

SHORELINE
and
HABITAT MANAGEMENT PLAN
for
The Falls

a multi-use development located in
Section 18, T25N, R43E
Spokane, WA.
July 10, 2017



Biology
Soil &
Water, Inc.

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HABITAT MANAGEMENT PLAN
for
The Falls

a multi-use development located in

Section 18, T25N, R43E
at
829 W. Broadway
City of Spokane, WA.

Completed for

LB Stone Properties

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SHORELINE AND HABITAT MANAGEMENT PLAN

1.0: INTRODUCTION

Biology Soil & Water, Inc. (BSW) was retained by LB Stone Properties to complete a Shoreline and Habitat Management Plan (HMP) for The Falls project located at old YWCA site in downtown Spokane, WA (Figures 1 - 5). The project entails demolition of the existing YWCA and building two 13 floor towers and a podium building over below grade parking. The 510,500 +/- sq. ft. project includes retail, office, and residential uses. The first tower will begin construction in the spring of 2018 with second tower to follow shortly thereafter. The project does not prevent access or interfere with normal public use of public shorelines, but enhances the shoreline existing condition and improves access to insure compatibility with other uses in the area.

The purpose of this report is to assess and mitigate potential adverse impacts to Shoreline Habitat, Priority Habitats and Species, and ecological functions as defined by the Shoreline Master Program (SMP) and City of Spokane Municipal Code. The stated goal of the SMP is to rehabilitate degraded shorelines, prevent net loss of shoreline ecological functions by preserving priority habitat (WAC 173-26-020(24), and identify specific mitigation measures that will achieve a No Net Loss of ecological function determination prior to issuance of development approvals. The project will have No Effect on any species protected under the Endangered Species Act (ESA) as State or Federally listed Threatened, Endangered, Proposed, or Candidate species because none were identified by BSW in the Project or Action Areas.

The priority habitats and species listed in the Spokane Municipal Code are adopted from the Washington State Priority Habitats and Species Program (PHS) (WDF&W, 2008). The SMP regulations expand site assessment requirements beyond priority habitats and species to include all terrestrial and aquatic organisms as well as chemical and physical parameters that cycle within the ecosystem to regulate the productivity of adjacent freshwater ecosystems. The SMP requires mitigation for shoreline impact through the rehabilitation of historically degraded habitat.

The Shoreline Designation of the site is Intensive Urban. The site is located in the Interim Riparian Zone Segment #2 defined as Green Street Bridge to Confluence with Latah Creek. The Riparian Habitat Area (RHA) for Zone 2 extends landward 130 feet from the OHWM. Fill material under the YWCA property covers about two thirds of the Spokane River shoreline and extends west from the river's edge across Lincoln Street at its widest point. The proposed development will occur in the existing disturbed footprint of the YWCA and the historically disturbed Shoreline where all native vegetation was removed when the entire proposed development footprint was covered with fill material.

The proposed impact area will be slightly larger than the existing condition because a trail is proposed at the top of the bank. For that reason, the proposed development plan does not fully comply with the development standards specified for Zone 2 so plans-in-lieu of compliance are proposed. Extensive native shrub plantings on the shoreline below the development are proposed to mitigate project impacts. The following report describes existing environmental conditions and project impacts, and prescribes mitigation to insure No Net Loss of ecological function.

Figure 1

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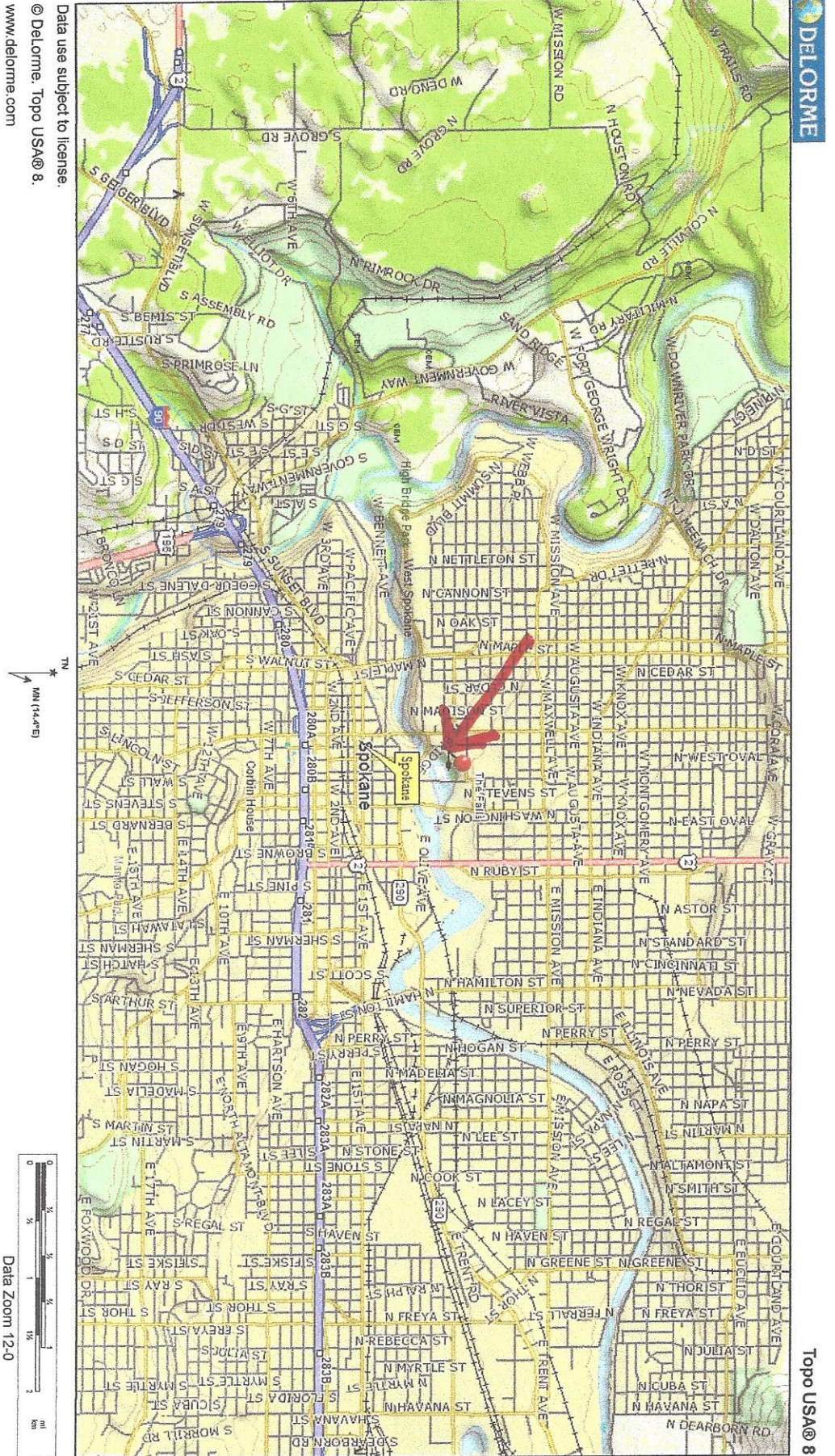
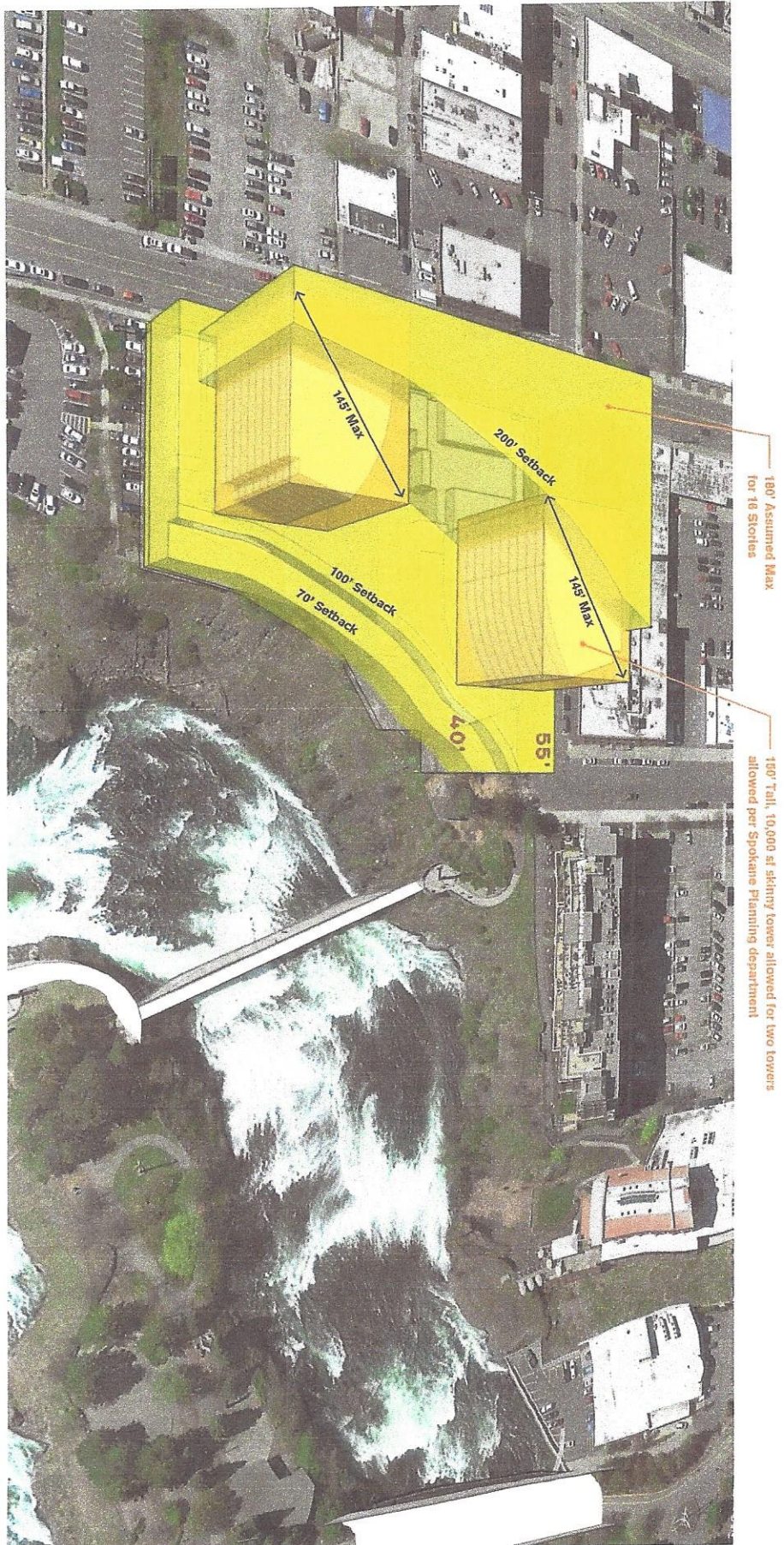


Figure 2
Google Earth

feet 1000
meters 300



Figure 3



Preliminary Option with Shoreline Zoning Envelope

The Falls Zoning and Shoreline Building Envelope Study

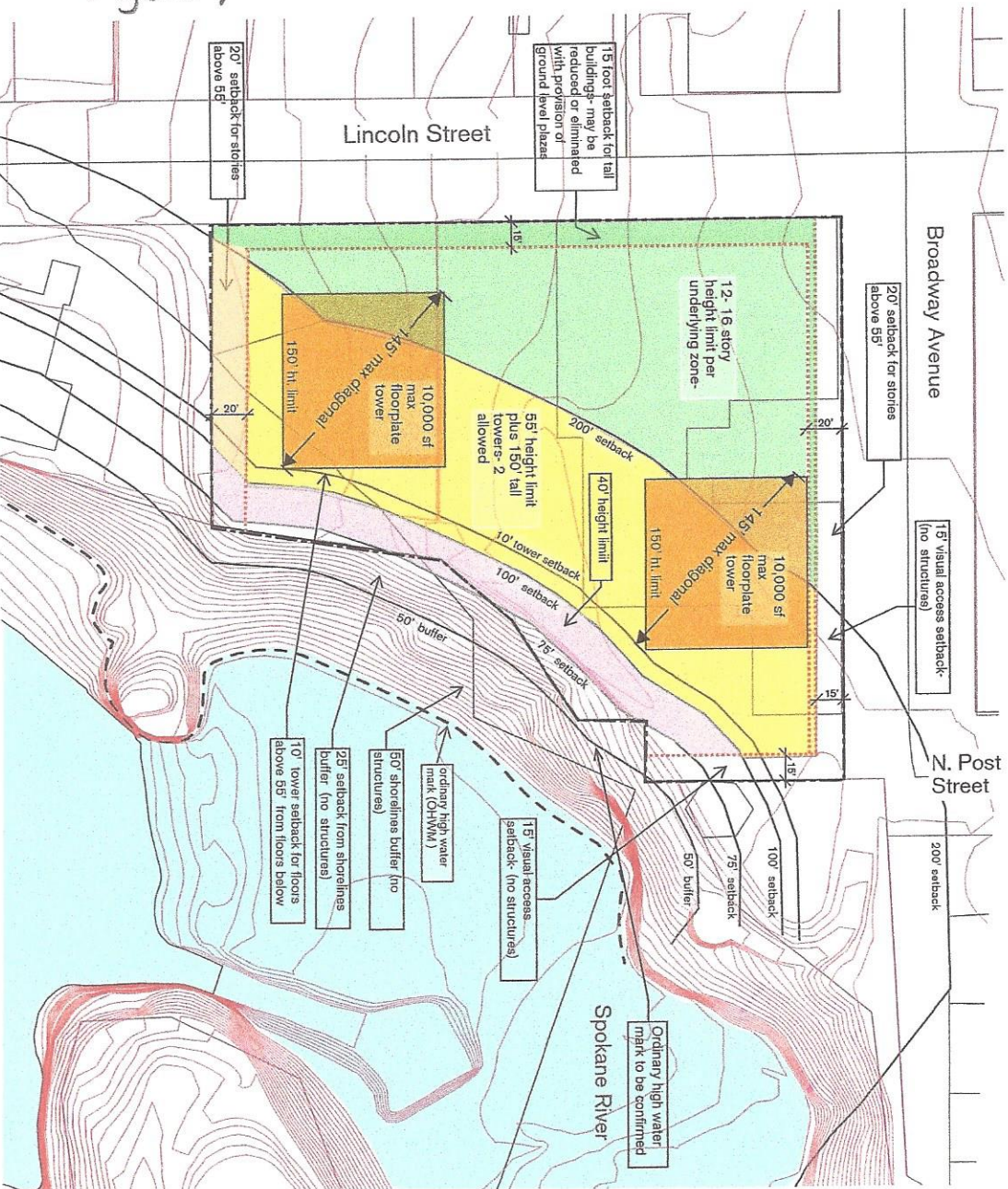


Figure 4

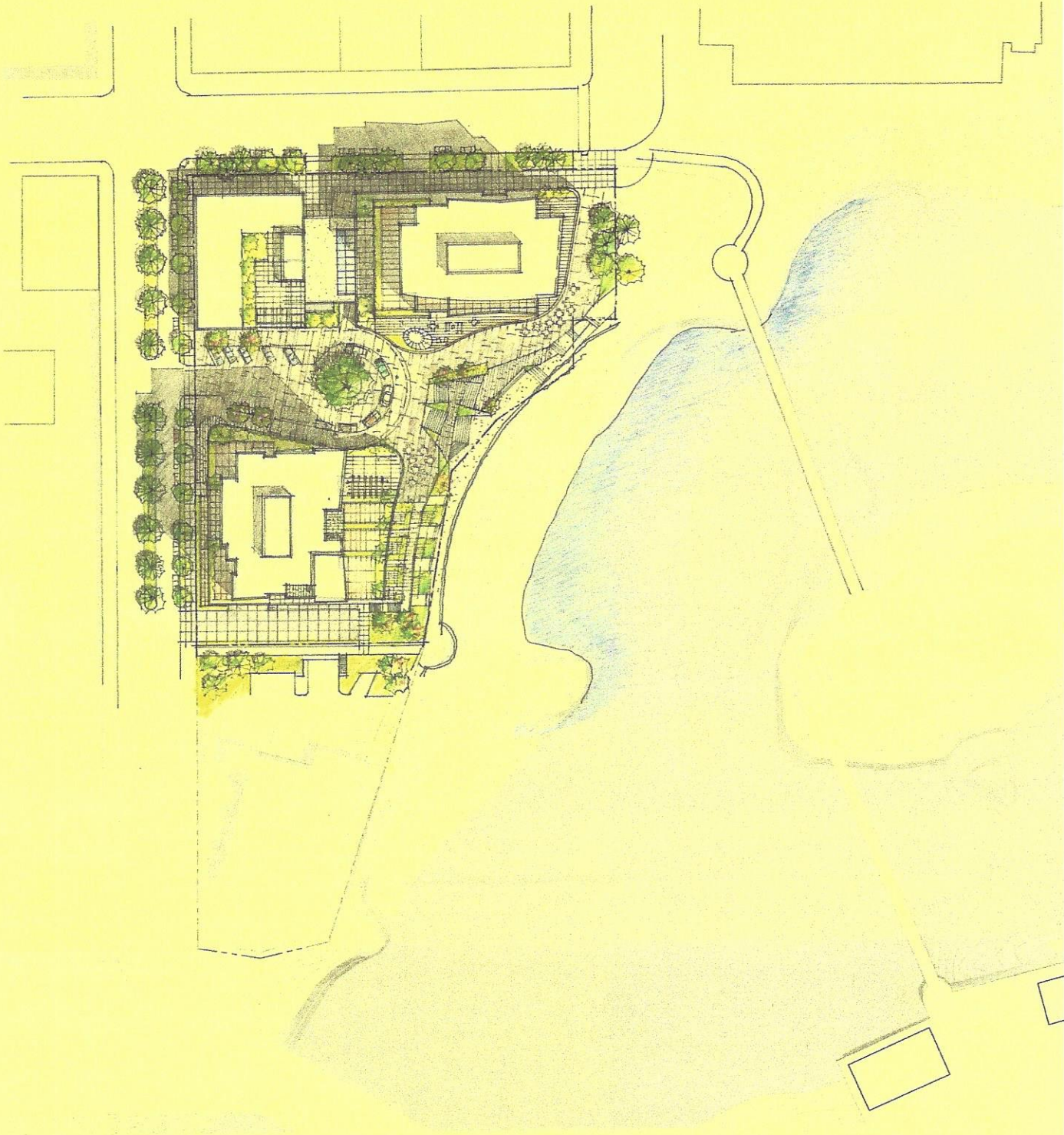
COLLIERSWORREMAN THE FALLS | MIXED USE PROJECT | SPOKANE, WA

- 40' height limit
- 55' height limit
- 150' height limit
- 12-16 story height limit (12 story base height with 2 and 4 story borus possible)

- Maximum structure width parallel to river = 70%
- 30' wide pedestrian level break in building every 300' parallel to river

The Falls Zoning and Shoreline Building Envelope Study

Figure 5



2.0 SITE DESCRIPTION

2.1 Physical Location

The 2.25 acre YWCA Project Area is located at 829 W. Broadway in Sec 18, T25N, R43E, W.M. in the City of Spokane, WA. Broadway Avenue is the north property line, Lincoln Street is the west property line and the Anthony's restaurant property defines the south property line. The Action Area is the Shoreline of the Spokane River.

2.2 Physical Description

In the predevelopment condition, a ravine bisected the YWCA property from east to west. At the deepest part of the ravine seventy-eight feet of fill material was required to bring the site up to the existing grade and create a level terrace for construction on top of the riverbank. Fill material totally changed the topography and covered all native habitat and species in the project area. Fill material from the YWCA property covers about two thirds of the Spokane River shoreline and extends west from the river's edge across Lincoln Street at its widest point. Soils covering the fill material are thin so only sparse vegetation grows along the shoreline adjacent to the YWCA.

A chain link fence set into a concrete wall generally defines the east YWCA property line. An asphalt parking lot extends from Lincoln Street to the concrete wall and covers the entire southern half of the property. The YWCA building is located on the north half of the site. After the YWCA was constructed, the site was landscaped with a few trees, small patches of shrubs, and manicured lawn. About 100 trees and shrubs were planted within the 130-foot Shoreline jurisdiction with about 10% being native plants.

Most wildlife activity occurs on the riverbank, but introduced ornamental species that dominate the YWCA plant community still provide a measure of habitat for the few bird species that utilize that urban environment. When The Falls project is constructed, all of the existing vegetation and associated habitat will be removed. The lost habitat functions on the YWCA property will be replaced when The Falls site is professionally landscaped. In addition, the riverbank below The Falls development will receive extensive vegetative enhancement with native plants where wildlife activity is concentrated along the shoreline. The natural character of the shoreline will be restored to enhance habitat and scenic views of the basalt outcroppings and beauty of the Spokane River Corridor.

3.0 PROJECT DESCRIPTION

The existing YWCA complex will be replaced with two 13 floor towers and a podium building over below grade parking. The 510,500 +/- sq. ft. project will include retail, office, and residential uses. The project will be consistent with the City visual and pedestrian access standards and guidelines to ensure that buildings and other constructed objects do not create barriers that wall off the Spokane River Gorge, Riverfront Park, or the Downtown Core. The project design insures that the amenity of the river and public access to the Spokane River Gorge will be shared, not limited to those properties immediately adjacent. The project will include a 10-foot wide sidewalk that extends south from the Pavilion vicinity along the east edge of the property. The proposed trail will connect to the observation point with benches on the NE corner of the Anthony's restaurant property.

No construction is proposed within the 50-foot buffer. The existing concrete wall and security fence will be removed and a new wall will be constructed on the terrace anywhere from 5 to 25 feet east of the existing wall. The wall may be basalt construction, similar to the bridges over the suspension bridges, or a veneer on a CIP concrete wall. The low wall will have a guard rail or fence on top for safety. A drainage system will be designed to contain runoff from the trail so the new impervious surface would not be draining onto the slope and cause erosion. Slope disturbance on the east side of the wall will be minimized. Temporary impact areas will be re-vegetated with the prescribed native grasses and shrub species so the replanted condition will be of significantly higher quality than the existing vegetation.

The contractor does not anticipate requiring a lot of fill to create the new terrace surface because the terrace will be cut down into the existing fill material. A small amount of fill will be needed along the edge of the terrace to create a level surface with approximately an equal amount of cut and fill. As the terrace surface is cut into the existing fill, the surface of the terrace will be made larger than the existing condition by about 4000 sq. ft. (0.092 acres). The new surface will not encroach into the 50-foot buffer, but will be within the 25-foot setback from the Shoreline Buffer so a Conditional Use Permit will be required for the project. The new fill material surface will be replanted with the prescribed native grasses and shrub species so the replanted condition will be of significantly higher quality than the existing vegetation.

There are two scenarios for the trail. 1) The proposed 10-foot wide trail will have a grade of less than or equal to 5% to accommodate ADA specifications. Achievement of the 5% grade will require significant earthwork on the east edge of the site where the existing grade exceeds 5%. 2) If it is not possible to meet the 5% grade, then a lift or elevator will be available to transition the steep grade.

The proposed site plan is appropriate because the development occurs almost entirely within the existing disturbed footprint of the YWCA building complex and associated paved parking lots. The proposed development intrudes slightly further into Shoreline habitat than the existing development footprint so the cumulative impacts of this project are slightly greater. The proposed mitigation for project impacts provides a substantial improvement over the existing shoreline habitat.

The project will not have an unreasonable adverse effect on the shoreline environment because there will be a net gain in habitat quantity and quality when compared to the existing condition. There will be a net gain of over 20,000 sq. ft. planted in native vegetation inside of the Shoreline buffer compared to the existing condition.

4.0 METHODS

Data were recorded to quantify the vegetation community and bird and small mammal habitat value. Plant and animal diversity and habitat values are very low on the site. The natural habitat was totally covered with fill material so the plant and animal communities have been greatly simplified. As a result, BSW listed plant and animal species that might occur here if the site had not been disturbed. The following plant and animal species lists are based on observations on the YWCA property and several BSW studies on other properties in the Spokane River corridor in previous years. Project mitigation will reintroduce vegetation from the predevelopment condition to provide habitat elements for bird and mammal species known to utilize the river corridor.

5.0 HABITAT AND SPECIES ANALYSIS

5.1 Shoreline Vegetative Community Inventory

Vegetation at the top of the bank along the YWCA property line (Photos 1-2) is a mix of 19 native and 63 non-native shrubs. A row of 24 Arborvitae parallels the security fence, many of which were planted in the last 5 years. Also along the fence line are 2 large patches of mature lilacs, a few serviceberry, mock orange, and a large patch of tall Oregon grape. The tree canopy inside the 130-foot Shoreline consists of 2 Ponderosa pines, one mature aspen and a patch of aspen shrubs, and several non-native species including 1 maple, 2 crab apple, 3 plum, and 2 sycamore.

Today only scant remnants of the native plant community survive in this reach of the Spokane River corridor (Photos 3-5). Small cottonwoods line the riverbank along the OHWM. Sparse patches of serviceberry, mock orange, and tall Oregon grape shrubs occur on the river bank along the OHWM. A mix of native and non-native grasses (mostly Great Basin rye and intermediate wheatgrass) and a few patches of noxious weeds (hounds tongue) dominate the remaining riverbank habitat on the property adjacent to the YWCA.

Following is a list of species that BSW concludes probably inhabited the site prior to disturbance. Plants from this list will be used to enhance riparian habitat on the subject property.

5.2 Vegetation

Table 1. Herbaceous plant species appropriate for planting on the site.

	Common Name	Scientific Name
Herbs:	yarrow	<i>Achillea millefolium</i>
	balsamroot	<i>Balsamorhiza sagitata</i>
	clematis	<i>Clematis lingusticifolia</i>
	Northern buckwheat	<i>Eriogonium compositum</i>
	yellow bell	<i>Fritillaria pudica</i>
	phlox	<i>Phlox</i> spp.
Grasses	bluebunch wheatgrass	<i>Agropyron spicatum</i>
	Idaho fescue	<i>Fescuta idahoensis</i>
	Junegrass	<i>Koeleria cristata</i>
Shrubs	serviceberry	<i>Amelanchier alnifolia</i>
	kinnikinnik	<i>Arctostaphylos uva-ursi</i>
	tall Oregon grape	<i>Berberis aquifolium</i>
	creeping Oregon grape	<i>Berberis repens</i>
	mock orange	<i>Philadelphus lewisii</i>
	ninebark	<i>Physocarpus malvaceus</i>
	chokecherry	<i>Prunus virginiana</i>
	golden current	<i>Ribes aureum</i>
	wild rose	<i>Rosa woodsii</i>
	snowberry	<i>Symphoricarpos albus</i>
Trees:	birch	<i>Betula occidentalis</i>
	black hawthorn	<i>Crataegus douglasii</i>
	Ponderosa pine	<i>Pinus ponderosa</i>
	cottonwood	<i>Populus trichocarpa</i>

Photo 1: Non-native trees (Crabapple) and shrubs (Arborvitae) inside the fence



Photo 2: Non-native shrubs (lilac and Arborvitae) outside the fence



Panoramic view of vegetation on the shoreline taken from the east project limits looking north (top) east (middle), and south (bottom). Non-native plants occur on top of the bank along the fence and native plants occur at the bottom of the slope along the river.

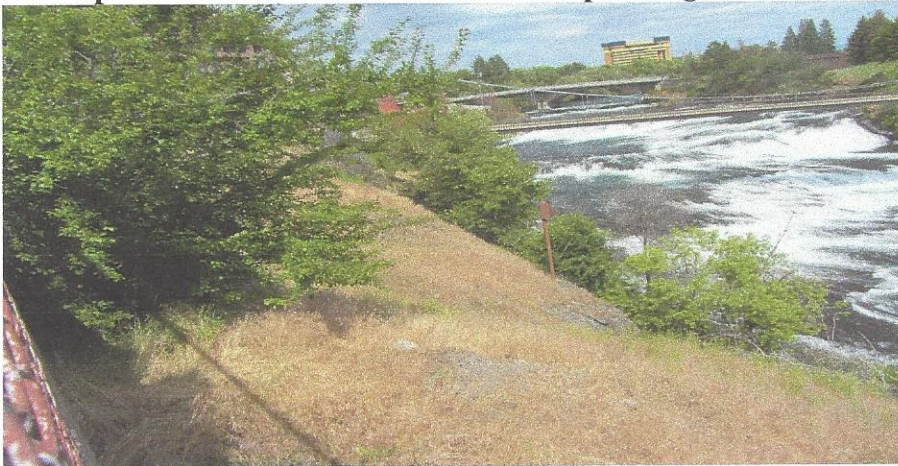


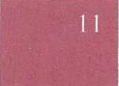
Photo 3: North facing View



Photo 4: East Facing View



Photo 5: South Facing View



5.3 Resident Animal Species

The site provides low quality habitat for resident and neotropical migratory bird species. After vegetative enhancement the habitat will have small patches of dense shrubs that will provide refugia, resting, perches, cover, and foraging opportunities for several species of birds and small mammals. Many resident and migratory bird species utilize the river corridor and may utilize this site on occasion. Following is a list of species that BSW observed on other properties along the Spokane River Corridor in past years. These species probably inhabited the site prior to site disturbance and could still visit the site on occasion.

5.4 Birds

Common Name	Scientific Name	Range Utilization
*red-tailed hawk	<i>Buteo jamaicensis</i>	resident
chipping sparrow	<i>Spizella passerina</i>	breeding
**house sparrow	<i>Passer domesticus</i>	resident
*song sparrow	<i>Melospiza melodia</i>	breeding
*northern flicker	<i>Colaptes auratus</i>	resident
*black-capped chickadee	<i>Parus atricapillus</i>	resident
*mourning dove	<i>Zenaida macroura</i>	resident
*rock dove	<i>Columba livia</i>	resident
*violet-green swallow	<i>Tachycineta thalassina</i>	breeding
*western wood peewee	<i>Contopus sordidulus</i>	breeding
*spotted sandpiper	<i>Actitis macularia</i>	breeding
*eastern kingbird	<i>Tyrannus tyrannus</i>	breeding
*American robin	<i>Turdus migratorius</i>	resident
*house finch	<i>Carpodacus mexicanus</i>	resident
*Cassin's finch	<i>Carpodacus cassinii</i>	resident
*brown-headed cowbird	<i>Molothrus ater</i>	breeding
*Brewers blackbird	<i>Euphagus cyanocephalus</i>	breeding
*northern oriole	<i>Icterus galbula</i>	breeding
*yellow warbler	<i>Dendroica petechia</i>	breeding
*house wren	<i>Troglodytes aedon</i>	breeding
*pygmy nuthatch	<i>Sitta pygmaea</i>	resident
*European starling	<i>Sturnus vulgaris</i>	resident
*mallard	<i>Anas platyrhynchos</i>	resident
*Canada goose	(<i>Branta canadensis</i>)	resident
*common merganser	<i>Mergus merganser</i>	resident
*black-billed magpie	<i>Pica pica</i>	resident
*California quail	<i>Callipepla californicus</i>	resident

*Bird observations recorded by BSW on June 12, 2017 and previous Spokane River Corridor studies dating back to 1992.

5.5 Mammals

The only mammals observed adjacent to the site were marmots. Other mammals utilizing the Spokane River corridor that could utilize this site to some extent are mole, shrew, mouse, yellow-pine chipmunk and squirrel. Skunk, raccoon, beaver, and mink could utilize the riverbank zone on temporary treks along the river corridor. Townsend's Big-eared bat, Big Brown Bat, and Myotis Bat are also listed by the City as Priority Species that could utilize the river corridor.

5.6 Fish

Rainbow Trout, Redband Trout are both listed by WDFW as occurring along this reach of the Spokane River.

6.0 EFFECTS ANALYSIS

6.1 Threatened or Endangered Species Listed for the Vicinity.

The project will have No Effect on any species protected under the Endangered Species Act (ESA) as State or Federally listed Threatened, Endangered, Proposed, or Candidate species because none were identified by BSW in the Project or Action Areas. Quarterly lists of all Endangered, Threatened, Proposed, and Candidate species are published by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NOAA Fisheries). The current NOAA and USFWS Priority Habitat and Species (PHS) data for the Project and Action Areas, downloaded from the respective web sites on June 10, 2017 are the most up to date species listings from those agencies. The NMFS and USF&W lists indicated the potential presence of the species and critical habitat(s) shown in Table 1.

Table 1. USFWS listed species and critical habitats potentially present in the vicinity

Species	ESU/DPS	Federal Status	Designated Critical Habitat	ESA Finding
Bull trout <i>Salvelinus confluentus</i>	Columbia River DPS	<i>Threatened</i>	<i>Yes</i>	<i>No Effect</i>
Water howellia, <i>Howellia aquatilis</i>		<i>Threatened</i>	<i>No</i>	<i>No Effect</i>
Yellow-billed cuckoo, <i>Coccyzus americanus</i> ,		<i>Threatened</i>	<i>No</i>	<i>No Effect</i>

Water howellia (*Howellia aquatilis*).

Howellia (Howellia aquatilis) is an obligate wetland, aquatic species that is only found in seasonal wetlands, ponds, orphaned river oxbows, and lakes less than 3-6 ft (1-2 m) deep. The ponds are typically in a matrix of dense forest vegetation, and are nearly always surrounded by broadleaf deciduous trees. Habitats are filled by snowmelt run-off and spring rains, and then dry out to varying degrees by the end of the growing season. Almost always bordered with one of the following broadleaf trees: *Populus trichocarpa*, *P. tremuloides*, *Fraxinus latifolia*. Most wetlands where the species occurs have a well-developed shrub component composed of plants such as *Cornus stolonifera*, and *Spirea*

douglasii. None of the plant species associated with the species occur at this site. There is no habitat capable of supporting this obligate wetland species in the Project or Action Areas. The 2017 site investigation determined that this species does not occur in the Project or Action Areas. The project will have NO EFFECT on *Howellia aquatilis* or any designated or proposed critical habitat for that species.

Fish Risk Assessment

Bull Trout (*Salvelinus confluentus*) Federal Status: Threatened

The U.S. Fish and Wildlife Service (USF&WS) lists the Columbia River population of bull trout as threatened. Small pockets of bull trout are present in isolated habitat fragments in the main stem and tributaries of the Columbia River. One isolated fragment of the Columbia River segment includes Coeur d'Alene Lake, its tributaries in the drainage basin, and the Spokane River. Bull trout populations have been identified in Coeur d'Alene Lake and three tributaries in its sub-basin, but no bull trout populations are known to occur presently, or have been noted historically, in the Spokane River downstream from the Post Falls Hydroelectric Dam (PBTTAT, 1998).

The U.S. Fish and Wildlife Service (USFWS) identified designated critical habitat for bull trout in Coeur d'Alene Lake, the Coeur d'Alene River, the St. Joe River, and associated tributaries (PBTTAT, 1998) and included those areas in the Coeur d'Alene Lake Basin Recovery Unit (RU). The Spokane River and its tributaries located downstream from the Post Falls dam is included in the Northeast Washington RU even though there are no known populations of bull trout downstream from the Post Falls dam. The USFWS does not include the Spokane River and its tributaries located downstream from the Post Falls dam in recovery planning efforts.

Large water falls on the upper Spokane River formed barriers to the post-glacial dispersal of fishes, such as the Pacific salmon and steelhead trout, from the lower Columbia River to the Coeur d'Alene Lake basin (Simpson and Wallace 1982). The Post Falls dam stops the migration of fish out of the Coeur d'Alene basin downstream into the Spokane River. Waterfalls and dams prevents the upstream and downstream migration of bull trout into the segment of the Spokane River in the vicinity of the Project Area. No dam on the Spokane River has a fish passage facility and all dams create fish barriers for upstream and downstream migration. There is no known population of bull trout in the Spokane River downstream of the Post Falls dam (FERC 2006) or its tributaries.

The USFWS does not include the Spokane River and its tributaries located downstream from the Post Falls dam in bull trout recovery planning efforts (Federal Register / Vol. 75, No. 200 / Monday, October 18, 2010). The project will have NO EFFECT on proposed Bull Trout Critical Habitat. The project will have NO EFFECT on bull trout or designated Bull Trout Critical Habitat.

5.3: Essential Fish Habitat, Distinct Population Segments, and Critical Habitat

The Action Area is not included in the ESU for any Pacific salmon species. For Pacific steelhead, NOAA Fisheries has delineated distinct population segments (DPSs) for consideration as “species” under the ESA. The Action Area does not include a distinct population segment for steelhead. NOAA Fisheries has not designated any Critical Habitat for West Coast Salmon or Steelhead in the vicinity of the project.

No species of steelhead, salmon or bull trout are listed for the Spokane River adjacent to the project area. Large water falls form barriers to the post-glacial dispersal of fishes, such as the Pacific salmon and steelhead trout, from the lower Columbia River to the Coeur d'Alene Lake basin (Simpson and Wallace 1982). The project will have no Adverse effects to salmonid EFH. The project will not result in the destruction or adverse modification of potential, designated or proposed EFH or salmonid prey species.

Yellow-billed Cuckoo (*Coccyzus americanus*), Federal and State Status: Threatened

The Yellow-billed cuckoo is nearly extinct west of the Continental Divide. Major declines among western populations have occurred due to loss and fragmentation of riparian habitat from inundation by reservoirs, flood control activities (channelization), and conversion to agricultural and urban development (Gaines and Laymon 1984) resulting in local extinctions and low colonization rates (Hughes 1999). Urban expansion and livestock grazing and trampling diminish critical understory vegetation, cottonwood/willow recruitment, and local food supplies (Wiggins, D. March 25, 2005). Sites that were occupied by yellow-billed cuckoos generally had higher canopies, denser cover in the upper layers of the canopy, and sparse shrub layers compared to unoccupied sites.

In Idaho, the species is rare and was historically considered a rare and local summer resident (Burleigh 1972, p. 159). In northern and central Idaho, there have only been four records of yellow-billed cuckoo over the last century (Taylor 2000). The yellow-billed cuckoo is considered a rare and erratic visitor and breeder in the Snake River valley in southwestern Idaho. The most recent record for this area comes from the South Fork of the Snake River in 1992 (Stephens and Sturts 1997). The literature does not report an observation of the species as far north as Riggins Idaho for many years.

The yellow-billed cuckoo was formerly a very rare summer visitor to western Washington, especially in the Puget Sound area (Roberson 1980). Jewitt et al. (1953) described the former breeding range in Washington as ranging north to Bellingham, east to Ellensburg, south to Vancouver, and west to Grays Harbor. There are only two published records of yellow-billed cuckoo in eastern Washington. Yellowbilled cuckoos were detected on July 21, 1956, 20 miles north of Grand Coulee Dam in Okanogan County (Weber and Larrison 1977) and in June 1978 at George, Grant County (Roberson 1980).

The 2017 investigation for the Yellow-billed cuckoo focused on specific habitat requirements of that species. Cuckoos prefer to nest in areas with at least 10 hectares (ha) (25 acres) of contiguous (riparian) woodland (Laymon 1998). The typical patch size is 20 ha (50 acres) or greater, and the likelihood of occupancy increases dramatically with increasing patch size, but they have been found breeding in patch sizes as small as 4 ha (10 acres) along the Colorado River in southern California (Johnson, Matthew J., 2007). Yellow-billed cuckoo's nest in undisturbed stands of cottonwood/willow galleries greater than 10 acres in total area and greater than 100 meters wide along waterways.

The Action Area does not contain, and is not in close proximity to, adequate habitat patches for that species. This project will not impact yellow-billed cuckoo populations or habitat components. The project will have NO EFFECT on yellow-billed cuckoo or any designated or proposed critical habitat for that species because there is no

suitable habitat present and there is no possibility of effects to the species or habitats from the project.

6.2 Migratory Birds

The site was also evaluated for compliance with the Migratory Bird Treaty Act. While several federal regulations protect specific avian species, the Migratory Bird Treaty Act covers all bird species that migrate in the United States. Under the authority of the Secretary of the Interior and US Fish & Wildlife Service, the act provides for the protection of migratory birds listed at “Revised List of Migratory Birds” [Federal Register Vol. 75, No. 39, Monday, March 1, 2010, Pp. 9282 - 9314]. The project will have No Effect on any of the following migratory bird species listed for the area.

Bald eagle (*Haliaeetus leucocephalus*) (delisted, monitor status) Season: year-round
Brewer's Sparrow (*Spizella brewerii*) Season: breeding
Calliope Hummingbird (*Stellula calliope*) Season: breeding
Eared Grebe (*Podiceps nigricollis*) Season: breeding
Ferruginous hawk (*Buteo regalis*) Season: breeding
Flammulated Owl (*Otus flammeolus*) Season: breeding
Fox Sparrow (*Passerella iliaca*) Season: breeding
Lewis's Woodpecker (*Melanerpes lewis*) Season: breeding
Peregrine Falcon (*Falco peregrinus*) Season: breeding
Rufous Hummingbird (*Selasphorus rufus*) Season: breeding
Short-eared Owl (*Asio flammeus*) Season: year-round
Swainson's Hawk (*Buteo swainsoni*) Season: breeding
Western Grebe (*Aechmophorus occidentalis*) Season: breeding
White Headed Woodpecker (*Picoides albolarvatus*) Season: year-round
Willow Flycatcher (*Empidonax traillii*) Season: breeding

The Project will have no effect on any of the following WDFW Priority Bird Species listed for the area: Peregrine Falcon, Bald Eagle, Merlin, Vaux's Swift, Pileated Woodpecker, Black-backed Woodpecker, Lewis' Woodpecker, White-headed woodpecker, Great Blue Heron, Harlequin Duck, Cavity-nesting Ducks, Osprey, or Waterfowl Concentrations.

6.3 Migration Route

The Spokane River is a valuable wildlife corridor that provides transitional habitat for many opportunistic species traveling through the area seasonally. However, the Spokane River wildlife travel corridor has become highly fragmented. In the downtown area, the term “movement corridor” applies mainly to birds. Except for Riverfront Park, riparian dependent bird and mammal habitat diversity is limited in the downtown area due to the narrow width of the river bank zone and the high degree of habitat disturbance. The YWCA site and adjacent riverbank does not contain any of the habitat types required to sustain a population of any listed priority species. Birds utilizing the Spokane River as a movement corridor will not be impacted during or after project construction.

The project area was historically cleared of all woody vegetation and developed. The subject property does not have high wildlife density or diversity and offers no native habitat. The functions and values, habitat quantity and quality, and wildlife activity in the project area and adjacent riverbank are all very low. The YWCA site provides almost no native habitat for wildlife and is not a Priority Habitat for any Priority Species. The site does not meet the acreage criteria for oases and clusters for scrub/shrub forested vegetation classes. The project will not reduce the functions or values of the riparian buffer for wildlife because the reduction will occur primarily in an existing disturbed footprint.

6.4 Fish

The project will have No Effect on Bull Trout, Rainbow Trout, or Redband Trout.

6.5 Mammals

The project will have N Effect on mammals utilizing the Spokane River corridor that could utilize this site to some extent including mole, shrew, mouse, yellow-pine chipmunk and squirrel, skunk, raccoon, beaver, and mink that could utilize the riverbank zone on temporary treks along the river corridor. Townsend's Big-eared bat, Big Brown Bat, and Myotis Bat are also listed by the City as Priority Species. They could utilize the river corridor, but the proposed project will have no effect because its footprint is similar to the existing developed condition of the site.

6.6 Effects on Habitat

BSW determined that the proposed development will result in 4000 sq. ft. (0.092 acres) of additional Shoreline Buffer impacts compared to the existing condition (Figures 3-5). The project will not jeopardize the continued existence of, or result in the destruction or adverse modification of Critical Habitat for any listed species.

7.0 HABITAT RATING

In this section habitat characteristics on the riverbank are compared to habitat characteristics on the YWCA site located on a basalt terrace above the riverbank.

7.1 Spatial Relationships

In natural landscapes, some vegetation occurs alone, while other vegetation occurs in clumps with either like or unlike species. This provides the spacial diversity important to wildlife for thermal and security refuge, migration paths, etc..

River Bank Zone Rating: Low X Medium _____ High _____
 YWCA Terrace Zone Rating: Low X Medium _____ High _____

7.2 Structural patterns

The arrangement and degree of interspersion of plant community types is an important determining factor in wildlife utilization of a habitat. Complex structural patterns that are important to wildlife include: curving edges, transition areas between plant communities, variable patch size, and high degree of interspersion between species. Desirable habitat has open areas interspersed with clusters of vegetation, several horizontal layers, and a variable structural pattern.

River Bank Zone Rating: Low X Medium _____ High _____
YWCA Terrace Zone Rating: Low X Medium _____ High _____

7.3 Vertical stratification

The structural diversity provided by logs of various species, lengths, diameters, and state of composition, woody debris, herbs, shrubs, and trees creates habitat for a variety of small mammals and ground nesting birds. They provide travel routes, perch sites, cover, and thermal refuge.

River Bank Zone Rating: Low X Medium _____ High _____
YWCA Terrace Zone Rating: Low X Medium _____ High _____

7.4 Microhabitat diversity

Habitat value increases in proportion to variety in microhabitat types (herbaceous cover, shrub habitat, and snags). For example, snags provide food, habitat and substrate for a variety of plants and animals. Cavity nesting birds use them for shelter, insects live under their bark, and the decaying wood provides substrate for mosses, liverworts, lichens, and fungi.

River Bank Zone Rating: Low X Medium _____ High _____
YWCA Terrace Zone Rating: Low X Medium _____ High _____

7.5 Riparian dependent bird/mammal habitat diversity

The extent of riparian zone use by birds and other wildlife is species specific and determined by seasonal life stage requirements such as reproduction, molting, migration, and wintering. Principal factors influencing the use of a particular habitat include habitat size, structural diversity, species richness of vegetative cover, food availability on a seasonal basis, vegetative class interspersion, canopy, vegetative width, upland habitat/adjacent forest acreage, contaminants, human disturbance, location, and the presence or absence of other species specific habitat requirements.

Cover requirements vary among species so it is essential for habitat to provide a variety of cover types. The Spokane River corridor provides several important habitat types essential for migrating, foraging, wintering, breeding, nesting, and perching. The subject property offers limited opportunities for perching. Tree and shrub density in the riverbank zone are not adequate to meet the breeding, wintering and migration habitat requirements of most bird species. Small mammals make limited use of the site. However, human disturbance in the downtown area interferes with wildlife use. Human activity diminishes habitat quality due to the narrow width of the river bank zone. The surrounding terrace zone (300 foot perimeter) lacks snags, a significant number of trees with a diameter greater than 10 inches or cavities larger than 2 inches, evergreens with greater than 80% canopy closure, and native prairie or tilled land with waste grain. The terrace has an inadequate number of native fruit, cone, or mast bearing food trees. In short, the habitat quality for birds and small mammals is very low.

River Bank Zone Rating: Low X Medium _____ High _____
YWCA Terrace Zone Rating: Low X Medium _____ High _____

8.0 DISCUSSION OF FUNCTIONS AND VALUES

The term “values” refers to processes and attributes that are valuable or beneficial to society. From a human perspective, values of the site are relatively high due to the scenic beauty of the river. However, human values also embody current and historical use of the surrounding area including recreational opportunities of the park and commercial development that have reduced wildlife habitat quantity and quality. Since growth and new development are inevitable, they should be relegated to existing disturbed footprints such as the subject property where human activity has already been promoted.

Riparian buffer functions refer to physical, chemical, and biological processes or attributes. Wildlife habitat has been stressed in this report, but the buffer also plays an important role in preserving water quality in the river. Analysis of development impacts on water quality and the functions and values of the riparian buffer follow.

IMPACT ON RIPARIAN ZONE FUNCTIONS AND VALUES

8.1 Nutrient removal/transformation and sediment/toxicant retention

Stormwater will be routed to an onsite detention tank and released to the City’s infrastructure at an approved outflow rate. 208 swales will be required to assist with treatment at the on-grade parking level and provide the important function of protecting water quality received by the Spokane River. This is accomplished when water velocity is slowed allowing suspended solids to settle out of the water column and nutrients and toxicants to be absorbed by vegetation and soils. The proposed development provides protection for receiving waters through the construction of 208 swales according to the specifications outlined in the City of Spokane Guidelines for Stormwater Management. The 208 swales will capture and address runoff from impervious surfaces from the site.

NEGATIVE IMPACT: None X Low _____ Medium _____ High _____

8.2 Gradient necessary to create non-depositional velocity conditions

When the velocity and energy level of water entering a pond is decreased sediment drops out of suspension and becomes trapped. Low gradients and shallow water increase frictional resistance which promotes sedimentation and also favors vegetation. The proposed 208 swales will allow the desired function of sediment removal to occur as all stormwater will infiltrate.

NEGATIVE IMPACT: None X Low _____ Medium _____ High _____

8.3 Shoreline stabilization

The 208 swales will protect the riparian shoreline from the erosive energy of stormwater runoff.

NEGATIVE IMPACT: None X Low _____ Medium _____ High _____

8.4 Floodflow alteration

Stormwater 208 swales will retard runoff peak flows and not exceed the existing rate and volume of infiltration or baseflow contributed to the river.

NEGATIVE IMPACT: None X Low _____ Medium _____ High _____

8.5 Diversity/abundance

Aquatic diversity and abundance are affected by salinity, temperature, substrate, current velocity, turbidity, water chemistry, sediment and contaminant sources, vegetative canopy, etc. The 208 swales will protect water quality and minimize impacts to the water column. Proposed native vegetative plantings will increase species diversity and abundance. Noxious weed control will be implemented in a way that does not adversely impact buffer function.

NEGATIVE IMPACT: None X Low X Medium High

9.0 URBAN NATURAL OPEN SPACE DESIGNATION

Urban Natural Open Space as defined by the City Code occurs when “A priority species **resides within or adjacent to** the open space, **and** uses it for **breeding**, and/or **regular feeding**.” The YWCA site does not meet that code definition of Urban Natural Open Space for the following reasons. No priority species resides in or immediately adjacent to the subject property. No priority species listed in the Spokane Municipal Code (Figure 5) uses the YWCA site for breeding and/or regular feeding.

The priority species Rainbow and/or redband trout could reside within a ¼ mile radius of the project area but it is unlikely that they reside adjacent to the site. Flows in the adjacent reach of the river vacillate between tremendous rapids and a dry channel. Great hydraulic energy develops in the adjacent channel and scours the basalt shoreline. The steep gradient and fast water during high flow does not provide habitat for fish, nor does the dry channel condition. The project will have no effect on the priority species rainbow trout or redband trout. The hydraulic characteristics in the adjacent reach of the river reduce habitat and plant and animal diversity.

The City Code states that “Urban Natural Open Space has comparatively high wildlife density and diversity, is important as a breeding habitat and is important as a movement corridor. These areas have limited availability and have a high vulnerability to habitat alteration.” Habitat at the YWCA site was altered long ago. The project area does not have high wildlife density and diversity and is not important as a breeding habitat. Many species use the Spokane River Corridor in general, but few species use the YWCA site or adjacent bank of the Spokane River.

The Spokane River is a valuable wildlife corridor that provides transitional habitat for many opportunistic species traveling through the area seasonally. However, the Spokane River wildlife travel corridor has become highly fragmented. In the downtown area, the term “movement corridor” applies mainly to birds. Except for Riverfront Park, riparian dependent bird and mammal habitat diversity is limited in the downtown area due to the narrow width of the river bank zone and the high degree of habitat disturbance. The YWCA site and adjacent riverbank does not contain any of the habitat types required to sustain a population of any listed priority species. Birds utilizing the Spokane River as a movement corridor will continue to fly up or down the river during and after project construction.

There is one suitable snag for cavity nesting ducks in the immediate area but it does not support a resident population or promote breeding or regular frequenting “within or adjacent to” the site by those Priority Species. The residence, breeding, and regular feeding of any priority species on the list would occur far from the YWCA site so the proposed project would have no effect on any priority species or its habitat. No listed

species “resides within or adjacent to” the YWCA site, and uses it for breeding, and/or regular feeding.”

The project area was historically cleared of all woody vegetation and developed. The subject property does not have high wildlife density or diversity and offers little native habitat. The functions and values, habitat quantity and quality, and wildlife activity in the project area and adjacent riverbank are all low. The YWCA site provides almost no native habitat for wildlife and is not a Priority Habitat for any Priority Species. The site does not meet the acreage criteria for oases and clusters for scrub/shrub forested vegetation classes.

The proposed small reduction in riparian buffer width will not reduce the functions or values of the riparian buffer for wildlife because the reduction will occur in an existing disturbed footprint. The mitigation plan for project impacts includes vegetative enhancement with woody plants and grasses that will significantly increase native habitat quantity and quality compared to the existing condition.

A Peregrine falcon hack site is located within a ¼ mile of the YWCA property. WDF&W does not currently use the hack site and does not have plans to use the site in the future. However, the hack is functional and could be used if the opportunity presented itself. If the hack was unexpectedly brought into operation, the noise and activity associated with the Broadway Tower project construction should not rise above the background noise and activity associated with traffic on the Monroe Street bridge and other projects in close proximity. The project will have no impact on the hack or any other Priority Habitat or Species.

10.0 HABITAT MANAGEMENT PLAN ELEMENTS

The proposed buffer reduction will occur over existing fill material that covered the Shoreline and eliminated the natural environment. However, mitigation is required for the proposed impacts because nature has reclaimed part of the disturbed Shoreline with sparse grasses, shrubs, and some herbaceous species including noxious weeds.

The proposed public trail/sidewalk will extend slightly closer to the river than the existing YWCA disturbed footprint, but will be over 50-feet from the OHWM at its closest point with adequate building setbacks from the OHWM as defined by City Code. The development will not result in a net loss of existing visual and physical access to the Shoreline. The mixed use project will increase public interest, access, and use of the Shoreline.

As compensation for project impacts, the developer proposes mitigation to improve buffer habitat quality on adjacent Shoreline owned by the City. Mitigation will include a noxious weed control program, the removal of existing ornamental/non-naïve plants, the planting of native grasses, replacement of existing evergreen and deciduous trees, shrubs, and groundcover to generously exceed the Replacement Ratios specified in the City Code. The planting of 200 native trees and shrubs, irrigation of vegetative plantings, and a monitoring plan that will insure vegetation survival. Compared to the existing condition, the proposed vegetative plantings will provide higher quality habitat, greater plant density, and an increase in functional habitat in the Shoreline Buffer.

The Spokane River corridor is recognized as a highly valued, natural, and open area that has become increasingly vulnerable to habitat loss. The plan provides an equal or greater amount of critical areas protection than the existing condition and includes

fencing around the project limits. As required by the City, DOE, and Washington Department of Fish & Wildlife, this Shoreline and Habitat Management Plan contains specific Habitat Management Elements prepared by a qualified biologist to compensate for encroachment on the riparian buffer.

10.1 Noxious weed control

Invasive species were identified on adjacent property. As required by Washington State Noxious Weed Control law, RCW 17.10, and the City of Spokane, invasive species will be managed through control measures that do not adversely impact native vegetation. As part of the annual site monitoring of the mitigation area, funds will be allocated for noxious weed monitoring and herbicide control.

10.2 Planting Strategy

The east edge of the property will be revegetated with native plants including species from the shrub and herbaceous vegetative strata. The replication of natural spatial relationships, structural complexity, vertical stratification, and microhabitat diversity will be stressed in the planting design to achieve a mosaic of open areas and dense shrub clusters. Vegetation will not be planted in a uniform manner. Some individuals will be planted alone, other individuals will be planted in grouped patches, and all plants will be interspersed with other vegetative species and classes. Patch size will be variable with curving edges. The incorporation of these elements will increase landscape diversity and promote habitat elements that are often scarce or absent at sites that have been disturbed. Native species and endemic plant materials will be selected for site revegetation to help maintain ecotypes that are adapted to local climatic and soil conditions and preserve local genotypes.

Structural complexity refers to the arrangement and degree of interspersed plant community types throughout the system. Complex structural patterns (such as variable patch size, curving edges, and high degree of interspersed between species) increase the value of a system for wildlife. Good wildlife habitat consists of open areas interspersed with clusters of vegetation, several horizontal layers, and a variable structural pattern.

Vertical stratification describes a community with good structural diversity and several horizontal layers (logs, woody debris, forbs, shrubs, and trees). Woody debris provides travel routes, perch sites, cover, and thermal refuge for a variety of small mammals and ground nesting birds.

Microhabitat diversity refers to variety in microhabitat types. Examples of microhabitat types include herbaceous cover and shrubs that provide food, habitat, and substrate for a variety of plants and animals.

10.3 Objectives for the Restored Riparian Buffer

Restoration will be achieved by planting native species to provide food and cover for wildlife. The Vegetation Plan will incorporate as many design features as possible for each function in order to increase the value for that function.

Objective a: Re-establish structural diversity in the buffer by replanting native shrub species.

Objective b: Re-establish species diversity by planting several species from each vegetative class.

Objective c: Re-establish bird and mammal habitat values in the enhanced buffer.

Objective d: Re-establish vegetative density in the riparian buffer area.

10.4 Materials Specification and Planting Design

Table 17E.060-1 in the City Code prescribes Shoreline vegetation replacement ratios. The following table shows the number of native plants removed by the proposed project and the number to be replaced for Shoreline enhancement.

Table 1. Shoreline Vegetation Replacement Ratios

Number and Species Removed	Size	Replacement Ratio	Number to be planted	Size
2 Native Evergreen Trees	>6" Caliper	2:1	8 @ 2.5" Caliper	8 @ 2.5" Caliper
1 Native Deciduous Tree	>6" Caliper	2:1	2	2.5" Caliper
5 Native Deciduous Trees	<6" Caliper	1:1	5	2.5" Caliper
4 Native Shrubs		1:1	4	12-18" dia at head
2 Native Shrub patches 6'X6'		1:1	2 Native Shrub patches 6'X6' = 18 total	12-18" dia at head

Eight native trees will be removed and 15 will be replanted in accordance with the City Code Replacement Ratios shown above. Two 36 sq. ft. patches of tall Oregon Grape used as landscaping in the existing parking lot will also be removed and replaced with two similar sized patches of Oregon Grape on the Shoreline. Each patch will contain 9 plants or 18 total. Four mock oranges will also be planted to replace the four removed. The total plants required by City Code Shoreline Vegetation Replacement Ratios is 15 trees and 22 shrubs or 37 total plants.

Common Name	Scientific Name	# Planted	Size
Trees			
rocky mountain juniper	<i>Juniperus scopulorum</i>	8	2.5" caliper
quaking aspen	<i>Populus tremuloides</i>	2	2.5" Caliper
chokecherry	<i>Prunus virginiana</i>	5	2.5" Caliper
Shrubs			
creeping Oregon grape	<i>Berberis repens</i>	18	1 Gal pots
mock orange	<i>Philadelphus lewisii</i>	4	1 Gal pots
Total		37	

BSW proposes the planting of an additional 180 shrubs on the Shoreline to compensate for additional Shoreline impacts. These plantings will replace the ecological contribution of the 90 non-native trees and shrubs that will be removed from the Shoreline Buffer.

Clusters of vegetation from the following list will be planted in according to the prescribed guidelines. Large and small shrubs will be planted in each cluster to provide multiple canopy layers. An additional 100 four cubic inch containers of the herbaceous species *Phlox speciosa* or *Phlox longifolia* (or a mix of the two) will be interplanted in the sun around the shrub clusters and in individual patches on the shoreline in the bunchgrass only areas where no shrubs are prescribed.

	<u>Common Name</u>	<u>Scientific Name</u>	<u># Planted</u>
Large shrubs	serviceberry	<i>Amelanchier alnifolia</i>	40
	mock orange	<i>Philadelphus lewisii</i>	40
	chokecherry	<i>Prunus virginiana</i>	20
	golden currant	<i>Ribes aureum</i>	40
Small shrubs	creeping Oregon grape	<i>Berberis repens</i>	40
	Sub Total		180
Herbaceous	Phlox sp.	<i>Phlox speciosa</i> or <i>longifolia</i>	100

The above listed species shall be planted in the approximate prescribed quantities depending on plant availability. Trees shall have a minimum 2.5" caliper size. Shrubs shall be a minimum of one gallon containers. Phlox shall be in 40 cubic inch containers.

Grasses from the following list will be planted in areas where the buffer is disturbed by earth moving during the wetland creation process. Vegetation will be planted according to the prescribed guidelines.

Grasses	<u>Common Name</u>	<u>Scientific Name</u>	<u>PLS (lb/acre)</u>
	Bluebunch wheatgrass	<i>Agropyron spicatum</i>	7.0
	Idaho fescue	<i>Festuca idahoensis</i>	8.0
	Prairie junegrass	<i>Koeleria cristata</i>	2.0
	Sandberg bluegrass	<i>Poa sandbergii</i>	1.0
	Total		18.0

A list of suppliers who will prepare the grass seed mixture and supply nursery stock specified in the vegetation plan follows.

Grass seed Grassland West
 PO Box 489
 908 Port Drive
 Clarkston, WA 99403
 1-800-582-2070

Trees, grasses
& Shrubs

Plants of the Wild
PO Box 866
Tekoa, WA 99033
509-284-2848

Wildlife Habitat Institute
1025 East Hatter Creek Road
Princeton, ID 83857
208-875-8704

10.5 Planting Guidelines

Seeding rates of Live Pure Seed (LPS) are a product of seed lot purity and germination percentage. LPS calculations are based on the number of seeds per pound and the number of seeds per square foot at one pound per acre. A nursery will prepare a custom seed mix with the prescribed LPS for each species. The prescribed mixture of grass species should be seeded at a density of 18 pounds PLS per acre.

Grasses should be planted during the growing season when precipitation and temperature levels will insure germination and survival. If grasses are planted during June, July, or August the plants may go dormant soon after germination. If root development is not adequate before dormancy onset, survival may be low even with irrigation. Grasses should be planted in early April so that the crop is well established before dry weather or in the early fall so that the crop is well established before October 15.

The irrigation system shall be designed to maintain the soil surface in a moist condition for the first two weeks after seeding. After the grass crop is well established, irrigation should supplement rainfall as required to achieve a total from combined sources of 2 inches per week and no more than 0.25 inches per hour. If germination, growth, and root development are substantial before the end of the growing season, some degree of erosion control will be provided during the winter and spring months that follow.

Shrubs should be planted after the end of the growing season when the plants are dormant. The best time to plant is late winter when sub-zero temperatures are over but plants are still dormant. Plants may be planted early or late in the growing season if irrigation is available from the time of planting through the rest of the growing season. Even with irrigation woody species should not be planted in June, July, or August when heat shock could cause high mortality.

The shrub planting process will cause unacceptable damage to a newly seeded and poorly established grass crop. Plant shrubs prior to grasses to avoid damage and grass replanting. Each shrub should be clearly identified with a tag to identify the species. Plant identification simplifies the reinforcement planting process.

10.6 Timeline for Planting

As soon as Phase I is developed the Phase I irrigation system will be installed. The planting schedule will be dictated by the development schedule. The development of an irrigation system is highly beneficial to the enhancement project. Without irrigation, the proposed tree and shrub plantings would have a very low survival rate due to the dry, extremely well drained conditions on the site. The prescribed species are all adapted to dry conditions, but without irrigation many plants would die in the direct sun exposure and extremely dry conditions on the Shoreline before extensive root systems were formed. Irrigation will insure the success of the proposed buffer enhancement.

11.0 THE MONITORING PLAN

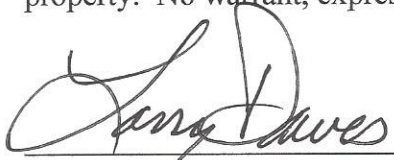
The vegetative plantings shall be monitored annually by a qualified biologist who will evaluate the site and determine whether the goals and performance standards set forth in the monitoring plan have been met. Since the vegetative plantings will be irrigated, a 5-year monitoring plan should be sufficient. An as built report shall be submitted after the vegetation has been planted. Monitoring shall continue for 5 years from the time of planting if the conditions of the mitigation plan have been met. The site should be monitored in the spring to evaluate the success of weed control from the previous year and prescribe weed control for the current year.

The biologist will also evaluate plant survival to insure that performance standards for percent ground cover of native vegetation are met. Shrubs will be replanted as necessary to achieve the general relative abundances illustrated in the plan. Planting of the original grass seed mixture will be repeated to fill in problem areas if they occur.

The City of Spokane will be notified immediately after diagnosis of failing functions or biological vitality and integrity of the plantings as determined through annual monitoring. The vegetation in mitigation areas will be managed to insure 80% areal cover with native grasses after five years (year 1=20%, year 2=30%, year 3=50%, year 4=70%, year 5=80%). Tree and shrub stock will be monitored to insure 80% survival after 5 years. Reinforcement plantings will be performed annually as necessary to insure performance standards are met at the end of five years.

12.0 LIMITATIONS

Within the limitations of scope, schedule, and budget, BSW services have been executed in accordance with best available science and generally accepted professional practices for the conditions at the time the work was performed. This report is not intended to represent a legal opinion. Specifically, there is no positive or negative recommendation towards the purchase, sale, lease, or construction on the subject property. No warrant, expressed or implied, is made.

 7-10-2017

Larry Dawes

Date

Principal Biologist

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13.0 BIBLIOGRAPHY AND SUGGESTED REFERENCES

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Outline of BSW Services and Experience

Biology Soil & Water, Inc. (BSW) provides environmental consulting services for large and small, federal, state, municipal, industrial, commercial and private projects throughout the Northwest. BSW is committed to a long-term relationship with the Northwest, innovative approaches, and continuous education to cope with changing environmental regulations, conservation objectives, permitting requirements, and ecosystem management strategies.

Wetland Delineation, Rating and Report

Routine and Comprehensive Delineation, Rating, and Wetland Reports

Wetland and Buffer Mitigation, Design, and Monitoring

Jurisdiction Approved Wetland Designs and Mitigation Plans,
Wetland Planting and Monitoring,
Consultation on Conservancy and Protection Options

Biological Assessments (required for all federally funded projects)

Priority Habitat & Species Analysis,
Threatened & Endangered Species Analysis
Ecological Investigations, Transect and Habitat Studies
Bird, Plant, Fish and Animal Identification, Population Sampling

Critical Areas Ordinance Compliance

Habitat Management Plans
Wetland, Shoreline, and Riparian Area Interpretation,
Water Typing, Riparian Buffer Determinations, Mitigation Plans

Soil Investigations

Hydric Soils, Agricultural and Urban Soils Investigations and Interpretations

Development Compliance Analysis

Shoreline, Wetland, and Riparian Setbacks,
Critical Areas Ordinance Interpretation and Compliance,
Mitigation Plans, Best Management Practice Recommendations

Remote Sensing and Airphoto Interpretations

Wetlands Analysis, Historical and Current Land Use Signatures

LARRY DAWES, *Biologist, Hydrologist*

SUMMARY: Mr. Dawes is well versed in federal, state, and local environmental regulations and consults primarily in the field of site assessment. He evaluates project development plans with respect to Shoreline, Wetland, and Critical Areas Ordinance issues and works with the jurisdictions regulating land uses and activities on a daily basis. Mr. Dawes delineates and rates wetlands to establish buffer widths and designs and implements wetland mitigation plans to meet jurisdiction performance standards. These plans include wetland design, engineering, construction, revegetation, and monitoring. He interprets regulations, completes Ecological and Biological Assessments for development sites, and prepares Management Plans when development encroaches on critical habitats or species. Mr. Dawes conducts upland, wetland, and aquatic plant surveys and has also been associated with many water quality assessment and restoration projects.

EDUCATION:

Master of Science, Biology, Eastern Washington University

Concentration: Site Assessment (Wetland, Water Quality and Habitat Restoration; Hydrogeology; Botany)

Bachelor of Science, Biology, Eastern Washington University

Concentration: Site Assessment (Zoology, Botany, Water Quality)

Minor, Urban and Regional Planning, EWU

Concentration: Environmental Planning, Law, and Legislation

EXPERIENCE:

1997-present: Biology Soil & Water, Inc *Owner/Principal Biologist.*

Performs wetland delineation and rating, hydrologic analysis, plant and animal surveys, and Biological Assessments. Designs wetlands, prepares and implements wetland mitigation and revegetation plans. Conducts Ecological and Biological Assessments, prepares/initiates habitat management and mitigation plans for Critical Areas Ordinance and Endangered Species Act compliance.

1996-1997 Northwest Biological Consulting, Inc. *Owner/Operator.*

Performed site hydrologic analysis, plant surveys; identified, rated, and delineated wetlands; prepared habitat management plans, prepared mining reclamation and revegetation plans.

1994-1996: Eastern Washington University Dept. of Biology *Limnology/Water Quality Researcher.* Conducted plant surveys and research. Co-investigator of water quality assessment and restoration projects. Co-author of water quality publications.

1992-1996: Independent Consultant. Performed wetland identification, rating, and delineation projects in the Northwest.