

## TECHNICAL MEMORANDUM

**DATE:** May 18, 2015  
**TO:** King County  
**FROM:** Paul Fendt  
**SUBJECT:** Evaluation of Existing Drainage Structures for Replacement in the South Sammamish Segment  
**CC:** Craig Buitrago, Jenny Bailey  
**PROJECT NUMBER:** 554-1521-075 (20/05)  
**PROJECT NAME:** East Lake Sammamish Trail

### INTRODUCTION

King County received feedback on its assessment of trail culverts from commenters on the Substantial Shoreline Development Permit with the City of Sammamish. In response, King County Parks prepared an enhanced, supplemental analysis to collect data and to evaluate the existing drainage structures located on the East Lake Sammamish Trail (ELST) South Sammamish Segment. In this analysis, the County further identified drainage structures suited for potential fish passage improvements (Technical Memorandum to King County dated February 26, 2015). The process consists of applying screening criteria that evaluates critical characteristics for considering replacement of non-passable structures with a fish-passable culvert and also removes from consideration those structures that do not serve a natural or modified stream.

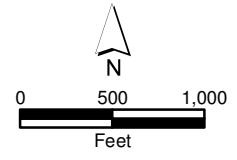
The purpose of this technical memorandum is to provide a summary table of the screening results that is compared to and related to the potential fish-bearing waters information previously prepared. No new information is provided and no modifications or updates have been made. Table 1 shows the full list of structures in the South Sammamish Segment. Some structures in the original analysis had slightly different stationing numbers, which have been used in Table 1 and are related to the new numbers now being used. Figure 1 shows the location of the structures in South Sammamish Segment A, which are the subject of the current permitting action. Table 1 shows all of the structures analyzed. Table 2 provides a summary of the WDNR stream typing maps and status of the existing structures.



Path: P:\554 1521 075 SammamishTrail\Figures 1A 1B\Figure 1A\_SSamamish TDA Segment A Basins.mxd

Source: King County, City of Sammamish, National Geographic Society, I-cubed.

**Parametrix**



- ▭ South Sammamish Segment A Project Location
- Stream Crossing Field-verified by Parametrix
- - - Stream Crossing Not Found within Trail Corridor
- City of Sammamish Drainage Basin



**Figure 1A  
Drainage Structure  
Locations**

Table 1. Summary of Structure Screens

Structures in the South Sammamish Segment (41) <sup>1</sup>	Structures included in the early stream width analysis (29) <sup>2</sup>	Structures meeting channel width criteria (23)	Structures passing replacement screens (8)	Structures meeting channel width criteria but failing screens (15)	WDNR stream typing <sup>3</sup>	Stream name or identifier
218+45	218+45	218+45		218+45		
220+00RT	220+00RT	220+00RT		220+00RT		
224+00	224+00					
229+85	229+90					
239+60	239+60	239+60	239+60		F	0163 S <sup>4</sup>
241+15	241+15	241+15	241+15		N	0163 N <sup>4</sup>
256+40	256+40	256+40		256+40	N	
270+00	270+00				N	
276+00						
290+05	290+05					
298+50						
308+10						
310+00						
315+90	315+90	315+90		315+90		
316+65	316+65	316+65		316+65	N	
320+75						
324+75						
330+00						
343+00						
350+50						
352+25	352+25					
356+65	356+65	356+65		356+65		
364+25						
366+75	366+75	366+75		366+75		
370+00						
378+40	378+40	378+40	378+40		F	Pine Lake Creek
383+50	383+47	383+50		383+50		
384+50RT	384+50RT	384+50RT		384+50RT		
385+80	385+80	385+80		385+80		
401+00	401+00	401+00	401+00		F	0155
411+10	411+10	411+10	411+10		F	Ebright Creek
426+40	423+40	423+40	426+40		F	Zaccuse Creek
431+60	431+60	431+60		431+60	N	
436+10						
441+50	440+20	440+20	441+50		F	George Davis Cr
450+00	448+73	448+73		448+73		
453+00	451+50	451+50		451+50		
454+50	453+32					
456+00	454+60	454+60		454+60		
460+20	459+03	459+03		459+03		
464+15	464+13	464+13	464+15		n/a	0143L

<sup>1</sup>Using current stationing numbers from “updated 60 percent plans”; from the February 26, 2015 Technical Memorandum

<sup>2</sup>Using stationing from the 2008 “30 percent design plans”

<sup>3</sup>Streams not shown on the WDNR typing maps have no typing designation

<sup>4</sup>Streams 163N and 163S are branches or distributaries of the same channel that crosses the trail in two locations. The stream mapping is inconsistent across numerous sources, but the typing and structure analysis are correct.

Eight structures met all the screening criteria to be considered for replacement (see Table 1) and will be further evaluated to confirm the replacement approach. Six of those eight will be replaced plus two additional structures

for a total of eight replaced. Fifteen of the 23 structures meeting the channel width criteria do not meet the screening criteria to be considered for replacement. Of these 15, 12 are not shown on the WDNR stream typing maps and the remaining three were rated “N” or non-fish-bearing.

The stream types for the structures meeting the screening criteria is shown on Table 2, which indicates that six of the eight structures are Type F, one is Type N, and one is not typed or shown on the maps.

**Table 2. Summary of Structures and Proposed Status**

Structures passing all screens	Stream name	WDNR stream typing	Proposal (reason)	Comments
239+60	0163S	Type F <sup>1</sup>	Not replaced (no habitat gain without other replacements outside of trail corridor); additional culverts replaced at Zaccuse and Pine Lake Creeks	Channel combines immediately downstream of trail; barrier immediately upstream
241+15	0163N	Type N <sup>2</sup>	Not replaced (no habitat gain without other replacements outside of trail corridor); additional culverts replaced at Zaccuse and Pine Lake Creeks	Channel combines immediately downstream of trail; channel in culvert immediately downstream of trail
378+40	Pine Lake Creek	Type F	Replace (pass screens, named, Type F); Additional structure to be replaced outside of trail corridor	Two culverts proposed will provide complementary benefits for comprehensive habitat gain
401+00	Stream 155	Type F	Replace (pass screens, named, Type F)	Downstream reach to lake is in a pipe that must be replaced to gain benefit
411+10	Ebright Creek	Type F	Replace (pass screens, named, Type F)	
426+40	Zaccuse Creek	Type F	Replace (pass screens, named, Type F); Additional structure to be replaced outside of trail corridor	Two culverts proposed will provide complementary benefits for comprehensive habitat gain
441+50	George Davis Creek	Type F	Replace (pass screens, named, Type F)	
464+15	Stream 143L	not typed	Replace (pass screens)	

<sup>1</sup> Type F is defined by WDNR as a stream or waterbody that is known to be used by fish, or met the physical criteria to be potentially used by fish.

<sup>2</sup> type N is defined by WDNR as a stream or that does not meet the physical criteria of a Type F stream, including streams that have been proven not to contain fish using methods described in Forest Practices Board Manual Section 13.