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## ISSAQUAH CREEK CYBIL-MADELEINE PARK REACH

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Location:	Issaquah Creek (tributary to Lake Sammamish), City of Issaquah, King County, WA. WRIA 08.0178
Proposed Action:	Regrade banks to a gentler slope, add LWD and other pool-forming features, and create side-channel habitat with spawning gravel
Species Benefiting:	Chinook, coho, cutthroat and kokanee

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**Issaquah Creek at Cybil-Madeleine Park, City of Issaquah, Washington**

# Kokanee/Chinook Restoration Feasibility Assessment in the Sammamish Watershed

## Map I - Issaquah Creek - Cybil-Madeleine Park Habitat Enhancement Project



11810 North Creek Parkway N  
Bothell, WA 98011

Project 0-915-17013-0

- Sanitary sewer
- Storm sewer
- Water utility
- Contour
- Watercourse
- Parcel

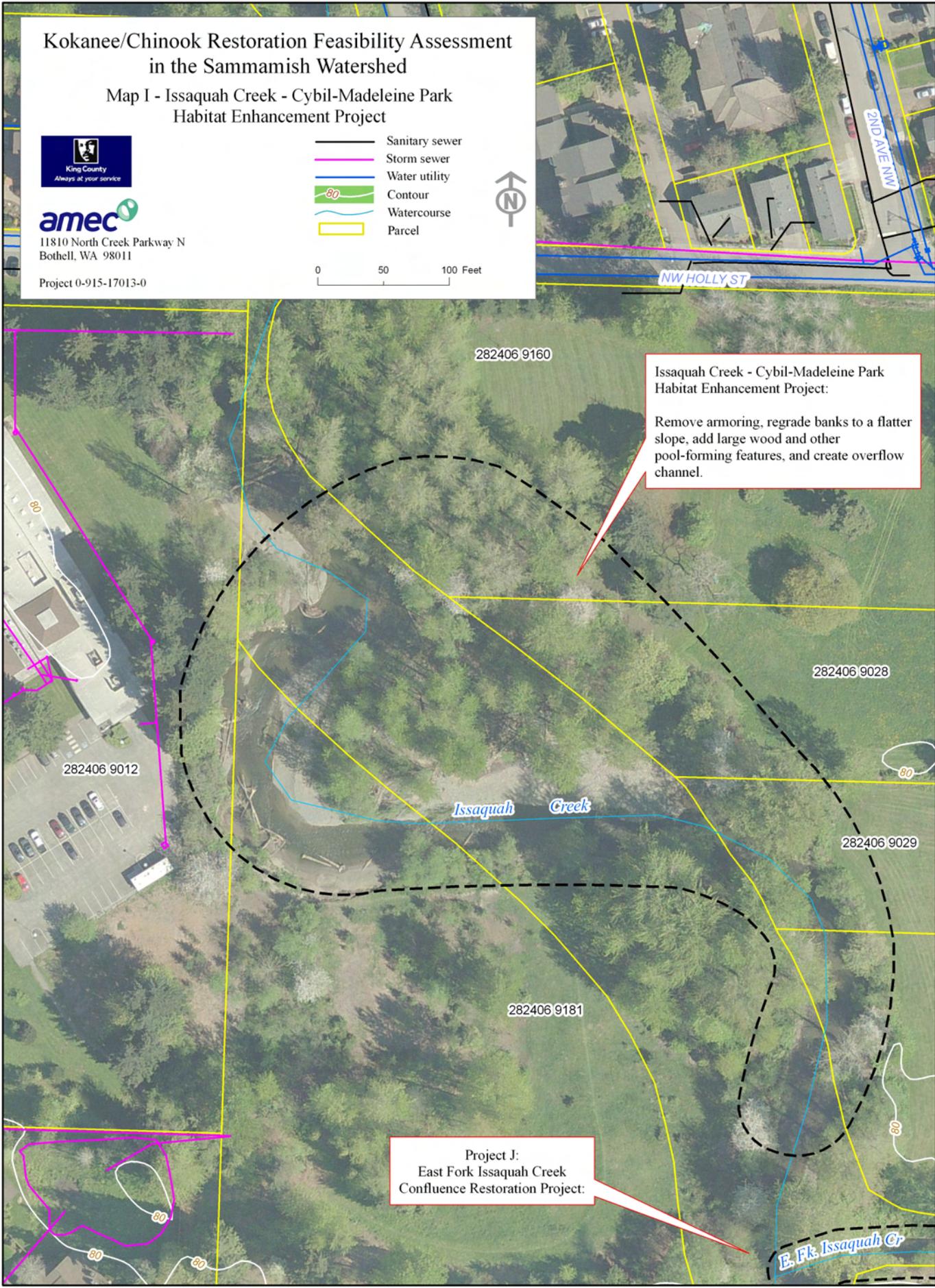


0 50 100 Feet

### Issaquah Creek - Cybil-Madeleine Park Habitat Enhancement Project:

Remove armoring, regrade banks to a flatter slope, add large wood and other pool-forming features, and create overflow channel.

### Project J: East Fork Issaquah Creek Confluence Restoration Project:



## **SITE BACKGROUND**

Issaquah Creek provides the largest freshwater input into Lake Sammamish. The 61 square mile watershed extends from the headwater streams on Squak, Cougar, Tiger and Taylor mountains to the mouth on the south end of Lake Sammamish. The most notable tributaries include Carey and Holder creeks in the upper watershed, and the East Fork and North Fork in the lower watershed. Issaquah creek flows through the heart of the City of Issaquah where a Washington Department of Fish and Wildlife (WDFW) salmon hatchery produces coho, Chinook and steelhead. Issaquah Creek is also utilized by several natural origin salmon runs, including Chinook, coho, sockeye, kokanee, rainbow/steelhead, and cutthroat. Flooding is a major concern along the Issaquah Creek floodplain and within the city, banks have been fortified to prevent erosion and protect property from inundation.

The City of Issaquah recently acquired several parcels of relatively undeveloped land along Rainier Avenue and Holly Street for a new park, dubbed Confluence Park. This land is located at the confluence of the East Fork Issaquah Creek and mainstem, and includes several hundred yards of the right banks of each. The site represents a unique opportunity for restoration because it is currently open space and publicly owned. The city of Issaquah is currently developing a master plan for the site, which integrates the Anderson, Cybil-Madeleine, and Issaquah Creek Parks.

The mainstem of lower Issaquah Creek, downstream of the East Fork confluence is characterized by incised banks, low in-channel habitat diversity, and an abundance of non-native invasive plant species in the riparian corridor.

This project is immediately downstream of the East Fork Issaquah Creek confluence reach project (Project J). We recommend that these two projects be designed and implemented in conjunction with each other, although the scale of issues on the East Fork and mainstem are very different.

## **IMPORTANCE FOR KOKANEE AND/OR CHINOOK POPULATIONS**

Issaquah Creek and its tributaries currently provide the vast majority of spawning habitat for Chinook salmon in the Lake Sammamish basin. The WDFW hatchery releases two million Chinook smolts into the creek every year to maintain the Issaquah Chinook run.

Historically, Issaquah Creek supported an early-run of kokanee; however, this run is now believed to be extinct. Kokanee spawner surveys have been limited in recent years. Based on observations of available habitat in the upper reaches of this watershed, Issaquah Creek and its tributaries may hold promise as potential kokanee spawning habitat, especially if restoration and barrier removal projects are developed in conjunction with the emergency supplementation program, which could provide a source of fry.

## **LIMITING FACTORS**

The proposed project area extends along Cybil-Madeleine park and includes a large bend in the river. Upstream of the bend, the right bank is armored and incised, and is covered by non-native invasive riparian plants. Very little pool habitat exists, which limits the opportunity for upstream migrating fish to rest and seek refuge from high flows. The lack of pools, eddies, and side channels also limits the ability of juveniles to rear in the creek before being swept downstream to the lake. These conditions are typical of lower Issaquah Creek.

## **PROPOSED ACTIONS**

This project will consist of the following elements:

- Remove armoring from the banks upstream of the bend and create a shallower bank slope, effectively widening the bankfull width and increasing flood capacity, while slowing the water velocities during a flood.
- Create an overflow channel across the gravel bar along the right bank in the park, which will provide additional flow conveyance capacity. Engineered log jams will be anchored at the upstream side of the side channel and at other key locations to allow limited channel migration, but maintain the creek within the floodplain.
- Other channel roughness elements may be used to create a diversity of microhabitats for holding fish.
- Native riparian vegetation will be planted along the impacted banks to provide shade and cover, and to eventually promote the recruitment of new wood.

## **EXPECTED BENEFITS**

This project will achieve the following benefits: 1) increase flood conveyance capacity; 2) enhance 500 feet of mainstem habitat for juvenile rearing and adult spawning; 3) improve the function of the riparian zone by planting native vegetation.

## SELECTION CRITERIA SCORING MATRIX RESULTS

Category	Basic Question	Scoring Question	Score	Justification
Location	In which stream and reach is the project located? What is the historical and current significance for kokanee and/or Chinook?	What is the historical and current significance of the site for <b>kokanee</b> ?	6	Historically used by the early run of kokanee
		What is the historical and current significance of the site for <b>Chinook</b> ?	10	Primary spawning stream in Sammamish Basin
Limiting Factors	Would the project address specific limiting factors?	How well does the project address factors limiting <b>kokanee</b> ?	3	Project would generally improve habitat, but unclear on what is currently limiting kokanee in Issaquah Creek
		How well does the project address factors limiting <b>Chinook</b> ?	9	Project would help reduce flashiness, add holding pools, and improve substrate composition
Watershed Context and Condition	Is project success dependent on conditions elsewhere in the watershed?	Do surrounding land uses and/or management strategies lead to constraints (or opportunities) for the proposed restoration? Examples: water quality, sediment, flow regime, fish access, riparian vegetation	6	Installed habitat features could be at risk from high flows from urbanized watershed
		Who owns project area and is long-term protection ensured?	10	New city park
		Who owns neighboring parcels? What land uses occur upstream and/or downstream that could be affected by restoration? What risks do those uses pose to the site now and in the future?	5	Site is adjacent to neighborhood and school buildings within city
Costs	How expensive will proposed action be? What is the likelihood for funding?	What is the order of magnitude cost estimate?	6	Roughly \$200K depending on length of reach
		Are matching funds available?	7	City likely to contribute
		Are specific grants or appropriations in mind that would be likely to fund this type of project?	8	High profile; eligible for Chinook funding
Socio-Political	What other considerations will determine feasibility of implementation?	Does the project have public support and/or support from the local jurisdiction?	9	Acquisition of parcels was recommended in Chinook plan
		Does the project have landowner support?	8	City is generally supportive
		Does the project utilize or create public access?	10	Yes, project is in new park and across from a school

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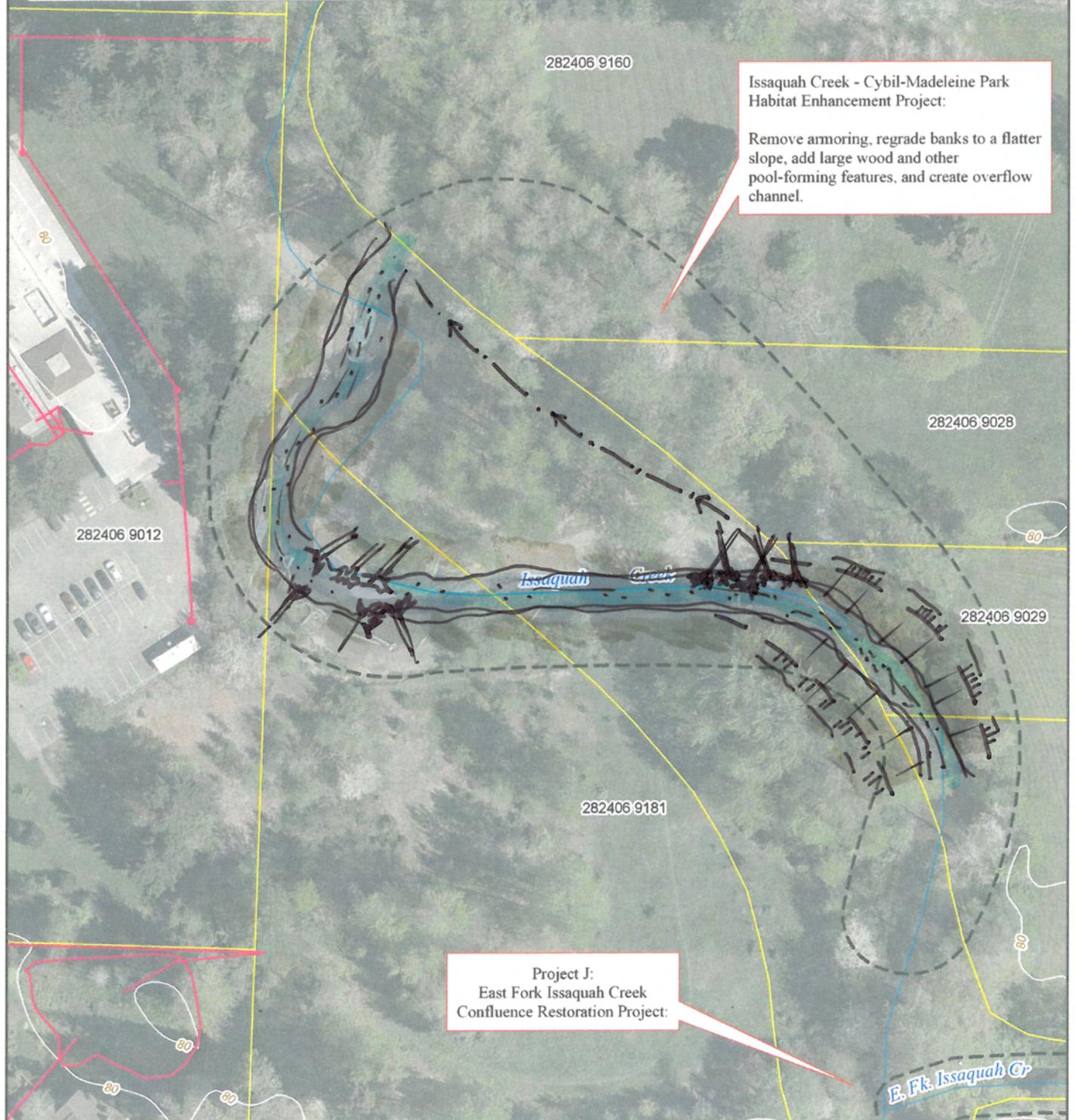
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Habitat Enhancement Project:**

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**Project J:  
East Fork Issaquah Creek  
Confluence Restoration Project:**