MEMORANDUM

To: Mark Hart, Comox Valley Regional District **Date: November 2, 2024**

From: Kim Poupard, Calidris Ecological Services Ltd.

RE: Watercourse Assessment Results Summary at Maris Nature Park

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Introduction

The Comox Valley Regional District (CVRD) asked Calidris Ecological Services Ltd. to update the stream mapping within the Eagles Greenway / Maris Park area. The study area is shown on Figure 1. Shapefiles of these features were provided to the CVRD with this summary.

Methods

The study area was traversed on foot by Kim Poupard, R.P.Bio. on October 31, 2024 to assess and map the streams. The foreshore trail (inside of the treeline at the toe of the steep bench slope) and the roadway and walking trail (above the slope break) were both walked for the length of the study area to identify any potential watercourses. Any potential areas were investigated up to the steep bank to look for signs of scour consistent with a stream. A thick layer of recently fallen maple leaves had to be cleared in many areas to assess ground conditions.

A georeferenced PDF on GPS enabled handheld device was used to map stream centerlines (using GPS tracking and walking the centerline), reach breaks, fish barriers and other notable features.

Extra attention was paid to areas where CVRD spatial data indicated a stream. When no stream was found, a waypoint was added to the map and labelled “No Stream Found” (Figure 1).

Results

Conditions were raining at the time of the survey and generally fairly wet. Water levels were at moderate flows; ephemeral features were assumed to have been flowing.

There is only one watercourse on the property along the southern boundary (Figure 1). There are a number of gullies, particularly at the north end, but none had any signs of scour and were determined not to be streams. There is one more stream feature where the road culvert concentrates flows but this dissipates and flows infiltrate to ground after approximately 50 m. There is no sign of this feature at the slope break.

Three reaches were defined in the stream at the south end. Physical and habitat conditions of these reaches are provided in the tables below. The entire stream is assumed to be seasonal / ephemeral. Only the lowest break is likely to contain fish with the next break above likely being too steep (>20%) to allow fish access. The lowest reach is actually smaller than the reach above as a considerable amount of flow appears to infiltrate to the ground. The stream disappears just before the foreshore and is likely only connected to the marine environment during some combination of very high flows and high tide. There is a fish barrier approximately 185 m (1.2 m fall) upstream from the foreshore at the top of the second reach. The upper reach is therefore confirmed non-fish bearing.

The stream centerline above (light blue on Figure 1) has been inferred from aerial imagery but it is very difficult to make out given the tree canopy. The inferred section should not be used for decision making and should be reassessed on the ground with permission from the landowner.

Table. Stream habitat data for Reach 1.

Site:	**Maris Nature Park**				
Stream ID:	Un-named Stream		Reach:	1	
Field UTMs	Zone: 10U		354707E		5519093N
Site Length (m):		70	*Left Bank Shape:*		Sloping
Mean Channel Width (m):		1.9	*Right Bank Shape:*		Sloping
Mean Wetted Width (m):		0.74	*Riparian Vegetation:*		Mixed Mature Forest
Mean Residual Pool Depth (cm):		<5	*Crown Closure (%)*		1-20%
Bankfull Depth (m):		0.5	*Cover:*		Moderate
Mean Gradient (%):		7.5	*Dominant Substate:*		Cobbles
Coupling:	Decoupled		*Sub-dominant Substrate:*		Fines
Confinement:	Unconfined			*D (cm):*	18
Morphology:	Cascade Pool			*D95 (cm):*	30
Fish Status:	Assumed Fish Bearing				
Habitat Description:					
Lowest reach in the system, flows into marine high tide. Marginal rearing and spawning habitat for salmonids. Lacks pools, cobble substrate embedded sufficiently to limit suitability for spawning. Flows infiltrate to ground at top of foreshore; no connectivity for fish much of the time. Season/ephemeral flows.					

Table. Stream habitat data for Reach 2.

Site:	**Maris Nature Park**				
Stream ID:	Un-named Stream		Reach:	2	
Field UTMs	Zone: 10U		354640E		5519034N
Site Length (m):		120	*Left Bank Shape:*		Vertical
Mean Channel Width (m):		2.0	*Right Bank Shape:*		Vertical
Mean Wetted Width (m):		1.1	*Riparian Vegetation:*		Mixed Mature Forest
Mean Residual Pool Depth (cm):		<5	*Crown Closure (%)*		20-40%
Bankfull Depth (m):		1.0	*Cover:*		Moderate
Mean Gradient (%):		26.5	*Dominant Substate:*		Cobbles
Coupling:	Coupled		*Sub-dominant Substrate:*		Gravels
Confinement:	Confined			*D (cm):*	15
Morphology:	Riffle Pool			*D95 (cm):*	35
Fish Status:	Assumed Fish Bearing				
Habitat Description:					
Reach is within a steep confined gully. Ephemeral flows and steep gradient likely preclude access to fish. Habitat is marginal for rearing and spawning. Upper end of reach is a fish barrier.					

Table. Stream habitat data for Reach 3.

Site:	**Maris Nature Park**		
Stream ID:	Un-named Stream	Reach:	3
Field UTMs	Zone: 10U	354330E	5519123N

Site Length (m):	40	*Left Bank Shape:*	Sloping
Mean Channel Width (m):	2.3	*Right Bank Shape:*	Sloping
Mean Wetted Width (m):	1.9	*Riparian Vegetation:*	Mixed Mature Forest
Mean Residual Pool Depth (cm):	<5	*Crown Closure (%)*	20-40%
Bankfull Depth (m):	1.0	*Cover:*	Moderate
Mean Gradient (%):	6.5	*Dominant Substate:*	Cobbles
Coupling:	decoupled	*Sub-dominant Substrate:*	Gravels
Confinement:	unconfined	*D (cm):*	12
Morphology:	Cascade Pool	*D95 (cm):*	20
Fish Status:	Not Fish Bearing		

Habitat Description:
Reach is isolated by a fish barrier below and seasonal/ephemeral flows. Marginal habitat for rearing or spawning salmonids. There is a pedestrian bridge and a horse-ford within this surveyed section. The area above this reach was not assessed but it is assumed to stay consistent into a wetland area upstream

Photo 1: Confirmed fish barrier at the top of reach 2.

LEGEND

- Assessment Area
- Maris Nature Park
- CVRD Stream Data
- Ditch Centerline
- Stream
- Estimated Stream Route

N

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CALIDRIS Ecological SERVICES
wildlife - ecology - restoration

COMOX VALLEY REGIONAL DISTRICT

Project

MARIS NATURE PARK

Title

WATERCOURSE MAPPING

Drawn: BL 24-11-01	Scale: 1:6000
Checked:	PROJECT: 2024-056b
Approved:	**FIGURE: 1**