due to the construction of the project."

Response: As discussed above, FFP's proposed measures are not expected to result in changes to wind patterns (i.e., wind speed, direction, and turbulence) to a degree that adjacent areas would no longer support wind farm operation. If TID believes that adverse effects are occurring to its wind turbines, they can seek redress with FFP in state court.

CULTURAL RESOURCES

Comment: The Yakama Nation, Interior, the Umatilla Tribes, Warm Springs Tribes, and several individuals state that the Commission has a duty to uphold the 1855 treaties between the United States government and local Tribes. Interior states "as part of the Yakama Treaty, the Treaty of

Walla Walla, the Nez Perce Treaty, and the Treaty with the Tribes of Middle Oregon, the Tribes agreed to relinquish title to the previously ceded lands but retained their rights to hunt, fish, and gather resources on open and 'unclaimed lands' outside of their respective reservation boundaries. Today, members of the Tribes protect the rights reserved by them in their respective treaties."

During the draft EIS public meetings, several commenters emphasized the importance of traditional use of the project area, including gathering food and medicinal plants and spiritual activities. They also expressed frustration that landowners in the vicinity of the proposed project have not permitted them to gather plants due to trespass issues. Interior recommends that the project license require that Tribal access to the project area for traditional purposes is not "hindered, encumbered, or otherwise interfered with during all phases of project construction, operation, and maintenance."

An individual citizen from the Yakama Nation states that the proposed project is "already on land where we have no access to" for root gathering and hunting activities and expressed general support for the potential employment opportunities the project would bring.

Response: Section 3.3.8, *Cultural Resources*, contains a discussion of the cultural context of the project area and describes the 1855 Yakama Treaty, the Treaty of Walla Walla, the Nez Perce Treaty, and the Treaty with the Tribes of Middle Oregon.

The 1855 treaties permit the Tribes to fish, hunt, and gather plant resources in all "usual and accustomed places" that are "open and unclaimed" lands. The lands on which the project would be constructed are privately held and are therefore not "open and unclaimed." The Commission does not have the authority to require adjacent landowners that could contain resources important to the Tribes to provide access to their lands for traditional purposes.

Comment: The Yakama Nation and the Environmental Groups state that the Commission may not delegate its NHPA section 106 consultation responsibilities to the applicant. The Yakama Nation, Umatilla Tribes, the Environmental Groups, and Interior state that they do not believe that the Commission has conducted adequate government-to-government consultation with the participating Tribes. EPA commented that the final EIS should describe the opportunities that were provided to the Yakama Nation and other Tribes for direct government-to-government consultation. Interior states that the *ex parte* rules should include flexibility to conduct off-the-record consultation regarding sensitive Tribal issues. Julie from Eugene, Oregon (no surname listed), requests that Commission staff "define tribal consultation that is required by NEPA," state whether tribal consultation was completed "as defined by NEPA," and explain why the project is moving forward when there are "alternatives that have been recommended by tribes." The Mid-Columbia Economic Development District, encourages "ongoing engagement between the Federal Energy Regulatory Commission and the four Treaty Tribes of the Columbia Gorge to ensure they are involved in the licensing process as Sovereign, including but not limited to access that respects traditional gathering areas."

Response: Section 106 of the NHPA and its implementing regulations (36 C.F.R. § 800.2(c)(4)) allow the Commission to authorize an applicant for a new license to initiate consultation with the state historic preservation office (SHPO), Tribes, and others. However, as acknowledged in the

final EIS, the Commission remains ultimately responsible for all findings, determinations, and government-to-government consultation. As outlined in section 1.4, *Tribal Consultation*, Commission staff offered to meet with the affected Tribes during both the development of the license application (pre-filing) and after the application was filed. Commission staff also understand that the Yakama Nation does not feel that the Commission's efforts were sufficient. Commission staff are seeking ways to further those discussions so that the Commission can consider any more information that the Tribes may wish to offer. However, Commission staff are bound by our *ex parte* rules, which ensure that all parties to the proceeding are aware of the information that may have a bearing on the Commission's decision. On October 18, 2023, Commission staff sent a letter suggesting a way to consult with the Tribes that would be consistent with the Commission's ex parte regulations. After the Umatilla Tribes expressed a desire to meet, Commission staff issued a notice of the meeting on November 29, 2023, and met with the representatives of the Umatilla Tribes on December 13, 2023.

Comment: The Yakama Nation state that the draft EIS does not adequately address the significance of cultural resources within the project Area of Potential Effect (APE). The Umatilla Tribes state that it has demonstrated an ongoing cultural relationship to *Pushpum* and *T'at'aliyapa* and that if the project is constructed, it will sever that link which connects the traditions of the past to present tribal members.

Response: Section 3.3.8, *Cultural Resources*, describes traditional cultural properties (TCP) and historic use of the project area, including food gathering and ceremonial and spiritual practices by the Yakama Nation, Umatilla Tribes, and Nez Perce based on ethnographic studies completed by or in consultation with the respective Tribes. It also acknowledges that the Yakama Nation and Umatilla Tribes believe that no amount of mitigation could address the impacts of this project on their culture or for future generations because of the sacredness of this resource. If the Tribes wish to provide more information on the importance of the area, they can do so as described in our December 9, 2021 letter to the Yakama Nation. Without more, we have no basis to revise the EIS.

Comment: The Umatilla Tribe states that in the discussion of Effects on Access to Usual and Accustomed Gathering Sites, the draft EIS states that the project would not be located on land that is directly adjacent to the Columbia River and that through-traffic on John Day Dam Road, which is used to access a Tribal traditional fishing site, would not be limited at any time during both construction and operation. The Umatilla Tribe notes, however, that in the discussion of traffic effects, the draft EIS states that construction activities would result in increased traffic on area roads, leading to delays and changes in traffic patterns. The Umatilla Tribe seeks clearer assurance that the road(s) to traditional fishing areas will remain open and accessible without excessive disruption or delay, for the health and safety of Tribal Fishers and for the free exercise of their reserved Treaty Rights.

Response: The EIS has been revised to remove the sentence that states through-traffic on John Day Dam Road used to access the tribal fishing site would not be limited. The final EIS acknowledges that increased traffic could cause delays and traffic pattern and that although closing the John Day Dam Road to construct the lower reservoir is not anticipated, coordinating any closure or delays with the Corps, BIA, and affected Tribes through the Columbia River Inter Tribal Fish Commission would minimize any disruption to Tribal access and use of the fishing

site. The Commission cannot guarantee there would not be any delay in reaching the tribal fishing site.

Comment: The Yakama Nation, Interior, EPA, and the Environmental Groups state that the draft EIS does not appropriately discuss the resolution of adverse effects to historic properties, including but not limited to avoidance or minimization of effects and that these issues should be resolved and included in the final EIS. The Environmental Groups state that finalizing the Historic Properties Management Plan (HPMP) should occur in consultation with the Tribes prior to the issuance of any license for the project. American Rivers comments that the proposed HPMP is inadequate to mitigate adverse effects. Interior recommends that the final EIS include measures which provide "higher levels of protection for trust resources and should be analyzed in the final EIS. These include providing more details regarding the resolution of known adverse effects, along with the protocols for future consultation between the Applicant, the Tribes, and appropriate consulting parties to address potential effects to historic properties arising from the future operation and maintenance of the proposed Project, post-review discoveries, and modifications of the proposed Project that would be covered under the new license." The Umatilla Tribes request consultation with the Commission on the status of the Section 106 process and states it expects to be involved in any discussions pertaining to mitigation and drafting the Programmatic Agreement (PA).

Response: While preferable to resolve all adverse effects prior to issuing a license, section 106 of the NHPA and its implementing regulations (36 C.F.R. 800.14(b)(ii)) permit the Commission to enter into a PA to resolve adverse effects "when effects on historic properties cannot be fully determined prior to approval of an undertaking" and "where other circumstances warrant a departure from the normal section 106 process." As discussed above, the EIS describes the significance of the historic properties and the adverse effects on those resources and proposes measures to address those effects. Staff-recommended measures include marking areas National Register-eligible cultural sites and avoiding those areas to the extent possible; revising FFP's draft HPMP to include research design and site-specific data recovery or other treatment plans for those sites that cannot be avoided; and developing protocols for training construction workers on the importance of cultural sites, how to identify cultural sites, the need to avoid damage to cultural sites, and procedures to follow if previously unidentified cultural sites, including Indian graves, are encountered during construction. The execution and implementation of the Commission's proposed PA would allow for continued consultation with the Washington SHPO, Tribes, and others after license issuance to finalize the HPMP and to develop additional measures that may be acceptable to the Tribes.

As noted above, we are seeking ways to further consult with affected Tribes within the limitations of our *ex parte* rules and met with the Umatilla Tribes on December 13, 2023. We will seek concurrence on the PA from all affected Tribes.

Comment: The Umatilla Tribes states that the HPMP falls short in its efforts to address the adverse effects and could do more to minimize potential impacts. The Umatilla Tribes recommends that the five archaeological sites affected by the undertaking be inventoried using specially trained canines for historic and prehistoric human remains detection because it would help prevent a later inadvertent discovery during the construction phase of the project. The

Umatilla Tribes states that a company like the Institute for Canine Forensics can provide these services and that this type of inventory can be completed in a short period of time.

Response: The final EIS recommends requiring the recommended surveys.

Comment: The Umatilla Tribes also recommended changes to the HPMP and draft PA. Changes to the HPMP include (1) periodic checks/monitoring to ensure the project activities are damaging historic properties; (2) procedures addressing newly discovered archaeological materials during construction; (3) methods and procedures for contacting the appropriate state officials in Washington and Oregon if human remains are found; and (4) measures to mitigate for the effects under criteria A and B, not just D. The Umatilla Tribes also suggests that off-site mitigation may be the preferred way to mitigate adverse effects to the TCPs and it should be in the form of a mitigation property with the First Foods resources available for harvest and gathering by members of the Umatilla Tribe.

Response: The final EIS recommends modifying the HPMP in consultation with the Washington and Oregon SHPO to refine the methods for monitoring cultural sites and handling newly discovered cultural resources. As explained in section 3.3.8, acquiring off-site mitigation lands for "First Food" gathering may be a reasonable mitigation measure; however, there is insufficient information to evaluate the efficacy of the measure, its benefits, costs or the acceptance to all the affected Tribes. For example, it is not known whether there are mitigation properties that could be purchased from willing sellers for tribal ownership that would contain resources appropriate for conducting cultural activities. We recommend that these measures be developed and the HPMP approved prior to any land-disturbing activities.

Comment: EPA recommends that the final EIS consider, and that the Commission consult with the National Park Service's Departmental Consulting Archaeologist regarding, the applicability of the Archaeological and Historic Preservation Act (AHPA). EPA asserts that the AHPA requires federal agencies to preserve historic and archaeological objects and materials that would otherwise be lost or destroyed as a result of their projects or licensed activities or programs.

Response: The AHPA requires federal agencies to notify Interior if it finds that activities associated with any federal construction project or federally licensed project, activity, or program "may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data." In those instances, the agency may request that Interior undertake the recovery, protection, and preservation of the data or may undertake those activities itself. Separately, section 106 of the NHPA requires that federal agencies take into account the effects of their actions on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. Here, the Commission's responsibilities under section 106 are ongoing. Given that the Commission has yet to conclude its section 106 consultation process and continues to evaluate the effects of its action on historic properties, Commission staff believes that any finding under the AHPA regarding data recovery efforts would be premature.

Comment: EPA recommends that the analysis provided in the footnote on page 85 of the draft EIS be included as part of the text in the final EIS so that the cumulative impacts of nearby infrastructure to subsistence practices are clearly explained. EPA states "it would be more direct

to explain in the FEIS that while the current use of *Pushpum* may be unknown to FERC, it is known that significant access restrictions have been placed upon the Yakama Nation in this area. For example, since 1997, a nearby unrelated programmatic agreement intended to 'allow members of the Yakama to conduct traditional plant gathering activities and other traditional uses' in the area, but that such access was never granted." EPA adds that "it would be useful for the FEIS to be informed through government-to-government consultation if the current subsistence practices reflect the historic or preferred subsistence practices of the Yakama Nation."

James Oliver states that "the destruction of cultural resources and the loss of access to traditional lands could lead to the loss of cultural identity for the Confederated Tribes of the Umatilla Indian Reservation." The Environmental Groups emphasize the importance of the area to the Tribes by including the following quote from the Yakama Tribe's comments submitted on Washington DOE's Draft Environmental Impact Statement on August 9, 2022: "These plant resources include buckwheats, balsam roots, lomatiums, yarrow, sumac, lupin, dogbane, rose, onion, thistle, serviceberry, sagebrush, junipers, and many others. These plants and combinations of them are used by Yakama People to treat illness in the body and spirit. These plants have served for thousands of years as poultice, tea, bandages, pacifiers, drums, needles, rope, nets, and food. They are important to traditional ceremonies and religious practices."

Response: Footnote 59 pertains to a PA executed in 1997 between BPA, the Washington SHPO, the Advisory Council, and the Yakama Nation regarding the Columbia Wind Farm #1. A clause in the PA provides that BPA would ensure that Conservation and Renewable Energy System "makes a good faith effort to acquire an access easement on private lands in the APE from the landowner where construction occurs to allow members of the Yakama to conduct traditional plant gathering activities and other traditional uses." The footnote is provided to explain the Yakama Nation's recommendation and comments, not as an analysis of the project's effect on subsistence or cultural resources; therefore, it remains a footnote in the final EIS. Section 3.3.8.3, *Cultural Resources, Cumulative Effects*, discusses the cumulative effects of infrastructure development on access to lands for traditional purposes, which could include subsistence activities. Therefore, we have no reason to revise the EIS. Regardless, because the project is located on private lands, access for subsistence activities likely has not been available for many years.

Comment: EPA comments that the draft EIS should consider visual impacts to Tribal populations visiting TCPs in the area. Friends of the White Salmon River state that "the natural landscape of the Columbia Hills area has been modified by the installation of John Day Lock and Dam, CGA Smelter, Klickitat County pumping station, nearby wind farms and other associated infrastructure. Together, these industrial projects have diminished the nature of the area for traditional Tribal use." Referring to section 3.3.8.3, *Cultural Resources, Cumulative Effects*, Ms. Arnold states that "reading this it is impossible for us to understand how FERC can contemplate allowing additional damage, in the face of the description of the damage that has already been done."

Response: Section 3.3.8.2, *Cultural Resources, Environmental Effects*, and section 3.3.7.2, *Aesthetic Resources, Environmental Effects*, already address the visual effect of constructing and

operating the project on Tribal populations visiting the TCPs. Therefore, no revisions to the final EIS are needed.

ENVIRONMENTAL JUSTICE

Comment: EPA states that it has concerns with the conclusion in the draft EIS that project impacts "would result in disproportionately high and adverse effects on environmental justice (EJ) communities . . . at a level that is less than significant with appropriate mitigation." EPA states that the draft EIS "underrepresents communities with EJ concerns; only analyzes EJ concerns on a limited number of environmental resources (e.g., noise, air quality, and aesthetics); and does not analyze the interrelated cultural, social, historical or other factors that may amplify the effect of the proposed action on communities with EJ concerns, e.g., the physical sensitivity of the community or population to particular impacts, the effect of any disruption on the community structure associated with the proposed action, and the nature and degree of the impact on the physical and social structure of the community." To address these concerns, EPA recommends: (1) the Commission conduct targeted outreach and provide meaningful involvement opportunities for communities with EJ concerns, including Tribal and indigenous populations, who may visit or have cultural ties to the proposed project and include in the final EIS a summary of the meaningful engagement with Tribal and other communities with EJ concerns and how that engagement informed project decision-making, modifications, mitigation measures, or availability of alternatives; (2) the EJ analysis in the final EIS identify communities with EJ concerns, including Tribal and indigenous populations, residing outside the 5-mile radius who may visit the project area for traditional subsistence activities and cultural purposes and identify whether any of these communities with EJ concerns living outside the 5-mile radius include low-income populations; (3) the final EIS include an EJ analysis of direct, indirect, and cumulative cultural resources impacts, including disproportionate impacts, on Tribal and indigenous populations from within the 5-mile buffer and those visiting the project area from further away (i.e., transient populations); and (4) the final EIS include the identification, inclusion, and integration of Traditional Ecological Knowledge into the NEPA analysis.

Interior states that the record does not demonstrate that opportunities for public involvement were targeted at engaging environmental justice communities and "request that the Commission through the issuance of the final EIS create additional avenues targeted at these environmental justice communities."

Response: Section 3.3.10.1, *Meaningful Measures and Public Involvement*, describes the opportunities given for public and Tribal involvement during the development and processing of the license application. As discussed previously, Commission staff invited the Yakama Nation, Umatilla Tribes, Warm Springs Tribes, and Nez Perce to participate in the licensing process, offered to meet with them and have met with members of the Yakama Nation, Nez Perce Tribe, and the Umatilla Tribe. A detailed consultation record with the Tribes is provided in section 1.4, *Tribal Consultation*. Commission staff are exploring additional opportunities for Tribal engagement that is consistent with the Commission's *ex parte* rules. Absent any further discussion with the Tribes, the ethnographic studies completed by and in consultation with the Tribes provides a clear understanding of the importance of the project area to Tribal members.

Commission staff followed CEQ's and EPA's guidance for identifying EJ communities. The EJ analysis in the final EIS has been revised based on the most current American Community Survey 5-Year Estimates (2017-2021). The more current data indicates that there are four EJ communities within a 5-mile radius of the project. Of these four identified EJ communities, two meet the criteria for "minority population" and only one of these two communities are reported to contain American Indian populations (0.3%) (Census Tract 9501, Block Group 2 in Sherman County). A 5-mile radius around the project boundary was chosen for analysis because this is the extent of the construction and operation effects on noise, air quality, and visual resources that users of the project area would experience. While Tribal members from outside the analysis area may want to use the lands affected by project construction and operation, it is unclear whether they can do so because the lands are privately held. Regardless, the effects described in the EIS would be the same as those experienced by those residing within the 5-mile radius. Therefore, expanding the EJ analysis beyond the 5-mile radius to identify additional EJ communities and determine if they include low-income populations is not necessary.

Nonetheless, in accordance with EPA's *Promising Practices*, we recognize that the project's effects on TCPs and ceremonies represent a unique cultural vulnerability. Therefore, we have revised the EJ analysis in the final EIS to address direct, indirect, and cumulative effects on Tribal use of the project area.

Section 3.3.8, *Cultural Resources*, describes TCPs and historic use of the project area, including food gathering and ceremonial and spiritual practices, by the Yakama Nation, Umatilla Tribes, and Nez Perce based on ethnographic studies completed by or in consultation with the respective Tribes. Thus, the EIS already considers Traditional Ecological Knowledge.

Comment: EPA comments that while the draft EIS states that the project will benefit the State of Washington's energy goals, the adverse effects fall disproportionately on Tribal and Indigenous populations and that efforts to determine appropriate measures for addressing these disproportionate impacts are needed. The Environmental Groups state that the draft EIS fails to address the EJ impacts to Tribal communities, does not address the cumulative impacts of green energy development on Tribes, and ignores the detrimental impacts to Tribes.

Response: As discussed above, the EJ analysis has been revised to reflect the most current populations statistics and to address to address direct, indirect, and cumulative effects on Tribal use of the project area. The execution and implementation of the Commission's proposed PA would allow for continued consultation with the Washington SHPO and Tribes after license issuance to finalize the HPMP and to collaboratively develop mitigation measures that may be acceptable to the Tribes.

AIR QUALITY/GREENHOUSE GAS/NOISE

Comment: American Rivers states that the analysis in section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, "fails to provide an analysis of anticipated [greenhouse gases (GHG)] to be emitted from project reservoirs over the lifecycle of the Project. Dams and reservoirs integral to hydropower production create and emit GHGs by altering the carbon balance of riverine ecosystems and adjoining lands, generally resulting in net emissions of

carbon dioxide and methane." American Rivers requests that the Commission "assess the project's net GHG emissions using the GHG Reservoir Tool (G-res Tool), a publicly available, web-based modeling tool used by researchers and hydropower companies to estimate and report GHG emissions from reservoirs" which it states can be found at https://gres.hydropower.org/. Additionally, American Rivers recommends that the results of the modeling should be validated by submitting model inputs to the G-res organization to ensure that the tool was used properly.

Response: The construction of new reservoirs on rivers results in the inundation of large quantities of organic matter. The subsequent aerobic and anaerobic decomposition of flooded organic matter results in the emission of GHGs. However, here, the project is not located on riverine system, construction would clear all vegetation from the reservoir sites, and the reservoirs would be lined with concrete and geosynthetic membrane liner. Because the project would be a closed-loop facility, future input of organic matter would be minimal. Therefore, the organic matter necessary for the creation of GHGs would be negligible. Thus, we do not expect any production of GHGs from the project reservoirs and there is no need further assess GHG production from the reservoirs using the G-res tool.

Comment: EPA comments that the final EIS should discuss GHG emissions and climate change similar to that found in Washington DOE's analysis or summarize or incorporate by reference sections of Washington DOE's analysis which included "assessments on air temperature; precipitation, snowpack, streamflow, and groundwater; water temperature, and wildfire occurrence and intensity; effects of climate change on the proposed project; and potential effects of climate change by resource, including environmental justice."

Response: Section 3.3.11, *Air Quality and Climate Change*, describes climate trends for the Pacific Northwest Region. Washington DOE's Final EIS summarizes climate trends in the Columbia River Basin. We revised the final EIS to incorporate that regional information. However, we do not incorporate Washington DOE's analysis of project effects on climate change because we could not identify discrete physical impacts resulting from the project's GHG emissions on the resources identified by EPA. Without the ability to determine discrete resource impacts, we are unable to assess the project's individual contribution to climate change through any objective analysis of effects attributable to the project. Summarizing or incorporating Washington DOE's analysis of general effects of future climate change on resources would not improve our ability to identify discrete project impacts or inform license conditions.

Comment: EPA recommends that project-related emissions be made available in tables and text in the final EIS.

Response: Project-related emissions are quantified and presented in the text in section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, and included in table 3.3.11-3 in Appendix B. Therefore, no changes to the final EIS are needed.

Comment: EPA recommends that the final EIS include a summary of how the changing climate may affect the project's infrastructure or the life of its operations, such as "the potential impact of increasing temperatures on the amount of water lost from the reservoirs due to evaporation" and "the potential impact of regional climate trends on the changes of water availability in the region to fill the reservoirs."

Response: Regarding increasing temperatures on water availability, the project is estimated to need 360 acre-feet of make-up water each year to refill the reservoirs, with the greatest evaporation occurring during the summer months. Trends showing an increase in average annual temperatures could increase evaporation rates during the summer; however, FFP's estimate of make-up water demand assumes a future evaporation rate greater than measured in the historical record to account for this anticipated future with climate change. Therefore, increasing temperatures and evaporation rates should not affect project operation. Although climate trends suggest decreases in Columbia River flows because of climate change, the project would not create a new appropriation of water from the Columbia River because make-up would be provided by Klickitat PUD via its existing water right; however, the project's withdrawals, albeit small relative to the flow in the Columbia River, could contribute to increased regional competition for water. The small quantities of make-up water needed for operation should not affect the project's ability to operate. Should environmental conditions change in the future because of climate change, the Commission's regulations and the requirements of any license would include measures that would ensure the project continues to maintain its structural integrity and safe operating conditions over the term of the license. Additionally, if there is a need to modify project operation or facilities to accommodate changes because of climate change or related factors during the term of any license issued, and reliable data became available to justify such modifications, the Commission's standard reopener article gives the Commission the ability to respond to the impacts of climate change, should license conditions need to be altered to respond to unforeseen environmental impacts.

Comment: EPA states: "In our review of the project's DEIS and [State Environmental Policy Act (SEPA)] documents, we note that both FERC and Ecology analyze construction emissions and operations emissions. In both documents, the construction emissions estimates are the same. However, the operations emissions diverge significantly. The operations emissions in the DEIS are about 96,000 tons of CO2e per year, while the SEPA document estimates about 1,780 tons of CO2e per year. The SEPA Appendix D clarifies that the analysis does not include emissions estimates for most generation operations because the power will not be derived from 'emitting sources.' We agree with FERC that it is worthwhile to estimate the potential emissions from generation activities. However, since the Bonneville Power Administration will be administering the project, it may be more accurate to analyze the electricity generated and available within BPA's district rather than a statewide comparison to understand the estimated emissions associated with consumed electricity."

Response: In the draft EIS, Commission staff assumed that a proportion of the energy used to pump water to the upper basin would come from fossil fuel generation sources based on the resource mix available in the state of Washington. However, we believe that assumption was wrong because FFP proposes to use surplus energy from renewable sources to pump water to the upper reservoir; therefore, it reasonable to assume, as Washington DOE did, that the power used to pump water will not be derived from emitting sources. Consequently, there would be no emissions during operation except for the occasional use of trucks and other maintenance equipment that burns fossil fuels. We revised the final EIS accordingly.

The Commission will oversee any license that is issued for the project. A map of BPA's service area (available online at https://www.bpa.gov/-/media/Aep/about/publications/maps/bpa-servicearea.pdf) shows that BPA's territory includes the states of Idaho, Oregon, and

Washington, and extends into smaller portions of Montana, California, Nevada, Utah, and Wyoming. Section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, compares the project's GHG emissions to both national and State of Washington GHG emission inventories as has been done in other NEPA analyses prepared by Commission staff. We believe this provides sufficient context for the project's anticipated emissions and thus see no reason to evaluate emissions in the context of BPA's service area.

Comment: EPA recommends that the estimate of construction emissions in the EIS include an estimate of the "embodied emissions due to construction materials." EPA states that "embodied emissions are the quantity of emissions, accounting for all stages of production including upstream processing and extraction of fuels and feedstocks, emitted to the atmosphere due to the production of a product per unit of such product." EPA further states that the federal government has a "Buy Clean policy" to promote use of construction materials with lower embodied emissions, taking into account the "life-cycle emissions associated with the production of those materials" and recommends the project consider use of construction materials with lower embodied emissions.

Response: If licensed, materials would be purchased and the project would be constructed by the non-federal licensee, not the Commission. However, the licensee would need to ensure that the materials selected are consistent with the Commission's dam safety requirements and that the project is constructed in accordance with the license's design requirements.

Comment: EPA states that the final EIS should describe in more detail the extent of planned mitigation measures to be integrated into the fugitive dust control plan. EPA states that a "robust fugitive dust control plan would include measures such as:

- A robust surface/roadway watering plan, possibly including chemical dust control and/or gravel roadway cover if necessary.
- A robust monitoring and response plan to identify and address periods of significant dust emission.
- Consideration of weather conditions including a threshold high windspeed for halt of material movement and processing to prevent significant dust emission events.
- Roadway speed limits to limit dust entrainment.
- Haul truck cleaning and load covering requirements.
- Identification of responsible officials and training procedures.
- Record keeping and reporting schedules.
- Community/citizen reporting forms/phone-line and contact information to report dust impact events."

Response: As discussed in sections 3.3.1.2, *Geology and Soils, Environmental Effects*, and 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, FFP proposes to develop a soil erosion and sediment control plan that includes best management practices for controlling wind and water erosion on project land. The plan would describe, in more detail, the extent of planned mitigation measures to control fugitive dust such as applying dust palliatives to limit air borne particles. Erosion control plans are usually developed during the final project design based on site-specific conditions and reviewed by the Commission's Division of Dam Safety

before any construction is authorized to begin. However, to make the plan more robust, we now recommend in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix G that the dust control measures in the erosion control plan include the detail recommended by EPA.

Comment: EPA states that the final EIS should disclose what construction permits would be required for the two concrete batch plants and summarize the control, monitoring, and reporting requirements that may be required under the permits and how these permit requirements would help protect the ambient air quality standards and limit impacts.

Response: As discussed previously, Appendix C describes the status of those statutory and federal regulatory requirements needed for the Commission to reach a licensing decision (e.g., FPA, Clean Water Act, ESA, NHPA, etc.). Defining all the necessary construction permits and their requirements is beyond the scope of the EIS. Regardless, if a license is issued, the licensee would be required to obtain all necessary permits and authorizations to commence construction within two years of any license issued. The conditions of those permits would dictate control, monitoring, and reporting requirements.

Comment: EPA disagrees with the following statement in section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*: "The results of the construction phase emissions analysis show that criteria pollutant average annual emission rates would be well below the significance thresholds for the [Prevention of Significant Deterioration (PSD)]/Title V programs. Therefore, construction phase criteria pollutant impacts would not result in significant air quality impacts." EPA states that it unreasonable to conclude no significant air quality impacts simply because the emissions are not high enough to trigger PSD or Title V permitting requirements and requests the concluding statement be deleted from the EIS.

Response: Section 3.3.11, *Air Quality and Climate Change*, states that "While EPA's [PSD] program and Title V requirements do not apply to temporary construction activities, Trinity (2022) compared criteria pollutant emission rates for the construction phase of the proposed project to federal thresholds for the PSD and Title V program *as a comparison of the relative magnitude of effects*. The results of the construction phase emissions analysis show that criteria pollutant average annual emission rates would be well below the significance thresholds for the PSD/Title V programs" (emphasis added). The analysis is intended to provide *a relative comparison to levels* that are recognized to have sufficient adverse effects to trigger PSD and Title V permitting requirements. Nonetheless, we clarified the text in section 3.3.11.2 to read as follows: "This suggests that construction phase criteria pollutant impacts would not likely result in significant air quality impacts."

Comment: The Environmental Groups comment that the project would not meet its stated goal of meeting the states' carbon reduction and environmental policy goals and would instead increase GHG emissions. The Environmental Groups state that the EIS: (1) fails NEPA's "hard look" standard in its emission comparisons; (2) does not take a "hard look" at reasonably foreseeable climate impacts; (3) refuses to determine the significance of the project's GHG emissions or the incremental nature of climate change; (4) does not consider the project's promotion of fossil fuel energy; and (5) fails to consider a renewables-powered alternative.

Response: Section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, estimates GHG emissions and compares the projected emissions during project construction to national and Washington State inventories. As explained previously, we revised the EIS to include more information on climate trends specific to the Columbia River Basin. However, we do not try to quantify the project effects on climate change and resources because we could not identify discrete physical impacts resulting from the project's GHG emissions on the discrete environmental resources. The project does not promote fossil fuel production as suggested by the Environmental Groups. It does the opposite by providing needed power when renewables such as wind and solar are not available. We revised the final EIS to indicate that because power for pumping would use surplus renewable power, it would not contribute to GHG production and further reduces reliance on fossil fuels.

Comment: James Oliver states that "the project could have a negative impact on air quality in the area. The construction and operation of the project could generate emissions of air pollutants, such as nitrogen oxides, sulfur dioxide, and particulate matter. These pollutants could contribute to respiratory problems, heart disease, and cancer."

Response: Section 3.3.11.1, *Air Quality and Climate Change, Affected Environment*, acknowledges that criteria air pollutants can have adverse effects on public health, which is why EPA established National Ambient Air Quality Standards. The analysis in section 3.3.11.2, *Air Quality and Climate Change, Environmental Effects*, describes the project's emission levels relative to those standards.

Comment: EPA recommends the Final EIS reference and apply the CEQ NEPA Guidance on Consideration of GHGs and Climate Change to determine the potential climate-related impacts of the project. EPA adds that "The updated guidance . . . improves transparency in the reporting of greenhouse gas emissions, including the appropriate use of the social cost of greenhouse gases to disclose climate impacts, provides specific recommendations for renewable and low greenhouse gas projects to keep reviews focused, and makes projects more climate-smart and resilient while helping reach [our national] goal to achieve net-zero emissions by 2050."

The Environmental Groups state that the Commission at a minimum should "quantify GHG emissions across alternatives; disclose the impact of those GHG emissions on the public via the use of the Interagency Working Group's (IWG) social cost of carbon dioxide and social cost of methane estimates; and assess whether continued and expanded fossil fuel production and the associated GHG emissions are consistent with our national goal of reducing GHG emissions by 50-52% by 2030 and to net zero by 2050."

The Environmental Groups go on to request that the Commission "consider, discuss, and evaluate the climate science regarding past and present impacts from climate change to further contextualize the climate impacts from the cumulative emissions of GHGs associated with the proposed project." The Environmental Groups suggest that the Commission consider using the following tools: (a) EPA's greenhouse gas equivalency calculator which can be used to express the estimated annual GHG emissions from the project in terms of the GHG emissions produced from gas-fueled vehicles driven for one year, or the emissions that could be avoided by operating wind turbines as an alternative energy source or offset by the carbon sequestration of forest land; (b) the social cost of greenhouse gases (SC-GHG) tool which can provide an estimate of the

monetized global damages associated with the incremental increases of GHGs; or the "MAGICC model" which can be used to evaluate the impact of GHG emissions associated with the proposed project on the remaining atmospheric capacity to take on further GHG emissions without exceeding different degrees of additional warming. For SC-GHG tool, the Environmental Groups urge the Commission to apply the Social Cost of Greenhouse Gas values contained in EPA's September 2022 Report on the *Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*, which they contend is a more accurate and up-to-date estimate of the costs of greenhouse gas production and consumption than the 2021 Interim Estimates of the Social Cost of Carbon, Methane, and Nitrous Oxide produced by the Interagency Working Group.

Response: As stated in the EIS, to date, Commission staff have not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from the project's incremental contribution to GHGs. Additionally, Commission staff have not been able to find an established threshold for determining the project's significance when compared to established GHG reduction targets at the state or federal level. Therefore, this EIS does not characterize the project's GHG emissions as significant or insignificant.[25] However, to address EPA's and the Environmental Group's comment and to provide additional context, we revised section 3.3.11.2, *Air Quality and Climate Change*, *Environmental Effects*, to include an estimate of the social cost of GHGs associated with the reasonably foreseeable GHG emissions during construction. However, calculating the social cost of GHGs does not enable the Commission to determine credibly whether the reasonably foreseeable GHG emissions associated with a project are significant or not significant in terms of their impact on global climate change.[26] In addition, there are no criteria to identify which monetized values are significant for NEPA purposes, and we are currently unable to identify any such appropriate criteria.[27] Because both the EPA and

[25] *See, e.g.*, *Driftwood Pipeline LLC*, 183 FERC ¶ 61,049, at P 63 (2023) ("[T]here currently are no accepted tools or methods for the Commission to use to determine significance, therefore the Commission is not herein characterizing these emissions as significant or insignificant.")

[26] *See Mountain Valley Pipeline, LLC*, 161 FERC ¶ 61,043, at P 296 (2017), *aff'd sub nom*., *Appalachian Voices v. FERC*, No. 17-1271, 2019 WL 847199 (D.C. Cir. 2019) (unpublished); *Del. Riverkeeper Network v. FERC*, 45 F.th 104, 111 (D.C. Cir. 2022). The social cost of GHGs tool merely converts GHG emissions estimates into a range of dollar-denominated figures; it does not, in itself, provide a mechanism or standard for judging "significance."

[27] *Tenn. Gas Pipeline Co., L.L.C.*, 181 FERC ¶ 61,051, at P 37 (2022); *see also Mountain Valley Pipeline, LLC*, 161 FERC ¶ 61,043 at P 296, *order on reh'g*, 163 FERC ¶ 61,197, at PP 275-297 (2018), *aff'd*, *Appalachian Voices*, No. 17-1271, 2019 WL 847199 at 2 ("[The Commission] gave several reasons why it believed petitioners' preferred metric, the Social Cost of Carbon tool, is not an appropriate measure of project-level climate change impacts and their significance under NEPA or the Natural Gas Act. That is all that is required for NEPA purposes."); *EarthReports*, 828 F.3d 949, 956 (D.C. Cir. 2016) (accepting the Commission's explanation why the social cost of carbon tool would not be appropriate or informative for project-specific review, including because "there are no established criteria identifying the monetized values that are to be considered significant for NEPA purposes"); *Tenn. Gas Pipeline*

CEQ participate in the IWG, Commission staff used the methods and values contained in the IWG's current draft guidance but note that different values will result from the use of other methods.[28]

Comment: The Environmental Groups state that the Commission improperly frames and weighs the context and intensity factors for assessing the significance of reasonably foreseeable GHG emissions from the proposed project and its cumulative climate impacts. The Environmental Groups state that a comparison to estimated GHG emissions to national and state GHG emission inventories suggests that the GHG emissions from the proposed project are minimal is in their view "precisely how the 2016 CEQ GHG Guidance and 2023 Interim CEQ Guidance directed federal agencies not to limit assessments of the significance of GHG emissions." The Environmental Groups request that the Commission include a "more comprehensive comparison of the estimated GHG emissions associated with the proposed project to other emissions sources, including but not limited to fossil fuel leases, individual coal-fired and natural gas electric generating facilities, and individual concentrated animal feeding operations (CAFOs)."

Response: The National Renewable Energy Laboratory (NREL) published a fact sheet that provides estimates of GHG emissions based on a review of approximately 3,000 published life-cycle assessment studies on utility-scale electricity generation from wind, solar photovoltaics, concentrating solar power, biopower, geothermal, ocean energy, hydropower, nuclear, natural gas, and coal technologies, as well as Li-ion battery, pumped storage hydropower, and hydrogen storage technologies.[29] NREL reports that hydropower pumped storage produces a median value of 7.4 g CO_2e/kWH over the life the plant. Li-ion battery and hydrogen fuel cells produced median values of 33 and 38 g CO_2e/kWH, respectively. Photovoltaic, solar, and wind produce median values of 43, 28, and 13 g CO_2e/kWH, respectively. Most of the emissions for these renewables are from construction and decommissioning of the plants. Ongoing non-combustion median values reported for hydropower pumped storage plants were 1.8 g CO_2e/kWH, hydrogen fuel cell was 2.5 g CO_2e/kWH, and Li-ion batteries had no report values in the literature. Median values for ongoing non-combustion for photovoltaic, solar, and wind were 10, 10, and 0.74 g CO_2e/kWH, respectively. In contrast, natural gas and coal technologies had reported total median life-cycle emissions of 486 and 1001 g CO_2e/kWH, respectively, with ongoing combustion rates of 389 and 1010 g CO_2e/kWH.

However, we have not included this information in the final EIS because we do not see how these comparisons help quantify physical effects on the environment resulting from the

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Co., L.L.C., 180 FERC ¶ 61,205, at P 75 (2022); *see, e.g.*, *LA Storage, LLC*, 182 FERC ¶ 61,026, at P 14 (2023); *Columbia Gulf Transmission, LLC*, 180 FERC ¶ 61,206, at P 91 (2022).

[28] Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*, at 5 (Table ES-1) (Feb. 2021).

[29] *See* NREL, *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update*, https://www.nrel.gov/docs/fy21osti/80580.pdf (accessed October 30, 2023).

project's incremental contribution to GHGs or inform the licensing decision or what conditions to include in any license issued for the project.

Comment: The Environmental Groups state the following: "A speculative increase in renewable energy in the grid does not obviate the need for a hard look at the project's impact on the grid as it exists today. If the shift in power sources fueling the grid is not speculative, due to state policy, FERC must be more specific in analyzing the timeline of the expected phase-out of coal and natural gas-powered electricity. Overall, FERC must take a hard look at the reasonably foreseeable impacts this project will have on fossil fueled electricity generation."

Response: As discussed previously, we revised the analysis to indicate that project operation is unlikely to generate any GHGs. Thus, the analysis is not dependent on the expected phase-out of coal and natural gas-powered electricity but would assist in achieving those goals.

DEVELOPMENTAL ANALYSIS

Comment: American Rivers states that it has concerns regarding the economic viability of the project. Specifically, American Rivers notes the following conclusions from a commissioned Rocky Mountain Econometrics critique report prepared for the project: (1) the project is very unlikely to operate profitably; (2) the project will not be able to serve in its stated capacity for a large portion of each day; and (3) the project will have no control over the prices of the energy it buys and sells. Therefore, it is not clear that the benefits provided by the project will outweigh its adverse impacts. American Rivers requests that Commission staff review the Rocky Mountain Econometrics report provided as Appendix A to its comment letter.

Response: Commission staff reviewed the report and offers the following responses to each of American Rivers' points:

Regarding item #1, as explained in section 4.0, *Developmental Analysis*, the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,[30] is to compare the current cost to produce project power to an estimate of the cost to provide the same amount of energy and capacity for the region using the most likely alternative source of power (cost of alternative power). If the difference between the cost to produce an equivalent amount of power from an alternative source and the total annual project cost is positive, the project produces power at a cost less than the cost of producing from the most likely least-cost source of alternative power. If the difference between the alternative source of power's annual cost and the total annual project cost is negative, the project costs more to produce an equivalent amount of power from the most likely least-cost source of alternative power. This estimate helps support an informed decision concerning what is in the public interest with respect to a proposed license. It is not intended to determine whether the project would be profitable to operate as conditioned in the license. That decision is left to the licensee because there are many factors that a licensee might consider in deciding whether it makes financial sense to develop a project. Furthermore, while the analysis helps support an informed decision concerning what is in the public interest, project economics is only one of many public

[30] 72 FERC ¶ 61,027 (1995).

interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

Regarding item #2, this is characteristic of pumped storage systems: water is pumped to the upper reservoir during low demand periods and used to generate during higher-demand periods. As such, FFP states that the project would typically generate 8 hours per day and pump/refill during the remaining 16 hours of the cycle.

Regarding item #3, this is typical of any wholesale market such as the one in which the project would operate. This makes low demand energy less expensive and high-demand energy more expensive, which is the basis for the feasibility of a pumped storage project.

COMPREHENSIVE PLANS

Comment: EPA recommends that Commission staff consider and summarize "relevant state, tribal, or local adaptation plans."

Response: Section 10(a)(2)(A) of the FPA,[31] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[32] As stated in section 5.4, *Consistency with Comprehensive Plans*, Commission staff reviewed comprehensive plans applicable to the Goldendale Project (Appendix I). After the draft EIS was issued, staff identified two comprehensive plans pertaining to the Lewis and Clark National Historic Trail that were not considered in the draft EIS. In the final EIS, we have added these two plans to the list in Appendix I and reviewed them. No inconsistencies were found. We are not aware of any other federal or state comprehensive plans that would apply to the Goldendale Project area.

[31] 16 U.S.C. § 803(a)(2)(A).

[32] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2022).

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APPENDIX M – WASHINGTON DEPARTMENT OF ECOLOGY WATER QUALITY CERTIFICATION CONDITIONS (ISSUED MAY 22, 2023)

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Water Quality Certification Conditions

The following conditions will be incorporated into the FERC license and the Corps permit and strictly adhered to by the Free Flow Power Project 101, LLC (c/o Rye Development).

Specific condition justifications and citations are provided below each condition.

A. GENERAL CONDITIONS

1. In this WQC Order, the term "Project Proponent" shall mean the Free Flow Power Project 101, LLC (c/o Rye Development) and its agents, assignees, and contractors.

    - Justification - Ecology needs to identify that conditions of this WQC Order apply to anyone conducting work on behalf of the Project Proponent to ensure compliance with the water quality standards and other applicable state laws.

    - Citation - 40 CFR 121.1(j), Chapter 90.48 RCW, RCW 90.48.080, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC, Chapter 173-201A WAC, and WAC 173-225-010.

2. All submittals required by this WQC Order shall be sent to Ecology's Headquarters Office, Attn: Federal Permit Manager, via e-mail to fednotification@ecy.wa.gov and cc to loree.randall@ecy.wa.gov. The submittals shall be identified with WQC Order No. 21703 and include the Project Proponent's name, FERC license number, Corps permit number, project name, project contact, and the contact phone number.

    - Justification - Ecology needs to identify where information and submittals are to be submitted to be in compliance with the requirements of this WQC Order.

    - Citation - Chapter 90.48 RCW, RCW 90.48.120, RCW 90.48.260, Chapter 173-201A WAC, and WAC 173-225-010.

3. Work authorized by this WQC Order is limited to the work described in the WQC request package received by Ecology on 5/23/2022, and the supporting documentation identified in Table 1.

    - Justification - Ecology has the authority to prevent and control pollution of state waters. By authorizing a discharge into a water of the state, through a WQC, Ecology is certifying the project as proposed will not negatively impact water quality. Therefore, it is imperative the project is conducted as it was presented during the review process. Any deviations from information within the WQC Request package and this WQC Order must be disclosed prior to the initiation of the planned work and may require a new WQC request.

    - Citation - 40 CFR 121.5, 40 CFR 121.10, 40 CFR 121.11, Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC, Chapter 173-201A WAC, Chapter 173-204 WAC, and WAC 173-225-010.

4. The Project Proponent shall provide Ecology documentation for review before undertaking any major changes to the proposed project that could significantly and adversely affect water quality, other than those project changes required by this WQC Order.

    - Justification - Ecology has independent authority to enforce our 401 certification conditions issued through this WQC Order pursuant to RCW 90.48, and has independent state authority to ensure protection of state water quality. To ensure the project will comply with water quality standards in the event of any major changes, Ecology must be able to review the scope of work involved in the construction and operation of the project, otherwise all work must stop and a new 401 certification pre-filing meeting, followed by a new WQC request (after requisite 30-days) is required.

    - Citation - 40 CFR 121.1(k) and (n), 40 CFR 121.3, 40 CFR 121.5, 40 CFR 121.11, Chapter 90.48 RCW, and Chapter 173-201 WAC.

5. The Project Proponent shall keep copies of this WQC Order on the job site and readily available for reference by Ecology personnel, the construction superintendent, construction managers and lead workers, and state and local government inspectors.

    - Justification - All parties (including on-site contractors) must be aware of and comply with the WQC Order for the protection of water quality.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-201A WAC, and WAC 173-225- 010.

6. The Project Proponent shall hire third party personnel, with a Certified Erosion and Sediment Control Lead (CESL) certification, to:

    a. Conduct site inspections and monitoring during construction.

    b. Provide notification required by this WQC Order and other water quality permits.

    c. Ensure that all plans and reports are submitted to Ecology as required by this WQC Order and other water quality permits.

    d. Submit (per A.2.) monthly written project status reports of the construction activities and changes that occurred on site. The frequency of these reports may be adjusted as the project evolves.

    - Justification - Ecology must have a third party person on site that has the authority to oversee the project to prevent and control pollution of state waters. Requiring a third party will allow for a neutral party to oversee the work and reports back to Ecology thus ensuring work is conducted in a manner that meets this WQC Order and water quality requirements.

    - Citation - 40 CFR 121.5, 40 CFR 121.10, 40 CFR 121.11, Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC, Chapter 173-201A WAC, Chapter 173-204 WAC, and WAC 173-225-010.

7. The Project Proponent shall provide access to the project site upon request by Ecology personnel for site inspections, monitoring, and/or necessary data collection, to ensure that conditions of this WQC Order are being met.

    - Justification - Ecology must be able to investigate and inspect construction sites and facilities for compliance with all state rules and laws.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.090, RCW 90.48.120, Chapter 173-201A WAC, and WAC 173-225-010.

8. The Project Proponent shall ensure that all project engineers, contractors, and other workers at the project site with authority to direct work have read and understand relevant conditions of this WQC Order and all permits, approvals, and documents referenced in this WQC Order. The Project Proponent shall provide Ecology a signed statement (see Attachment A for an example) before construction begins.

    - Justification - Ecology needs to ensure that anyone conducting work at the project, on behalf of the Project Proponent, are aware of and understand the required conditions of this WQC Order to ensure compliance with the water quality standards and other applicable state laws.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-201A WAC, and WAC 173-225- 010.

9. This WQC Order does not authorize direct, indirect, permanent, or temporary impacts to waters of the state or related aquatic resources, except as specifically provided for in conditions of this WQC Order.

    - Justification - Ecology has the authority to prevent and control pollution of state waters, and to protect designated uses. By authorizing a discharge into a water of the state, through a water quality certification, Ecology is certifying the project as proposed will not negatively impact state water quality and will comply with the state's water quality requirements. Therefore, it is imperative the project is conducted as it was presented during the review process, and as conditioned herein.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.120, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300(2)(e)(i), WAC 173-201A-310, WAC 173-204-120, and WAC 173-225-010.

10. Failure of any person or entity to comply with the WQC Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the state's water quality standards and the conditions of this WQC Order.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses. Ecology has independent state authority to ensure protection of state water quality. Civil penalties and other enforcement actions are the primary

means of securing compliance with water quality requirements.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.037, RCW 90.48.080, RCW 90.48.120, RCW 90.48.140, RCW 90.48.142, RCW 90.48.144, and WAC 173-225-010.

11. The Project Proponent shall send (per A.2.) a copy of the final Federal license and permit to Ecology's Federal Permit Manager within two weeks of receiving it.

    - Justification - This condition is needed to ensure that all the conditions of the WQC Order have been incorporated into the federal permit.

    - Citation - 40 CFR 121.10, 40 CFR 121.11, and Chapter 90.48 RCW.

12. This WQC Order will automatically transfer to a new owner or operator if:

    a. A Request for Transfer of Order form is completed between the Project Proponent and new owner or operator with the specific transfer date of the WQC Order's obligations, coverage, and liability and submitted to Ecology per condition A.2. Link to form: https://apps.ecology.wa.gov/publications/SummaryPages/ECY070695.html;

    b. A copy of this WQC Order is provided to the new owner or operator.

    c. Ecology does not notify the new Project Proponent that a new WQC Order is required to complete the transfer.

    - Justification - Ecology has independent state authority to ensure protection of state water quality. Ecology needs to ensure that anyone conducting work at the project, including any new owners or operators, are aware of and understand the required conditions of this WQC Order to ensure compliance with the water quality standards and other applicable state laws.

    - Citation - 40 CFR 121.5, Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-201A WAC, and WAC 173-225-010.

B. PERMITS OR AUTHORIZATIONS

1. This Certification does not authorize any discharge of waters that cause or tend to cause pollution, as determined by Ecology, to waters of the state, including the Swale Creek drainage and discharges to groundwater. All applicable water quality permits required under the Water Pollution Control Act (RCW 90.48), or the federal Clean Water Act, must be obtained by the project proponent prior to discharge.

    a. The project proponent must submit a complete application to Ecology for a National Pollutant Discharge Elimination System (NPDES) discharge permit, per WAC 173-220, at least 180 days prior to any discharge of wastewater to the Swale Creek Drainage.

b. If proposing to discharge wastewater to ground, the proponent must submit a complete application to Ecology for a State Waste Discharge permit, per WAC 173-216, at least 60 days prior to discharging to ground.

c. The Project Proponent must provide all known, available, and reasonable methods of prevention, control, and treatment to any discharge of waters from the reservoir, per WAC 173-216, and as approved by Ecology prior to discharge, irrespective of any additional requirements to obtain applicable water quality permits.

- Justification - Ecology must protect waters of the state and prevent potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, RCW 90.48.260, Chapter 173-200 WAC, WAC 173-200-040, Chapter 173-201A WAC, WAC 173-201A- 300 - 330, WAC 173-204-120, Chapter 173-216 WAC, Chapter 173-220 WAC, and WAC 173-225-010.

2. The Project Proponent shall obtain and comply with the conditions of the following permits for this project**:**

a. Construction Stormwater General Permit and a Companion Order to address known contamination in the vicinity of the lower reservoir.

b. Sand and Gravel General Permit, unless a portable concrete batch plant with a current permit will be used.

- Justification - Ecology requires general permits to limit the discharge of pollutants to surface waters and limits the discharge of pollutants to surface and ground water. Ecology must prevent potential discharges of pollution that can affect water quality and protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, RCW 90.48.260, Chapter 173-200 WAC, WAC 173-200-040, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-220, and WAC 173-225-010.

3. The Project Proponent shall obtain and comply with a Surface Reservoir Permit for this project prior to filling the reservoirs.

- Justification - Ecology must promote and protect the interests of the public waters of the state and preserve its natural resources and aesthetic values. A reservoir permit will be required whenever it is proposed to construct a barrier across a stream, channel, or water course, and which will actually retain for a beneficial use a portion of the annual runoff of the stream or water course. This will also apply to a reservoir adjacent to a stream channel when water will be required to fill the reservoir in addition to constant diversion to keep it full.

- Citation - Chapter 90.03 RCW, RCW 90.03.005, Chapter 90.48 RCW, RCW

90.48.030, RCW 90.48.080, RCW 90.48.260, Chapter 90.54 RCW, Chapter 173-201A WAC, WAC 173-201A-300-330, WAC 173-204-120, WAC 173-225-010, Chapter 508-12 WAC, and WAC 508-12-260.

4. The Project Proponent shall implement an Ecology approved Cleanup Action Plan in accordance with the schedule as required under a Model Toxics Control Act order or decree prior to conducting any ground-disturbing construction activities within the CGA Site.

    - Justification - Ecology will require any cleanup action be protective of human health and the environment, including setting appropriate soil, groundwater, sediment, and surface water cleanup levels (where applicable). This includes requiring that all applicable, relevant, and appropriate requirements are met – which includes the state's water quality standards.

    - Citation - Chapter 70A.305 RCW, Chapter 70A.300 RCW, Chapter 90.48 RCW, Chapter 173- 200 WAC, Chapter 173-201A WAC, Chapter 173-204 WAC, Chapter 173-303 WAC, and Chapter 173-340 WAC

C. WATER QUALITY CRITERIA AND MONITORING

1. This WQC Order does not authorize the Project Proponent to exceed applicable water quality standards beyond the limits established in Chapter 173-201A WAC, except as authorized by this WQC Order.

    - Justification - This condition ensures compliance with water quality standards to protect surface waters of the state. Ecology must protect waters of the state from potential discharges of pollution that can affect water quality and protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

2. Water Quality of the reservoir water to be discharged to Swale Creek shall meet the following limits, along with the specified water quality criteria within the NPDES permit for this discharge.

    a. Temperature - February 15 through June 1, the 7-day average daily maximum temperature value must not exceed 16ºC (60.8ºF).

    b. pH – pH shall be within the range of 6.5 to 8.6 with a human-caused variation within the above range of less than 0.2 units.

    c. DO – 10 mg/l or 95% saturation.

    - Justification - This condition ensures compliance with water quality standards to protect surface waters of the state. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to

protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-204-400, and WAC 173-225-010.

3. The Project Proponent shall conduct water quality monitoring as described in the WQMP Plan, identified in Table 1 (hereafter referred to as the WQMP), unless otherwise required in the WQC Order or NPDES permit(s) issued for this project.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and prevent exceedances of the water quality standards that protect aquatic life and beneficial uses.

    - Citation - RCW 90.48, RCW 90.48.030, Chapter 173-201A WAC, 173-201A-300-330 and WAC 173-225-010.

4. The Project Proponent shall revise the Draft Water Quality Monitoring Plan (Plan), identified in Table 1, to be consistent with the conditions of this WQC Order and with any NPDES permit issued for this project. The revised Plan shall be submitted to Ecology's Federal Permit Manager (per Condition A.2 of this Order) for review at least 30 days prior to beginning any work covered by this WQC Order.

    - Justification - This condition is necessary to ensure that the monitoring and BMPs that are proposed by the Project Proponent and authorized by Ecology are conducted to protect water quality. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

5. Monitoring results shall be submitted annually or as required by the NPDES permit(s) to Ecology's Federal Permit Manager, per condition A.2 and the requirements of the permit(s).

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and prevent exceedances of the water quality standards that protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

6. Ecology may ask or could use its discretionary authority to require the Project Proponent to provide mitigation and/or additional monitoring if the monitoring results indicate that the water quality standards have not been met.

- Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution and ensure that aquatic life and beneficial uses are protected.

- Citation - RCW 90.48, RCW 90.48.010, RCW 90.48.030, RCW 90.48.080, RCW 90.48.120, Chapter 173-201A WAC, 173-201A-300-330 WAC, and Chapter 173-204 WAC.

D. PLANS TO BE IMPLEMENTED BY THE PROJECT PROPONENT

1. Revised or additional plans are required from the Project Proponent throughout this document. These plans shall be provided to Ecology for review (Per A.2.), either prior to commencing construction or as specified for each plan below. It is the Project Proponent's responsibility to provide the information in a timely manner.

    - Justification - Ecology needs to be aware of any proposed changes to the project by reviewing any updated or new plans to ensure that the conditions of this WQC Order and the water quality standards and other applicable state laws are met.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-201A WAC, and WAC 173-225- 010.

2. The Project Proponent shall finalize the following plans and implement them once Ecology has provided written notification that our review has been completed:

    a. Goldendale Draft Mitigation and Planting Plan Rev 2

    b. Goldendale Draft SWPPP (CSGP) Rev 2

    c. Goldendale Draft Dewatering Plan Rev 2

    d. Goldendale Draft WQ Monitoring Plan Rev 2

    - Justification - Ecology needs to be provided the final plans for the project to ensure that the conditions of this WQC Order can be and the water quality standards and other applicable state laws are met.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-201A WAC, and WAC 173- 225-010.

3. The Project Proponent shall prepare plans describing the cleanup actions and WSI closure in accordance with the requirements and schedule put forth in the Model Toxics Control Act order or decree. These plans at a minimum shall meet the requirements of WAC 173-340-400 and Chapter 173-303 WAC, and include detailed engineering design documents and specific protocols for implementation of the Cleanup Action Plan.

    - Justification - Ecology must ensure that the cleanup actions are designed, constructed and operated in a manner that is consistent with the Cleanup Action

Plan, accepted engineering practice, and the requirements of applicable or relevant and appropriate state and federal law.

- Citation – Chapter 70.105 RCW, Chapter 70A.305 RCW, Chapter 90.48 RCW, Chapter 173-201A WAC, Chapter 173-225 WAC, Chapter 173-340 WAC, and Chapter 173-303 WAC.

E. NOTIFICATION REQUIREMENTS

1. The following notifications shall be made via phone or e-mail (e-mail is preferred) to Ecology's Federal Permit Manager via e-mail to fednotification@ecy.wa.gov and cc to loree.randall@ecy.wa.gov. Notifications shall be identified with WQC Order No. 21703, FERC No. 14861, Corps Reference No. NWS-202100572, and include the Project Proponent name, project name, project location, project contact and the phone number.

    a. Immediately following a violation of state water quality standards or when the project is out of compliance with any conditions of this WQC Order;

    b. At least ten (10) days prior to all pre-construction meetings;

    c. At least ten (10) days prior to starting construction; and,

    d. At least thirty (30) days prior to operation.

    - Justification - Ecology must be aware of when a project starts and ends and whether there are any issues. This allows Ecology to evaluate compliance with the state water quality requirements.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.120, Chapter 173-201A WAC, WAC 173-201A-300 - 330, Chapter 173-204 WAC, and WAC 173-225-010.

2. In addition to the phone or e-mail notification required under D.1.a. above, the Project Proponent shall submit a detailed written report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

    - Justification - Ecology has independent state authority to ensure protection of state water quality. This condition is intended to assure the Project Proponent remains in full compliance with state water quality requirements for the duration of the project.

    - Citation - Chapter 90.48 RCW, RCW 90.48.120, Chapter 173-201A WAC, and WAC 173-225- 010.

3. If the project construction has not started within 13 months of issuance of this WQC Order, the Project Proponent shall submit per Condition A.2 a written construction status report and submit status reports every 12 months until construction begins.

- Justification - Ecology must be aware of when a project starts and ends and whether there are any issues. This allows Ecology to evaluate compliance with the state water quality requirements.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.120, Chapter 173-201A WAC, WAC 173-201A-300 - 330, Chapter 173-204 WAC, and WAC 173-225-010.

F. TIMING

1. This WQC Order is effective upon issuance of the FERC license for this project and will remain valid for the duration of the associated license for the project.

    - Justification - Certifications are required for any license or permit that authorizes an activity that may result in a discharge or fill material into waters. This WQC Order is not valid until the Federal agency issues a permit. Additionally, Ecology needs to be able to specify how long the WQC Order will be in effect.

    - Citation - Chapter 90.48 RCW, Chapter 173-201A WAC, and WAC 173-225-010.

2. It is estimated that the initial fill quantity of 7,640 acre-feet at a rate of 21 cubic feet per second (cfs) will take approximately 6 months. The Project Proponent must plan for this to occur across a 2-calendar-year period (e.g., about 3 months at the end of one calendar year, and the first 3 months of the subsequent calendar year) to comply with the consumptive use quantity authorized by the KPUD water right.

    - Justification - Ecology must promote and protect the interests of the public waters of the state and preserve its natural resources and aesthetic values. Currently available consumptive portions of KPUD's water right total 4,137 acre-feet per year, thus requiring the reservoir to be filled across two or more calendar years.

    - Citation - Chapter 90.03 RCW, RCW 90.03.005, Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, RCW 90.48.260, Chapter 90.54 RCW, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-225-010, Chapter 508-12 WAC, and WAC 508-12-260.

G. CONSTRUCTION

GENERAL CONDITIONS

1. Construction stormwater, sediment, and erosion control Best Management Practices (BMPs) suitable to prevent exceedances of state water quality standards shall be in place before starting construction and shall be maintained throughout the duration of the activity.

    - Justification - Disturbed areas without appropriate BMPs and construction methods can discharge excess sediment to waters of the state and degrade water quality. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, Chapter 90.48.030 RCW, Chapter 90.48.080 RCW, Chapter 173-201A WAC, Chapter 173-201A-300-330 WAC, Chapter 173-204-120 WAC, and Chapter 173-225-010 WAC.

2. All clearing limits, stockpiles, staging areas, and trees to be preserved shall clearly be marked prior to commencing construction activities and maintained until all work is completed for each project.

    - Justification - Ensures that the project proponent preserves sensitive areas from discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

3. Within the project limits[33] all environmentally sensitive areas including, but not limited to, wetlands, wetland buffers, riparian buffers and mitigation areas shall be fenced with high visibility construction fencing (HVF), prior to commencing construction activities. All field staff shall be trained to recognize HVF, understand its purpose and properly install it in the appropriate locations. HVF shall be maintained until all work is completed.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

4. No petroleum products, fresh concrete, lime or concrete, chemicals, or other toxic or deleterious materials shall be allowed to enter waters of the state.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

5. All construction debris, and other solid waste material shall be properly managed and disposed of in an upland disposal site approved by the appropriate regulatory authority.

    - Justification - Ecology must be assured that the Project Proponent is managing and

[33] Project limits include mitigation sites, staging areas, borrow sources, and other sites developed or used to support project construction.

disposing of material to protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

6. Applicant shall ensure that fill (soil, gravel, or other material) placed for the proposed project does not contain toxic materials in toxic amounts.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300-330, WAC 173-204-120, and WAC 173-225-010.

7. If seeding is used for temporary erosion control, it must be a seed mix consisting of native, annual, non-invasive plant species.

    - Justification - Establishment of native species are a necessary element of wetland mitigation. Planting mixes must not contain non-native, invasive species, including noxious weeds since they will inhibit the success of the mitigation site and plan. Noxious weeds are a subset of invasive species that have been classified according to the seriousness of the threat they pose. Governments and landowners are required to control them.

    - Citation - 40 CFR 131.12, Chapter 16-228-1400 WAC, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A-300, WAC 173-225-010, and WAC 173-226-110.

EQUIPMENT AND MAINTENANCE

8. Stock piles and staging areas must be located a minimum of 25-feet, from waters of the state, including wetlands and their buffers, unless otherwise requested by the Project Proponent.

    - Justification - Requiring a minimum setback ensures that material will not end up in waters of the state. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

9. Equipment used for this project shall be free of external petroleum-based products while used around the waters of the state, including wetlands. Accumulation of soils or debris shall be removed from the drive mechanisms (wheels, tires, tracks, etc.) and the undercarriage of equipment prior to its use around waters of the state, including wetlands.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

10. Trucks hauling soil or contaminated media off site shall implement protective measures to avoid dust escaping or leaching.

    - Justification – Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 70.105D RCW, RCW 90.48, 90.48, RCW 90.48.030, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300-330, Chapter 173-204 WAC, and WAC 173-225- 010.

11. No equipment shall enter, operate, be stored, or parked within any sensitive area except as specifically provided for in this WQC Order.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

12. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, Chapter 173-200, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

13. Wash water containing oils, grease, or other hazardous materials resulting from washing of equipment or working areas shall not be discharged into state waters. The Project Proponent

shall set up a designated area for washing down equipment.

- Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

14. A separate area shall be set aside, which does not have any possibility of draining to surface waters, for the wash-out of concrete delivery trucks, pumping equipment, and tools.

    - Justification – Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

15. Concrete process water shall not enter waters of the state unless treated to meet the requirements of the Construction Stormwater General Permit or the Sand and Gravel General Permit, whichever is most protective. Any concrete process/contact water discharged from a confined area with curing concrete shall be contained and treated to meet state water quality standards or applicable permit requirements prior to discharge.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, Chapter 173-220 WAC, and WAC 173-225-010.

16. All excavated sediment shall be disposed upland in an approved disposal site, unless otherwise authorized by this WQC Order.

    - Justification - Ecology must be assured that the Project Proponent is managing and disposing of sediment to protect water quality and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

DEWATERING

17. Turbid de-watering water associated with construction shall not be discharged directly to

waters of the state, including wetlands, unless it meets the limitations set in applicable discharge permits.

- Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, C Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, Chapter 173-220 WAC, and WAC 173-225-010.

18. Clean de-watering water associated with construction activities that has been tested and confirmed to meet water quality standards may be discharged directly to waters of the state including wetlands. The discharge outfall method shall be designed and operated so as not to cause erosion or scour in the stream channel, banks, or vegetation.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

19. Dewatering water may not be discharged to waters of the state unless it meets Water Quality Standards (Chapter 173-201A WAC and Chapter 173-200 WAC) or permit limits at the point of discharge, unless otherwise authorized by this WQC Order. Dewatering water from the CGA Site may not be discharged to waters of the state unless it meets Model Toxics Control Act cleanup levels including those for surface water and sediment (Chapter 173-340 and Chapter 173-204).

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation – Chapter 70A.305 RCW, Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204- 120, WAC 173-225-010, and WAC 173-340.

20. The dewatering outfall or method of discharge shall be designed and operated so as not to cause erosion or scour in state waters, banks, or vegetation.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

21. All equipment associated with dewatering activities shall be properly operated and maintained.

    - Justification - Maintained equipment is less likely to fail or leak pollutants. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

CONTAMINATED MATERIAL MANAGEMENT

22. Contaminated materials are known to be present within the project site. Contaminated materials shall be managed in accordance with the detailed cleanup plans specified in Condition D.3 of this WQC Order.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 70.105D RCW, Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, Chapter 173-204 WAC, and WAC 173-225-010.

23. Remedial actions to address contaminated materials shall be implemented per the requirements of this WQC Order, water quality permits, Cleanup Action Plan and implementing MTCA order or decree, and the detailed cleanup plans specified in Condition D.3 of this WQC Order. Contaminated materials shall be managed and disposed of in accordance with state and local regulations.

    - Justification - Ecology must be assured that the Project Proponent is managing and disposing of contaminated materials to protect water quality and beneficial uses.

    - Citation - Chapter 70.105D RCW, Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, Chapter 173-204 WAC and WAC 173-225-010.

24. Post-removal soil sampling shall be conducted per the Cleanup Action Plan, implementing MTCA order or decree, and detailed cleanup plans specified in Condition D.3 of this WQC Order.

    - Justification - This condition is necessary to ensure that contaminated materials with the potential to impact water quality and beneficial uses have been addressed.

- Citation - Chapter 70.105D RCW, Chapter 90.48 RCW, RCW 90.48.030, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300 - 330, Chapter 173-204 WAC and WAC 173-225-010.

25. If new information regarding contamination at the project site is discovered, including the nature, quantity, migration, pathway, or mobility of hazardous substances, it must be reported to Ecology (per A.2.). Ecology will direct additional remedial action under the MTCA order or decree.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 70.105D RCW, RCW 90.48, 90.48, RCW 90.48.030, Chapter 173-200 WAC, Chapter 173-201A WAC, WAC 173-201A-300-330, Chapter 173-204 WAC, and WAC 173-225- 010.

H. AQUATIC RESOURCE MITIGATION CONDITIONS

1. The Project Proponent shall mitigate aquatic resource impacts as described in Draft Mitigation and Planting Plan Rev 2 (hereafter called the "Mitigation Plan") as identified in Table 1 or as required by this WQC Order.

    - Justification - Alteration of water quality necessitates the use of mitigation as a method of controlling pollution. When adequate mitigation is provided, the impacts are not considered significant enough to water quality, at least in the long-term. The water quality standards, along with mitigation, protect wetlands as well as permitting some level of degradation where unavoidable or necessary.

    - Citation - 33 CFR 332, 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A-300, and WAC 173-225-010.

2. The Project Proponent shall have a qualified professional at the Aquatic Resource mitigation site to supervise during construction and planting.

    - Justification - Mitigation success is critical to achieving control of pollution. Supervision of qualified professionals helps ensure success.

    - Citation - 40 CFR 131.12, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A- 300, and WAC 173-225-010.

3. Unless otherwise authorized by this WQC Order, the Project Proponent shall begin the compensatory mitigation project concurrently with, impacting aquatic resources S7 and S8. Otherwise, Ecology may require the Project Proponent to provide additional compensation to account for additional temporal loss of aquatic resource functions.

- Justification - Mitigation that is not emplaced concurrent with impacts will result in degradation of existing beneficial uses of the wetlands affected by the proposed action.

- Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC,WAC 173-201A-260 (3)(i-ii, WAC 173-201A-300, and WAC 173-225-010.

4. To minimize sediment releases, re-introduction of water into the mitigation stream channel shall be done gradually, and at a rate not higher than the normal flow.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300-330, WAC 173-204-120, and WAC 173-225-010.

5. The Project Proponent shall not use hay or straw on exposed or disturbed soil at the mitigation site(s), unless otherwise provided for in the Mitigation Plan.

    - Justification - Straw can be a source of noxious weeds which are a subset of invasive species that have been classified according to the seriousness of the threat they pose. Governments and landowners are required to control them. Noxious weeds can inhibit the success of a mitigation site. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - WAC 16-228-1400, WAC 173-225-010, and WAC 173-226-110 WAC.

6. Aquatic herbicides can be used or applied only by certified applicators or persons under the direct supervision of a certified applicator, and only for those uses covered by the certified applicator's license category.

    a. Applicators are required to be permitted under Ecology's Noxious Weed Control Permit.

    b. Applicators shall comply with all conditions of the Noxious Weed Control Permit.

    - Justification - Noxious weeds are a subset of invasive species that have been classified according to the seriousness of the threat they pose. Governments and landowners are required to control them. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - WAC 16-228-1400, WAC 173-225-010, and WAC 173-226-110.

7. If weed-barrier fabric is used on the site, the Project Proponent shall use only water-

permeable, fully biodegradable, non-toxic weed-barrier fabric for the entire-site and/or individual plant weed control. If use of non-biodegradable plastic weed-barrier fabric is proposed in the mitigation plan approved by Ecology, it shall be used only at the base of individual plants and shall be removed before it starts to break down, before it interferes with plant growth, or before the end of the monitoring period, whichever comes first.

- Justification - The establishment of hydrophytic vegetation and substrate characteristics, is a necessary element of the mitigation plan and is promoted by weed suppression. Suppression of weeds is necessary until hydrophytic vegetation is established, after which time the presence of the fabric will hinder vegetation establishment and may affect mitigation success.

- Citation - 40 CFR 131.12, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A- 300, and WAC 173-225-010.

8. If solid or mesh plant protector tubes are used on the mitigation site(s), Ecology strongly recommends that the Project Proponent use fully biodegradable options. If non-biodegradable plant protection options are used, they shall be removed before they interfere with plant growth or before the end of the monitoring period, whichever comes first.

    - Justification - This requirement provides assurance that the mitigation site has the best chance at being successful in achieving wetland conditions. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - 40 CFR 131.12, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), and WAC 173- 201A-300.

9. Treated water added to the mitigation stream alignment from the upper reservoir shall be discharged in a manner and at a rate not higher than the normal flow to prevent erosion or scour to the channel, banks, or vegetation.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

MITIGATION SITE MONITORING AND MAINTENANCE

10. After completing construction and planting of the mitigation sites(s), the Project Proponent shall submit to Ecology (see A.2) an as-built report, including plan sheets, documenting site conditions at Year Zero. The as-built report must:

a. Be submitted within 90 days of completing construction and planting.

b. Include the information listed in Attachment B (Information Required for As-built Reports).

- Justification - This condition is necessary to ensure the mitigation site was constructed and planted per the approved mitigation plan and serves as a baseline for monitoring performance standards, which must be met to ensure success of the mitigation site.

- Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A- 260 (3)(i-ii), WAC 173-201A-300 and WAC 173-225-010.

11. The Project Proponent shall water and maintain all mitigation site plantings so as to meet the Mitigation Plan's performance standards. If an irrigation system is installed, it shall be removed by the end of year three unless otherwise provided for in the Mitigation Plan.

    - Justification - Designing and implementing an appropriate maintenance plan is crucial to the success of a mitigation site.

    - Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i- ii), WAC 173-201A-300, and WAC 173-225-010.

12. The Project Proponent shall monitor the mitigation site for a minimum of five (5) years. The Project Proponent shall use the monitoring methods described on pages 14-26 of the Mitigation Plan.

    - Justification - A monitoring plan describes the methods used to collect and analyze data needed to show that performance standards are being met. Monitoring plans are necessary to track environmental changes at mitigation sites to ensure success of the mitigation site.

    - Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i- ii), WAC 173-201A-300 and WAC 173-225-010.

13. The Project Proponent shall submit to Ecology (see A.2) monitoring reports documenting mitigation site conditions annually for years 1, 2, 3, and 5. The monitoring reports must:

    a. Be submitted by December 31 of each monitoring year.

    b. Include the information listed in Attachment C (Information Required for Monitoring Reports).

- Justification - Monitoring reports track the environmental progress of the mitigation site, and are necessary to track environmental changes at mitigation sites to ensure success of the mitigation site.

- Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A- 260 (3)(i-ii), WAC 173-201A-300 and WAC 173-225-010.

14. Prior to implementing contingency measures not specified in the Mitigation Plan, the Project Proponent shall consult with Ecology.

    - Justification - A contingency plan is necessary in case the actions undertaken for the mitigation fail or only partially succeed. A contingency plan contains corrective measures that will be taken if monitoring indicates that performance standards are not being met. The contingency plan should outline the steps that will be taken for each performance standard if it is not met.

    - Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i- ii), WAC 173-201A-300 and WAC 173-225-010.

15. When necessary to meet the mitigation performance standards, the Project Proponent shall replace dead or dying plants with the same species, or an appropriate native plant alternative, during the current or upcoming planting season and note species, numbers, and approximate locations of all replacement plants in the subsequent monitoring report.

    - Justification - Performance standards must be met to ensure success of the mitigation site.

    - Citation - 40 CFR 131.12, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A- 300 and WAC 173-225-010.

16. If the Project Proponent has not met all compensatory mitigation conditions by the end of the monitoring period, Ecology may require additional monitoring, additional mitigation, or both. Conditions include specifications in the approved Mitigation Plan, such as performance standards for the mitigation site.

    - Justification - If the mitigation site is not meeting all compensatory mitigation conditions, then the water quality impacts will not be offset by the mitigation.

    - Citation - 40 CFR 131.12, 40 CFR 230, subpart J, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i- ii), WAC 173-201A-300 and WAC 173-225-010.

17. While construction is occurring, the project proponent shall have a qualified wetland professional, use the currently approved federal wetland delineation manual and appropriate regional supplement to delineate wetlands W6, W1, and W2 every year during the wettest

portion of the growing season and for five years after construction has been completed to ensure the wetlands' hydrology is not impacted by the project. Wetland delineation reports must be submitted to Ecology each year by December 31 for review.

- Justification - Ecology must ensure that the construction of the project does not impact unintended waters of the state in order to ensure and protect our states water quality standards.

- Citation - 40 CFR 131.12, Chapter 47.85.040 RCW, Chapter 90.48 RCW, Chapter 90.54 RCW, Chapter 90.74 RCW, Chapter 173-201A WAC, WAC 173-201A-260 (3)(i-ii), WAC 173-201A- 300 and WAC 173-225-010.

I. EMERGENCY/CONTINGENCY MEASURES

1. The Project Proponent shall provide a Spill Control Plan for review by Ecology 30 days prior to commencing construction. The Spill Control Plan shall include protocols for handling and containing hazardous material during project construction, operation, and maintenance. The Spill Control Plan shall address potential issues resulting from spills during construction operation, or maintenance. The plan shall include:

    a. a description of project operations;

    b. the general types of oil or hazardous materials in use and stored;

    c. a project plan map indicating hazardous substance storage areas;

    d. materials handling procedures and storage requirements;

    e. spill cleanup procedures for areas and processes in which spills may occur;

    f. training of key training of key personnel in the implementation of the plan;

    g. the posting of summaries of the plan around the project to facilitate implementation of response actions;

    h. revising the plan as conditions or operations change at the project (e.g., from construction to operations);

    i. BMPs that would be implemented during operation include: (1) notification to regulatory agencies, including local authorities, in accordance with applicable federal and state regulations if a spill may reach surface water or groundwater; and, (2) placement of emergency spill containment and cleanup kits (appropriate to the hazardous substances in use) in areas where they are easily accessed and used, with locations modified or moved as operations and activities change/progress at the project.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life

and beneficial uses. Any hazardous material spills or equipment leaks at this site could allow contaminants to migrate into surface waters, which could degrade water quality and adversely affect fish and wildlife.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, RCW 90.48.260, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, and WAC 173-225-010.

2. The Project Proponent shall have adequate and appropriate spill response and cleanup materials available on site to respond to any release of petroleum products or any other material into waters of the state.

    - Justification - Ecology must have assurance that the Project Proponent has the material readily available in WQC Order to address any spills that might occur to protect waters of the state. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, RCW 90.56.280, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-225-010, and WAC 173-303-145.

3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.

    - Justification - Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

    - Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, RCW 90.56.280, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-225-010, and WAC 173-303-145.

4. Discharges of oil, fuel, or chemicals into state waters or onto land with a potential for entry into state waters is prohibited. If such work, conditions, or discharges occur, the Project Proponent shall notify Ecology's Federal Permit Manager, per condition A.2, and immediately take the following actions:

    a. Cease operations at the location of the non-compliance.

    b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and prevent further environmental damage.

    c. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over

normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.

d. Immediately notify Ecology's Regional Spill Response Office and the Washington State Department of Fish and Wildlife with the nature and details of the problem, any actions taken to correct the problem, and any proposed changes in operation to prevent further problems.

e. Immediately notify the National Response Center at 1-800-424-8802, for actual spills to water only.

- Justification - This condition is necessary to prevent oil and hazardous materials spills from causing environmental damage and to ensure compliance with water quality requirements. The sooner a spill is reported, the quicker it can be addressed, resulting in less harm. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, RCW 90.56.280, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-225-010, and WAC 173-303-145.

5. Notify Ecology's Regional Spill Response Office immediately if chemical containers (e.g., drums) are discovered on-site or any conditions present indicating disposal or burial of chemicals on-site that may impact surface water or ground water.

- Justification - Oil and hazardous materials spills cause environmental damage. The sooner a spill is reported, the quicker it can be addressed, resulting in less harm. Ecology must protect waters of the state from all discharges and potential discharges of pollution that can affect water quality to protect aquatic life and beneficial uses.

- Citation - Chapter 90.48 RCW, RCW 90.48.030, RCW 90.48.080, Chapter 90.56 RCW, RCW 90.56.280, Chapter 173-201A WAC, WAC 173-201A-300 - 330, WAC 173-204-120, WAC 173-225-010, and WAC 173-303-145.

Attachment B

Information Required for As-built Reports

Goldendale Energy Storage Project Ecology Order # 21703

And

Corps Reference # 202100572

Ecology requires the following information for as-built reports submitted under this Order. Ecology will accept additional information that may be required by other agencies.

Background Information

1. Project name.

2. Ecology Order number and the Corps reference number.

3. Name and contact information of the person preparing the as-built report. Also, if different from the person preparing the report, include the names of:

    a) The applicant

    b) The landowner

    c) Qualified professional on site during construction of the mitigation site(s).

    d) Date the report was produced.

Mitigation Project Information

4. Brief description of the **final** mitigation project with any changes from the approved plan made during construction. Include:

    a) **Actual** area of stream and buffer establishment.

    b) Important dates, including:

        i. Start of project construction.

        ii. When work on the mitigation site began and ended.

        iii. When different activities such as grading, removal of invasive plants, installing plants, and installing habitat features began and ended.

5. Description of any problems encountered and solutions implemented (with reasons for changes) during construction of the mitigation site(s).

6. List of any follow-up actions needed, with a schedule.

7. Vicinity map showing the geographic location of the site(s) with landmarks.

8. Mitigation site map(s), 8-1/2" x 11" or larger, showing the following:

    a) Boundary of the site(s).

    b) Topography (with a description of how elevations were determined).

    c) Installed planting scheme (quantities, densities, sizes, and approximate locations of plants, as well as the source(s) of plant material).

d) Location of habitat features.

e) Location of permanent photo stations and any other photos taken.

Include the month and year when each map was produced or revised. The site map(s) should reflect on-the-ground conditions after the site work is completed.

9. Photographs taken at permanent photo stations and other photographs, as needed. Photos must be dated and clearly indicate the direction from which each photo was taken. Photo pans are recommended.

Attachment C

Information Required for Monitoring Reports

Goldendale Energy Storage Project Ecology Order # 21703

And

Corps Reference # 202100572

Ecology requires the following information for monitoring reports submitted under this Order. Ecology will accept additional information that may be required by other agencies.

Background Information

1. Project name.

2. Ecology Order number and the Corps reference number.

3. Name and contact information of the person preparing the monitoring report. Also, if different from the person preparing the report, include the names of:

    a) The applicant

    b) The landowner

    c) The party responsible for the monitoring activities

4. Dates the monitoring data were collected.

5. Date the report was produced.

Mitigation Project Information

6. Brief description of the mitigation project, including area and mitigation type(s) (re-establishment, rehabilitation, creation, enhancement, preservation, upland, buffers).

7. Description of the monitoring approach and methods. For each performance standard being

measured provide the following information:

a) Description of the sampling technique (e.g., monitoring point for soil or hydrology, line or point intercept method, ocular estimates in individually placed plots). If you are using a standardized technique, provide a reference for that method.

b) Size and shape of plots or transects.

c) Number of sampling locations and how you determined the number of sampling locations to use.

d) Percent of the mitigation area being sampled.

e) Locations of sampling (provide a map showing the locations), how you determined where to place the sampling locations (e.g., simple random sample), and whether they are permanent or temporary.

f) Schedule for sampling (how often and when).

g) Description of how the data was evaluated and analyzed.

8. Summary table(s) comparing performance standards with monitoring results and whether each standard has been met.

9. Discussion of how the monitoring data were used to determine whether the site(s) is meeting performance standards.

10. Goals and objectives and a discussion of whether the project is progressing toward achieving them.

11. Summary, including dates, of management actions implemented at the site(s), for example, maintenance and corrective actions.

12. Summary of any difficulties or significant events that occurred on the site that may affect the success of the project.

13. Specific recommendations for additional maintenance or corrective actions with a timetable.

14. Photographs taken at permanent photo stations and other photographs, as needed. Photos must be dated and clearly indicate the direction the camera is facing. Photo pans are recommended.

15. Vicinity map showing the geographic location of the site(s) with landmarks.

16. Mitigation site map(s), 8-1/2” x 11” or larger, showing the following:

a) Boundary of the site(s).

b) Location of permanent photo stations and any other photos taken.

c) Data sampling locations, such as points, plots, or transects.

d) Approximate locations of any replanted vegetation.

e) Changes to site conditions since the last report, such as areas of regrading, shift in habitat features, or a change in water regime.

f) Include the month and year when each map was produced or revised. The site map(s) should reflect on-the-ground conditions during the most recent monitoring year.