GSS ENGINEERING CONSULTANTS LTD

Table 1 - Continued Study for Potential Removal of the Head Street and Coldstream Dams
East Sydenham River
St. Clair Region Conservation Authority (SCRCA)

DRAFT

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21-118

Activity Description	Consultant	Cost Estimate	Timeframe
Secure funding for continued study & design phase	SCRCA		Unknown
1. Prepare materials and attend initial public information meetings for the Head Street Dam and Coldstream Dam.	GSS Engineering	$4,000	1-2 months
2. Preliminary multi- year removal plan for the Head Street dam and further exploration/evaluation of both multi-year and partial removal for the Coldstream Dam.	GSS Engineering	$15,000	4-6 months
3. As part of Item 2,evaluate dam removal methods to retain as much as of the sediment in the dam head ponds as possible for long term revegetation and stabilization.	GSS Engineering	$10,000	
4. Estimate baseline, normal sediment transport without influence of dams on sediment retention or sediment release (ie assume dams never constructed).	GSS Engineering	$6,000	
5. Sediment source study for each head pond including collecting and analyzing sediment samples to better clarify the depth, volume, and physical characteristics of the head pond sediments.[2]	GEO Morphix	$17,600	4-6 months - simultaneous with items 2-3 (includes field work that must be completed during spring - fall)
6. Desk top and field based geomorphic assessment of the downstream river reaches to identify and highlight areas of potential sediment deposition.[2, 3]	GEO Morphix	$29,700	
7. Head pond sediment transport modelling to more precisely define the downstream propagation and deposition of head pond sediments. (**Provisional** based on the adequacy of sediment deposition estimates from activities 2 and 3).[2]	GEO Morphix	$34,100	
8. Refine design of removal options based on sediment transport study results to minimize sediment loading of the downstream river for each dam removal or modification step.	GSS Engineering	$13,000	2-3 months
9. Literature review of the effects of sedimentation on Eastern Sand Darter (SAR species in the dams vicinty).[4]	Stantec	$3,881	2-3 months - simultaneous with item 8
10. Literature review of the effects of sedimentation on SAR mussels approximately 16 km downstream of dam. (**Provisional** based on the extents and severity of estimated sedimentation in activities 3 and 4).[4]	Stantec	$6,023	
11. Reporting, meetings and general project support.[4]	Stantec	$6,638	
12. Evaluate effects of dam removals and sedimentation on river flood plain with use of HEC-RAS modelling software.	GSS Engineering	$20,000	2-4 months
13. Apply for all permits from regulators (DFO, MNR, Aboriginal Consultation, MECP etc.)	GSS Engineering	$70,000	Variable (up to 1 year)
14. Prepare materials and attend second PIC meetings for both dams.	GSS Engineering	$3,000	1-2 months
15. Present to local Councils on project (2 presentations assumed).	GSS Engineering	$4,000	1-2 months following PIC
16. Prepare project cost estimates.	GSS Engineering	$3,000	1-2 months
Secure funding for project construction phase	SCRCA		Unknown
17. Prepare final tender documents for dam removal including drawings and specifications.	GSS Engineering	$10,000	2-3 months
18. Attend site meeting with bidders during tendering, and review and provide recommendation of contract award.	GSS Engineering	$5,000	
19. Project management and support for all continued study activities.	GSS Engineering	$10,000	Throughout study

Total GSS Engineering Cost Estimate (Excluding HST)	$173,000	Total timeline will be influenced by the time required to secure funding (approximately 18-24 months to complete studies, consultation, design, and permitting)
Total GEO Morphix Cost Estimate (Excluding HST)	$81,400	
Total Stantec Cost Estimate (Excluding HST)	$16,542	
GRAND TOTAL (Excluding HST)	**$270,942**	

Notes:

[1] Activities to be completed by GSS Engineering highlighted in green, activities to be completed by GEO Morphix highllighted in blue, and activites to be completed by Stantec highlighted in orange.

[2] For more information see "Proposal for Sediment Transport Study" as prepared by GEO Morphix.

[3] GEO Morphix cost estimates are based on the river reach downstream of Coldstream Dam to Amiens Road (approximately 4.5 km downstream) and downstream of Head Street Dam to the rail line crossing south of Albert Street (approximately 1.5 km downstream).

[4] For more information see "Head Street Dam and Coldstream Dam Removal Projects - Scoped Ecological Impact Study Assessment" as prepared by Stantec.

Table 2 - Supplementary (Provisional) Continued Study Items for Potential Removal of the Head Street and Coldstream Dams
East Sydenham River
St. Clair Region Conservation Authority (SCRCA)

Activity Description	Consultant	Cost Estimate	Timeframe
1. Extend sediment transportation models further downstream to include the full channel length between the Coldstream dam and the upper limit of the Head Street Dam head pond, and for 20 km distance downstream of the Head Street dam.	GEO Morphix	$30,000	TBD if required
2. Complete river cross section sediment surveys at select bridge locations downstream of both dams[5]	GSS Engineering	$10,000	TBD if required
TOTAL OF TABLE 2 (Excluding HST)		**$40,000**	

All field work cost estimates are based on safe and public access points to river sections and each head pond.[5]