
LAUGHING JACOBS CREEK

SAMMAMISH STATE PARK CHANNEL RE-ALIGNMENT

Location:	Laughing Jacobs Creek (tributary to Lake Sammamish), King County, WA. WRIA 8.
Proposed Action:	Install a new fish passable culvert under the East Lake Sammamish Parkway and create a new stream alignment from Hans Jensen State Park (Project H), west southwest through the Sammamish State Park wetland, south of the boat launch area. Install appropriate habitat features and spawning gravel throughout new reach.
Species Benefiting:	kokanee, Chinook, coho, cutthroat trout



Kokanee/Chinook Restoration Feasibility Assessment in the Sammamish Watershed

Map G - Laughing Jacobs Creek - Sammamish State Park Channel Re-route Project



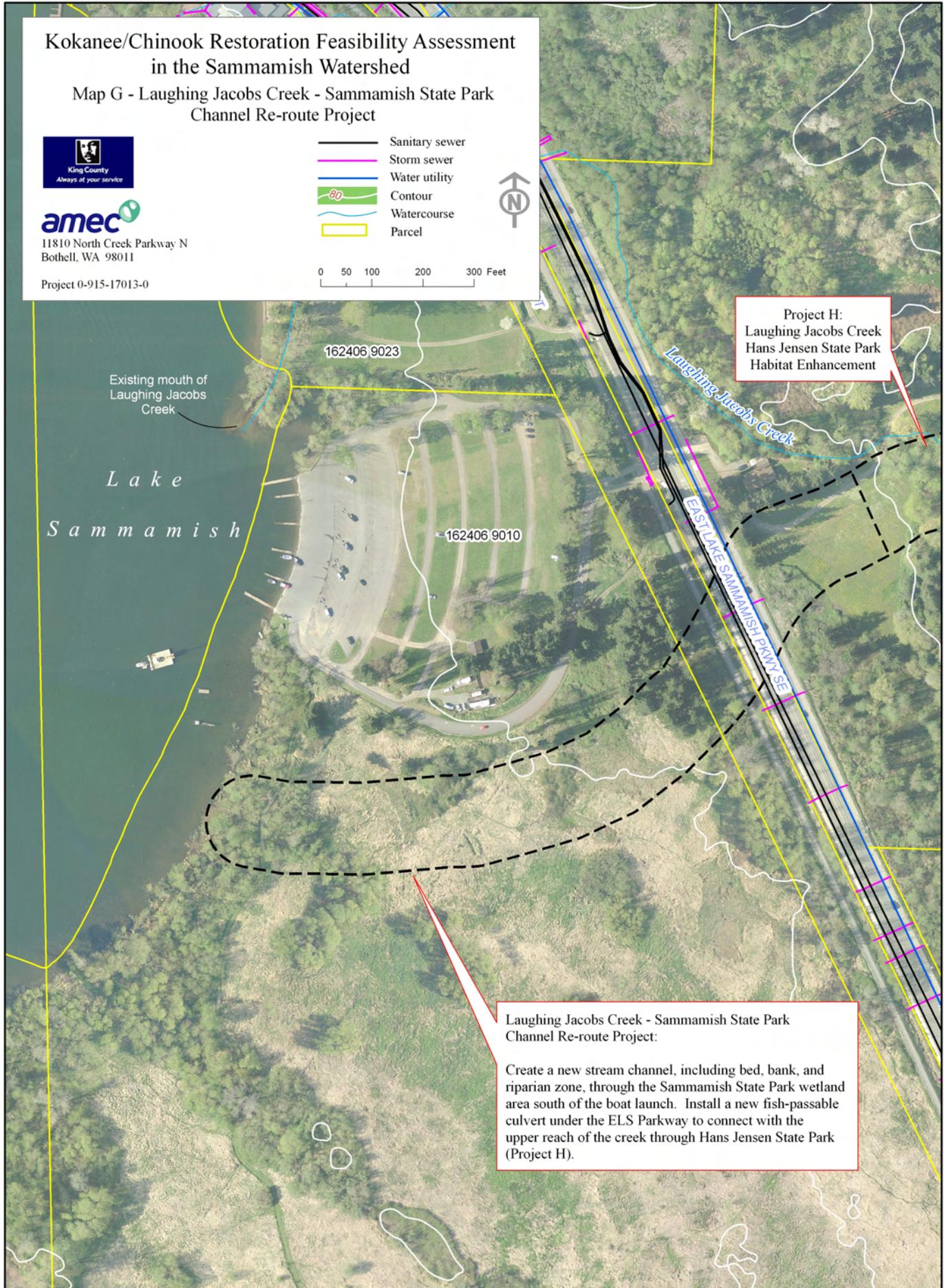
11810 North Creek Parkway N
Bothell, WA 98011

Project 0-915-17013-0

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



0 50 100 200 300 Feet



Project H:
Laughing Jacobs Creek
Hans Jensen State Park
Habitat Enhancement

Laughing Jacobs Creek - Sammamish State Park
Channel Re-route Project:

Create a new stream channel, including bed, bank, and riparian zone, through the Sammamish State Park wetland area south of the boat launch. Install a new fish-passable culvert under the ELS Parkway to connect with the upper reach of the creek through Hans Jensen State Park (Project H).

SITE BACKGROUND

Laughing Jacobs Creek flows from Laughing Jacobs Lake, down from the plateau, into the southeastern end of Lake Sammamish. The upper portion of the watershed is within the City of Sammamish and lower portion is within the City of Issaquah. In the upper watershed, the creek flows through residential neighborhoods, down a forested canyon into Hans Jensen State Park. Within the park, the creek flows in a constricted channel through a narrow riparian corridor consisting of mature evergreen forest, then bends to the north where it flows under the East Lake Sammamish (ELS) parkway and trail via 48 inch diameter corrugated pipe culvert and meets with Many Springs Creek. The culverts under the ELS trail and parkway are passable to some extent by kokanee, since most of the spawning is observed upstream in Hans Jensen State Park (Hans Berge, personal communication). From there, the creek crosses three private lots before joining the lake, just north of the Sammamish State Park boat launch. Stream and riparian habitat on these private lots is highly modified and is described below under Limiting Factors. Discharge in Laughing Jacobs Creek is generally 10 cfs in the summer, with winter flows commonly exceeding 50 cfs (Figure 1).

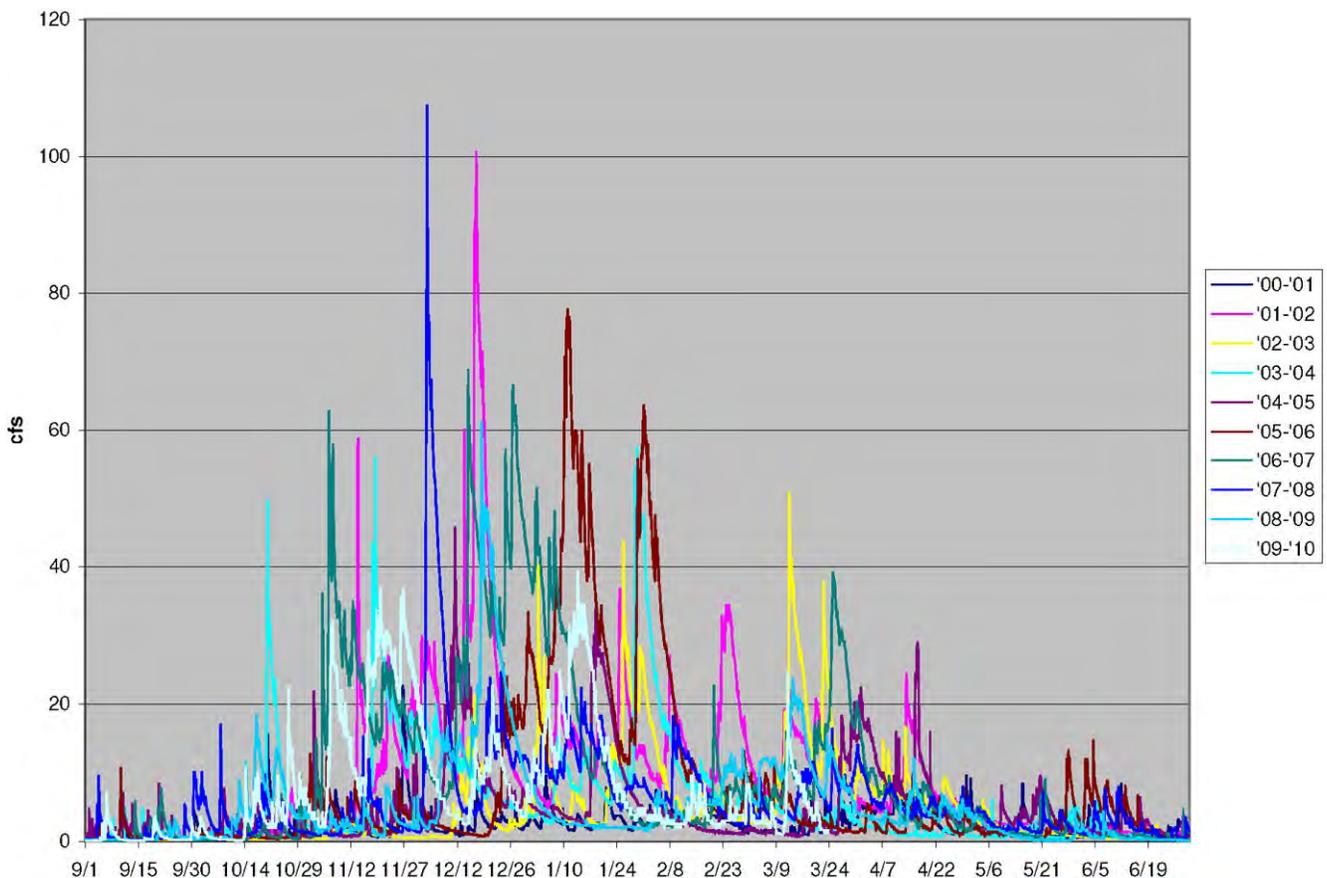


Figure 1. Laughing Jacobs Creek discharge measured at East Lake Sammamish Parkway (King County steam gage 15c) during water years 2000 to 2009.

IMPORTANCE FOR KOKANEE AND/OR CHINOOK POPULATIONS

Laughing Jacobs Creek contains one of only three consistent spawning populations of late-run Lake Sammamish kokanee and is part of the emergency supplementation program. The lower reach of Laughing Jacobs Creek downstream of the ELS parkway (hereafter referred to as the lower reach) currently serves as an important migration corridor to spawning habitat (primarily upstream of the ELS parkway). The lower reach may also be used for spawning by kokanee, but its relative value is unclear because of limited spawner surveys and highly degraded conditions in this reach (Hans Berge, personal communication).

The mouth of Laughing Jacobs Creek has the potential to provide important non-natal rearing habitat for juvenile Chinook salmon. The key attributes include: its proximity to Issaquah Creek, the low gradient that allows juvenile fish to access the creek, and instream flows that remain consistent throughout the spring and summer.

LIMITING FACTORS

Fish habitat in the lower reach of Laughing Jacobs Creek is degraded. Along much of the reach, the riparian zone consists of lawn and landscaped fields, resulting in very little protective cover and shade. In some sections, the riparian zone is choked with non-native invasive species which prevent the establishment of native species. The channel is highly constrained between rip-rap banks, which increase the velocity of high flows and scour spawning size gravels from the bed. In one section the creek is undercutting and eroding a five foot tall bank that could collapse and cause problems for upstream migrating fish. Small boulders (likely from collapsing rip-rap), concrete, and metal debris are littered within the channel.

PROPOSED ACTION

The objective of this project is to reconstruct the lower reach of Laughing Jacobs Creek within Sammamish State Park, south of the current boat ramp and parking area. All flow will be re-routed through a new culvert or under a new bridge structure to be installed under the ELS Parkway and Trail. A naturalized channel will be created starting at the location where the footbridge crosses the creek (within Hans Jensen State Park), and will join the lake at a new location in the Sammamish State Park wetland. Channel bed, bank, and riparian elements will be designed to optimize kokanee spawning habitat. In addition, the creek mouth, surrounding shoreline, and low gradient wetland reach will be designed to optimize juvenile Chinook habitat.

The project will include the following elements:

- A new culvert or bridge structure will be installed under the ELS parkway and trail.

- A stream channel and flood plain bench will be excavated through the wetland meadow of Sammamish State Park.
- Large wood jams and other natural habitat features will be installed to anchor the stream-course within the floodplain and promote pool-forming habitat.
- Spawning gravel will be laid down along the length of the reach.
- Native riparian plants will be installed along the length of the reach.
- Finally, flow will be diverted from the Hans Jensen park reach into the new channel. The new channel will remain dry until the entire length of new stream is complete.

This project is considered separately, but in conjunction with another proposed project on Laughing Jacobs Creek: the Hans Jensen State Park Habitat Enhancement Project above the ELS Parkway (Project H). Details of the upper end of this design (primarily the phasing for connecting to the existing creek location) are linked with the proposed treatments for the lower end of that project.

EXPECTED BENEFITS

The project will replace the current degraded lower reach of the creek with a stream channel optimized for kokanee spawning and migration. Improvements will include: clean spawning gravels, pool habitat, riparian cover, and reconnected floodplain. Furthermore, moving the creek onto state-owned park land eliminates the risk of future development that would threaten this habitat. Educational and outreach elements will be promoted as add-ons to this high profile project.

Owners of the parcels along the current stream alignment are expected to benefit from reduced capacity of flood flows. The existing channel would still receive flow from Many Springs Creek.

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 kokanee ?	10	One of only three consistent late-run kokanee spawning streams
		What is the historical and current significance of the site for Chinook ?	8	Creek mouth proximity to Issaquah Creek creates potential for use as rearing area
Limiting Factors	Would the project address specific limiting factors?	How well does the project address factors limiting kokanee ?	8	Would allow for creation of optimal spawning habitat to replace the current degraded lower reach
		How well does the project address factors limiting Chinook ?	7	Design of mouth could create optimal non-natal stream mouth rearing habitat
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	10	Routing creek through park avoid threats from private land uses, and create long continuous stretch of protected habitat
		Who owns project area and is long-term protection ensured?	10	State 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?	9	Large parcel not affected by neighbors, but includes WSDOT right-of-way at ELS Parkway.
Costs	How expensive will proposed action be? What is the likelihood for funding?	What is the order of magnitude cost estimate?	1	Involves major utility work under Parkway and extensive earthwork
		Are matching funds available?	6	Unknown; could get support from fed/state/city
		Are specific grants or appropriations in mind that would be likely to fund this type of project?	3	No specific grants in mind - might be long term project/multi-phase
Socio-Political	What other considerations will determine feasibility of implementation?	Does the project have public support and/or support from the local jurisdiction?	3	relatively new idea, needs more research in terms of feasibility
		Does the project have landowner support?	3	Park and neighbors not yet contacted
		Does the project utilize or create public access?	10	State park, education opportunities, high profile



Degraded in-stream and riparian habitat in the lower reach of Laughing Jacobs Creek

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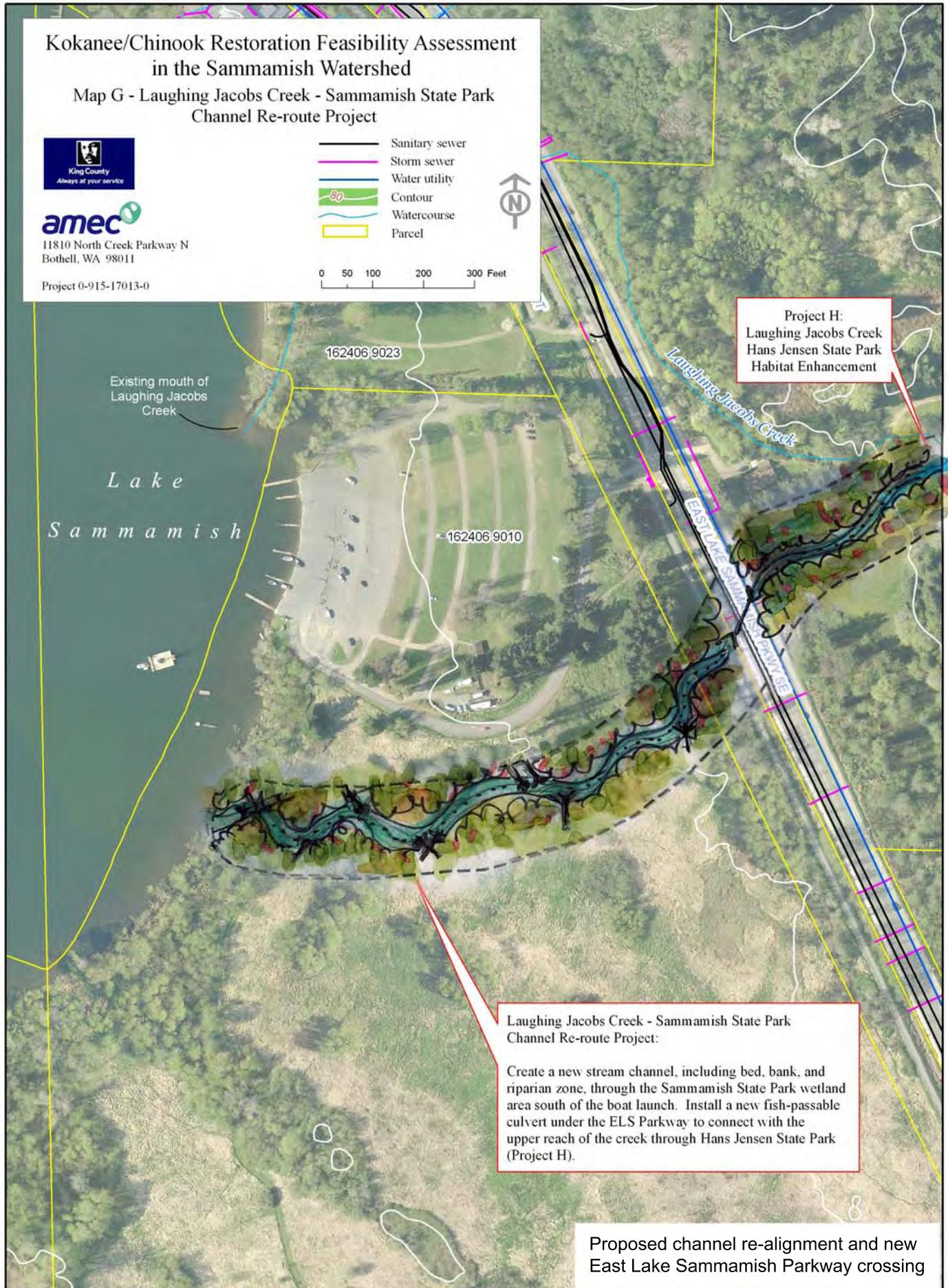
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Proposed channel re-alignment and new
East Lake Sammamish Parkway crossing