



June 8, 1999

Ministry of Environment, Lands, and Parks  
Environment and Lands, Lower Mainland  
Planning and Assessment  
10470 - 152 Street  
Surrey, B.C.  
V3R 0R3

**Attention:** **Ms. Jean Cook**  
**Habitat Officer**

Dear Ms. Cook,

**RE: GLOUCESTER INDUSTRIAL ESTATES**  
**HABITAT MITIGATION/COMPENSATION WORKS**  
**Application for Environmental Review**

Our client, Gloucester Industrial Estates Limited (Gloucester), requires a series of works be undertaken in and about watercourses and wetland/pond habitats on their development site in Langley. These works will be undertaken in order to complete development of the site. These works have been designed by ECL Envirowest Consultants Ltd. (Envirowest), Aplin & Martin Consultants Ltd. (Aplin & Martin), and Hunter Laird Engineering Ltd. (Hunter Laird). The development has been the subject of ongoing consultation with representatives of both the Ministry of Environment, Lands, and Parks (MELP) and the Department of Fisheries and Oceans (DFO).

## **1.0 PROJECT LOCATION**

The project is located within Gloucester Industrial Estates in Langley, generally encompassing lands north of the Trans-Canada Highway, west of the Langley-Abbotsford boundary, east of 264th Street and south of 60th Avenue. The site is divided into four quadrants centred on the intersection of 272nd Street and 56th Avenue: northwest, northeast, southwest and southeast. Tributaries to West Creek are located in all quadrants.

Works are proposed for the all quadrants and include: realignment, enhancement and elimination of watercourses; elimination of wetlands, ponds, riparian vegetation, and a minor ravine; setback relaxations and enhancement; wetland/pond creation; and riparian enhancement. These works are extensive in nature and will impact fish habitat and, as such, require habitat compensation and an Authorization under Section 35(2) of the federal Fisheries Act.

## 2.0 DESCRIPTION OF EXISTING CHARACTERISTICS OF THE STUDY AREA

The Gloucester site has been largely impacted by human activity. The area is a mixture of industrial/commercial sites, residences, pasture and native vegetation. Existing watercourses are all low gradient and have been realigned in places. Riparian vegetation has been reduced over significant portions of the area. Wetlands and ponds have been created through past land development activity. Spawning habitat is not supported by any of the watercourses. Currently, only threespine stickleback (*Gasterosteus aculeatus*) are resident within the watercourses. Enhancement works will render them accessible to salmonids.

## 3.0 PROPOSED PROJECT WORKS

The project includes works at 16 sites and includes a number of undertakings which are listed below and numerically referenced to plans of existing drainage (attached as Schedule A) and ultimate drainage (attached as Schedule B).

### Northeast Quadrant

- 1. Realignment and enhancement of an existing watercourse, wetland/pond creation, riparian enhancement, and relaxation of setbacks.

This is a minor watercourse located within the northwestern portion of the northeast quadrant. It has some significant riparian vegetation. The channel itself is indistinct in places. Substrates consist primarily of silt. The channel will be realigned and reconstructed within a reduced setback. The new channel will be lined with 100 - 200 mm  $\phi$  round stones on the banks. The channel invert will be covered with 10 - 75 mm  $\phi$  round stones. Two wetland/ponds will be created on the alignment of the channel. They will be up to 2.0 metres in depth and will have 2:1 sideslopes. The riparian zone will also be enhanced. This enhancement will include live staking of willow (*Salix* sp.) and red-osier dogwood (*Cornus stolonifera*) around the perimeter of the ponds/wetlands. Native trees and shrubs, including western redcedar (*Thuja plicata*), will be planted within the remainder of the setback area. See Envirowest Drwg. No. 467-06-01R for details.

- 2. Elimination of a minor watercourse.

This minor watercourse is located immediately east of the channel in proposed work area 1. It will be eliminated. The channel is very indistinct.



- 3. Elimination of a minor ravine, elimination of a portion of wetland, and setback relaxation from the wetland.

A wetland is located within a ravine in the northeast portion of the northeast quadrant. A minor side ravine and a portion of the wetland will be eliminated. A setback relaxation from the remaining wetland will also be included.

#### **Southeast Quadrant**

- 8. Elimination of a watercourse.

This watercourse is located south of Gloucester Way immediately east of 272nd Street. It will be eliminated.

- 9. Realignment/preservation of a watercourse and setback enhancement.

This watercourse is located from immediately north of Gloucester Way to the southeast portion of the quadrant. Portions of the watercourse will be retained. This includes a wetland in the southeast corner of the quadrant. Other sections will be realigned. The tributary will be preserved in a setback area placed under a restrictive covenant agreement. An 1800 mm  $\phi$  culvert will convey flow under Gloucester Way.

The typical width of the new channel will be 1.0 metres at the invert. The channel will include 100 - 300 mm  $\phi$  round stones on the banks, with 50 - 150 mm  $\phi$  round stones (coho gravel) on the bottom. Boulder complexing and revegetation of the banks will also be included.

A series of ponds will be incorporated into the channel. The ponds will include 300 mm  $\phi$  minus round stones and rootwads.

See Envirowest Drwg. Nos. 467-02-02, 467-02-08 and 467-02-09, as well as Hunter Laird Drwg. Nos. C1, C2 and C3, for details.

- 10. Elimination of a watercourse.

This watercourse is located south of the wetland to be retained in the southeast corner of the quadrant. It will be eliminated.

Southwest Quadrant

- 12. Elimination of a watercourse.

This watercourse is located north of Gloucester Way and immediately west of 272nd Street. It will be eliminated.

- 13. Elimination of a pond.

This pond is located north of Gloucester Way and south of the existing detention pond area. It will be eliminated.

- 14. Elimination of a pond.

This pond is located north of Gloucester Way and east of the existing pond at site 13. It will be eliminated.

- 15. Elimination of a pond.

This pond is located south of Gloucester Way and immediately west of 272nd Street. It will be eliminated.

- 16. Elimination of a watercourse and pond.

This watercourse and pond are located south of Gloucester Way and immediately west of 272nd Street. They will be eliminated.

- 17. Realignment of a watercourse.

This watercourse is located south of Gloucester Way to the west of 272nd Street. The channel will be realigned and reconstructed. The banks will be lined with 100 - 200 mm  $\phi$  round stones. The bottom of the channel will be covered with 50 - 200 mm  $\phi$  coho gravel. Rip rap (300 mm  $\phi$ ) will be placed at the bends of the new channel to provide erosion protection. Boulder complexing will be incorporated into the channel. The banks will be revegetated. See Envirowest Drwg. Nos. 467-02-08 and 467-04-06, as well as Aplin & Martin Drwg. Nos. 96025SR-1, -2 and -3, for details.

- 18. Elimination of a watercourse.

This watercourse is located south of Gloucester Way and immediately west of the watercourse at site 17. It will be eliminated.



- 19. Elimination of a pond.

This pond is located southwest of the intersection of 272nd Street and 56th Avenue. It will be eliminated.

- 20. Elimination of a watercourse and pond.

This watercourse and pond are at the extreme western end of 56th Avenue within the development site. They will be eliminated.

#### Northwest Quadrant

- 21. Elimination of riparian vegetation due to culvert extension.

A culvert extension of 5.0 metres is required on the north side of 56th Avenue. Riparian vegetation will be impacted as a result.

The proposed works are depicted in Envirowest Drwg. Nos. 467-02-02, 467-02-08, 467-02-09, 467-04-06 and 467-06-01R, Aplin & Martin Drwg. Nos. 96025SR-1, 96025SR-2 and 96025SR-3 and Hunter Laird Drwg. Nos. C1, C2 and C3, enclosed with the application.

As the project involves extensive works in an about fish habitat, the works require notification to, and approval from, Planning & Assessment of MELP in accordance with the Water Act Regulation. As impacts to fish habitat are involved, an Authorization pursuant to Section 35(2) of the Fisheries Act is also required for works.

#### 4.0 POTENTIAL IMPACTS TO FISH AND FISH HABITAT

##### Northeast Quadrant

- 1. Realignment and enhancement of an existing watercourse, wetland/pond creation, riparian enhancement, and relaxation of setbacks.

Riparian habitat and a portion of the existing channel will be impacted as a result of the reduction of the setback. However, the setback area will be enhanced. The channel will be realigned and reconstructed. It will include the placement of round stones on the banks and bottom of the channel. Two wetland/ponds will be constructed. The remainder of the setback will be enhanced with the addition of native trees and shrubs. Habitat impacted by the setback relaxation will be mitigated by the enhancement works.

- 2. Elimination of a minor watercourse.  
Impacts will include the loss of the watercourse and its associated riparian vegetation.
- 3. Elimination of a minor ravine, elimination of a portion of wetland, and setback relaxation from the wetland.  
Impacts will include the loss of a minor ravine, a portion of wetland and riparian vegetation associated with the reduction of the setback.

#### **Southeast Quadrant**

- 8. Elimination of a watercourse.  
Impacts will include the loss of the watercourse and its associated riparian vegetation.
- 9. Realignment/preservation of a watercourse and setback enhancement.  
Impacts will include the loss of portions of the watercourse and its associated riparian vegetation. These impacts will be mitigated by the reconstruction of the channel. The new channel will include the placement of round stones on the banks and bottom and the inclusion of boulder complexing. A series of ponds will also be incorporated into the channel. These ponds will include round stones and rootwads. The setback area will be enhanced with native vegetation and will be placed under a restrictive covenant agreement.
- 10. Elimination of a watercourse.  
Impacts will include the loss of the watercourse and its associated riparian vegetation.

#### **Southwest Quadrant**

- 12. Elimination of a watercourse.  
Impacts will include the loss of the watercourse and its associated riparian vegetation.
- 13. Elimination of a pond.  
Impacts will include the loss of the pond and its associated riparian vegetation.
- 14. Elimination of a pond.  
Impacts will include the loss of the pond and its associated riparian vegetation.



- 15. Elimination of a pond.  
Impacts will include the loss of the pond and its associated riparian vegetation.
- 16. Elimination of a watercourse and pond.  
Impacts will include the loss of a pond and watercourse along with their associated riparian vegetation.
- 17. Realignment of a watercourse.  
Impacts will include the loss of the existing watercourse and its associated riparian vegetation. Impacts will be mitigated by the reconstruction of the channel. The new channel will be lined with round stones on the banks and bottom. Boulder complexing will be incorporated into the channel. Native trees and shrubs will be planted adjacent to the banks.
- 18. Elimination of a watercourse.  
Impacts will include the loss of the watercourse and its associated riparian vegetation.
- 19. Elimination of a pond.  
Impacts will include the loss of the pond and its associated riparian vegetation.
- 20. Elimination of a watercourse and pond.  
Impacts will include the loss of the pond and watercourse along with their associated riparian vegetation.

#### Northwest Quadrant

- 21. Elimination of riparian vegetation due to culvert extension.  
Impacts will be limited to the loss of riparian vegetation.

## 5.0 PROPOSED IMPACT MITIGATION STRATEGY AND HABITAT COMPENSATION

The mitigation/compensation components of this project, when combined with the development proposed for the Poppy Estates Golf Course in the southwest and southeast quadrants, offsets its impacts on-site, and provides fish access to newly constructed fish habitat. As such, no off-site compensation habitat is required. Construction mitigation strategies are described below.

### Northeast Quadrant

- 1. Realignment and enhancement of an existing watercourse, wetland/pond creation, riparian enhancement, and relaxation of setbacks.

The work site will be isolated with sand bags or metal sheeting. Flow will be directed around the site using screened pumps and will be discharged immediately downstream of the construction area. A fish salvage will be conducted. The site will be dewatered. Any seepage into the site will be pumped to the adjacent field. Due to potential impacts to downstream habitat, this work will be restricted to the instream works window (August 1 to September 15).

- 2. Elimination of a minor watercourse.

This watercourse discharges to a roadside ditch only during times of higher water and it is unlikely that there will be flow to the ditch during the summer months. However, a drain rock berm will be installed at the outlet point to the ditch if necessary. Impacts to downstream habitat are unlikely. However, this work will be restricted to the instream works window (August 1 to September 15).

- 3. Elimination of a minor ravine, elimination of a portion of wetland, and setback relaxation from the wetland.

Any flow within the ravine discharges to the wetland. There is no flow within the wetland itself. Impacts to downstream reaches are unlikely. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).



#### Southeast Quadrant

- 8. Elimination of a watercourse.

The watercourse will be isolated at the downstream end with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

- 9. Realignment/preservation of a watercourse and setback enhancement.

Given the length of this portion of watercourse, works are likely to proceed in sections. The watercourse will be isolated at the upstream and downstream ends of each section. Flow will be directed around the site with a screened pump and discharged immediately downstream. A fish salvage will be conducted prior to realignment. The watercourse will then be dewatered. Seepage into the site will be pumped to adjacent vegetation. Due to potential impacts to downstream habitat, this work will be restricted to the instream works window (August 1 to September 15).

- 10. Elimination of a watercourse.

The watercourse will be isolated at the downstream end with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

#### Southwest Quadrant

- 12. Elimination of a watercourse.

The watercourse will be isolated at the downstream end with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

- 13. Elimination of a pond.

This pond has no outlet and neither construction mitigation nor a fish salvage will be required.

- 14. Elimination of a pond.

The pond outlets to a watercourse. It will be isolated at the outlet point with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

- 15. Elimination of a pond.

This pond has no outlet and neither construction mitigation nor a fish salvage will be required.

- 16. Elimination of a watercourse and pond.

The watercourse will be isolated at the downstream end with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

- 17. Realignment of a watercourse.

Given the length of this portion of watercourse, works are likely to proceed in sections. The watercourse will be isolated at the upstream and downstream ends of each section. Flow will be directed around the site with a screened pump and discharged immediately downstream. A fish salvage will be conducted prior to realignment. The watercourse will then be dewatered. Seepage into the site will be pumped to adjacent vegetation. Due to potential impacts to downstream habitat, this work will be restricted to the instream works window (August 1 to September 15).

- 18. Elimination of a watercourse.

The watercourse will be isolated at the downstream end with a drain rock/silt fence berm to ensure that sediments are not introduced to downstream reaches. A fish salvage will be conducted prior to infilling. Work will be restricted to the instream works window (August 1 to September 15).

- 19. Elimination of a pond.

This pond has no outlet and neither construction mitigation nor a fish salvage will be required.



- 20. Elimination of a watercourse and pond.

The watercourse has no outlet and neither construction mitigation nor a fish salvage will be required.

#### Northwest Quadrant

- 21. Elimination of riparian vegetation due to culvert extension.

The work site will be isolated at the upstream and downstream ends of the section. Flow will be directed around the site with a screened pump and discharged immediately downstream. A fish salvage will be conducted prior to extension of the culvert. The site will then be dewatered. Seepage into the site will be pumped to adjacent vegetation. Due to potential impacts to downstream habitat, this work will be restricted to the instream works window (August 1 to September 15).

Additional general conditions to be adhered to include the following:

- all works within and/or immediately adjacent to the above-referenced watercourses are to be conducted in accordance with the general requirements of the Land Development Guidelines and the specific conditions of approval provided by the environmental regulatory agencies;
- a pre-construction meeting is to be undertaken with the construction contractor to discuss the proposed works and required construction mitigation measures;
- no contaminated water is to enter any watercourse; waters collected within the work areas requiring removal are either to be pumped into an impermeable container for disposal in compliance with all applicable waste disposal regulations or to an area designated by the environmental consultant;
- a fuel spill response kit is to be retained on site during all construction activities; the spill kit will include: a 45 gallon drum or equivalent container capable of storing wasted (i.e. oiled) materials; 100 oil absorbent pads; 4 spill booms (minimum 5 metres in length); and a shovel; and
- all excavated materials are to be removed immediately off-site.

## 6.0 ENVIRONMENTAL INSPECTION AND MONITORING COMMITMENTS

### Northeast Quadrant

- 1. Realignment and enhancement of an existing watercourse, wetland/pond creation, riparian enhancement, and relaxation of setbacks.  
  
Full time monitoring during initial dewatering, otherwise periodic inspections (minimum twice per week) for instream works only.
- 2. Elimination of a minor watercourse.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 3. Elimination of a minor ravine, elimination of a portion of wetland, and setback relaxation from the wetland.  
  
Full time monitoring during infilling until it is demonstrated that no negative impacts are occurring to downstream reaches.

### Southeast Quadrant

- 8. Elimination of a watercourse.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 9. Realignment/preservation of a watercourse and setback enhancement.  
  
Full time monitoring during initial dewatering, otherwise periodic inspections (minimum twice per week) for instream works only.
- 10. Elimination of a watercourse.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).



**Southwest Quadrant**

- 12. Elimination of a watercourse.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 13. Elimination of a pond.  
  
Monitoring not required.
- 14. Elimination of a pond.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 15. Elimination of a pond.  
  
Monitoring not required.
- 16. Elimination of a watercourse and pond.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 17. Realignment of a watercourse.  
  
Full time monitoring during initial dewatering, otherwise periodic inspections (minimum twice per week) for instream works only.
- 18. Elimination of a watercourse.  
  
Full time monitoring during infilling until sediment control is demonstrated to be working as required (instream works only).
- 19. Elimination of a pond.  
  
Monitoring not required.
- 20. Elimination of a watercourse and pond.  
  
Monitoring not required.

#### Northwest Quadrant

- 21. Elimination of riparian vegetation due to culvert extension.  
  
Full time monitoring during initial dewatering, otherwise periodic inspections (minimum twice per week) for instream works only.

### 7.0 PROJECT SCHEDULE

#### Northeast Quadrant

- 1. Realignment and enhancement of an existing watercourse, wetland/pond creation, riparian enhancement, and relaxation of setbacks.  
  
During instream works window (August 1 to September 15)
- 2. Elimination of a minor watercourse.  
  
During instream works window (August 1 to September 15)
- 3. Elimination of a minor ravine, elimination of a portion of wetland, and setback relaxation from the wetland.  
  
During instream works window (August 1 to September 15)

#### Southeast Quadrant

- 8. Elimination of a watercourse.  
  
During instream works window (August 1 to September 15)
- 9. Realignment/preservation of a watercourse and setback enhancement.  
  
During instream works window (August 1 to September 15)
- 10. Elimination of a watercourse.  
  
During instream works window (August 1 to September 15)



**Southwest Quadrant**

- 12. Elimination of a watercourse.  
During instream works window (August 1 to September 15)
- 13. Elimination of a pond.  
Upon receipt of approval
- 14. Elimination of a pond.  
During instream works window (August 1 to September 15)
- 15. Elimination of a pond.  
Upon receipt of approval.
- 16. Elimination of a watercourse and pond.  
During instream works window (August 1 to September 15)
- 17. Realignment of a watercourse.  
During instream works window (August 1 to September 15)
- 18. Elimination of a watercourse.  
During instream works window (August 1 to September 15)
- 19. Elimination of a pond.  
Upon receipt of approval.
- 20. Elimination of a watercourse and pond.  
Upon receipt of approval.

**Northwest Quadrant**

- 21. Elimination of riparian vegetation due to culvert extension.  
During instream works window (August 1 to September 15)

272nd

North West Quadrant

North East Quadrant

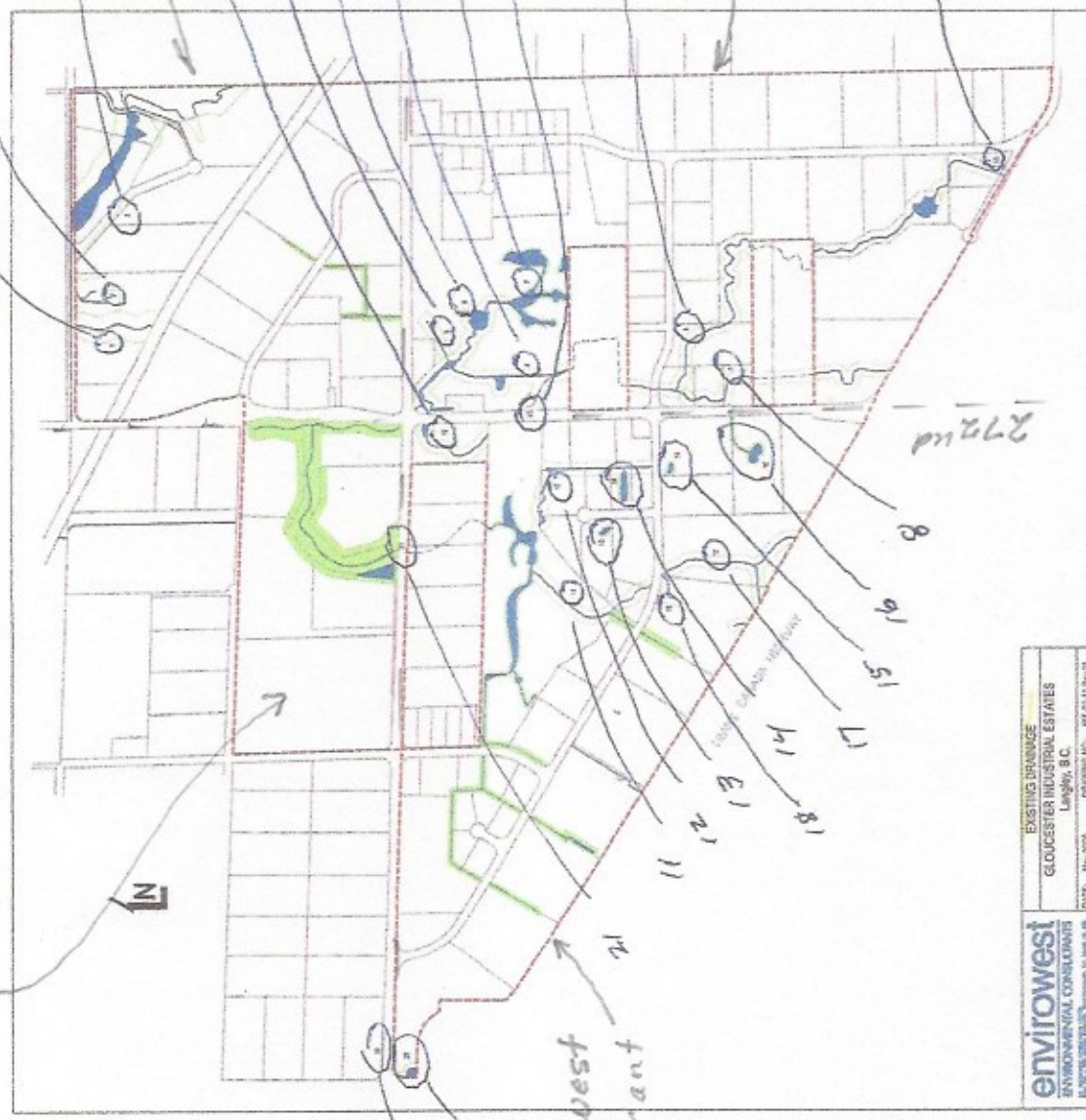
56th Ave

South East Quadrant

56th Ave

South West Quadrant

272nd



<b>envirowest</b> ENVIRONMENTAL CONSULTANTS	EXISTING DRAINAGE
	GLoucester INDUSTRIAL ESTATES
	Langley, B.C.
	DATE: May 2003 DRAWING NO: 07-0311 Rev-03

Drawing No. 467-02-11 rev-03  
Existing Drainage



HABITAT BALANCE, Page 1 of 2

Habitat Feature	Pre-development			Post-development		
	Area (m2)	Habitat Rating	EHA (m2)	Area (m2)	Habitat Rating	EHA (m2)
Area 1:						
rearing - mod - inaccess	598	0.45	269	150	0.45	67
rearing - high - inaccess				655	0.35	229
riparian - mod - inaccess	11,614	0.10	1,161	4,820	0.10	482
Area 2:						
rearing - low - inaccess	773	0.45	348			
riparian - mod - inaccess	7,390	0.10	739			
Area 3:						
wetland - high - inaccess	11,115	0.45	5,002	10,795	0.45	4,858
riparian - high - inaccess	47,841	0.20	9,568	46,031	0.20	9,206
Areas 8-10:						
rearing - mod - inaccess	1,395	0.45	628	560	0.45	252
rearing - high - access				1,240	0.63	781
wetland - mod - inaccess	3,780	0.40	1,512	3,780	0.40	1,512
riparian - low - inaccess	28,046	0.05	1,402	13,770	0.05	688
riparian - mod - inaccess	19,455	0.10	1,946	9,152	0.10	915
riparian - high - inaccess	7,898	0.20	1,580	5,742	0.20	1,148
Area 11:						
rearing - low - inaccess	310	0.40	124			
rearing - mod - in/access	11,055	0.45	4,975	11,055	0.80	8,844
wetland - high - access				8,000	0.63	5,040
riparian - low - in/access	18,553	0.05	928	12,450	0.10	1,245
riparian - high - access				2,300	0.18	414
Areas 12-16:						
rearing - mod - inaccess	3,363	0.45	1,513			
riparian - low - inaccess	15,552	0.05	778			
Areas 17-18:						
rearing - low - inaccess	1,235	0.45	556	2,970	0.63	1,871
rearing - high - access						
riparian - low - inaccess	6,294	0.05	315			
riparian - mod - inaccess	8,992	0.10	899			
riparian - high - access				6,855	0.18	1,234

HABITAT BALANCE, Page 2 of 2

Habitat Feature	<u>Pre-development</u>			<u>Post-development</u>		
	Area (m2)	Habitat Rating	EHA (m2)	Area (m2)	Habitat Rating	EHA (m2)
Area 19:						
rearing - mod - inaccess	372	0.45	168			
riparian - mod - inaccess	2,100	0.10	210			
riparian - high - inaccess	3,500	0.20	700			
Area 20:						
rearing - low - inaccess	280	0.45	126			
riparian - low - inaccess	335	0.05	17			
Area 21:						
riparian - mod - access	20	0.20	4			
Area 22:						
rearing - low - inaccess	160	0.45	72			
Area 23:						
rearing - low - inaccess	20	0.45	9			
<hr/>						
Totals:						
wetted habitats	34,456		15,302	39,205		23,454
riparian habitats	177,590		20,247	101,120		15,332
all habitats	212,046		35,549	140,325		38,786

Note: Biofiltration features A through E (refer to ECL Drawing No. 467-02-13) are not included as habitat areas in the habitat balance.



## 8.0 CONCLUSION

Gloucester Industrial Estates requires these instream works in order to complete development of the site. The mitigation/compensation components of this project, when combined with the development proposed for the Poppy Estates Golf Course in the southwest and southeast quadrants, offsets its impacts on-site, and provides fish access to newly constructed fish habitat.

Thank you for your attention. Please contact the undersigned at 521-6500 should you have any comments or questions regarding the application.

Sincerely  
ECL ENVIROWEST CONSULTANTS LIMITED

ORIGINAL  
SIGNED BY

\_\_\_\_\_  
Nathan Gregory  
Project Biologist

NRG/  
encl.