

Appendix D

Field Notes

AECOM

Field Crew:

BG NL

C5

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1059 Turbine # GC 11 / SMN-9
 Date: July 13, 2011 Start time: 10:00 End Time: 12:00 10:30

Weather Conditions: Sunny, light windField Notes By: NL

Site Location

Parked 6thn 2 houses off Bunker, walk thru corn field.

UTM Co-ordinates

Easting: 0448703Northing: 48048739Description: Edge of site @ insig road prop - border

Easting:

Northing:

Description:

Easting:

Northing:

Description:

Easting:

Northing:

Description:

Surrounding Landuse/Pollution Sources

Residential ☐Agriculture ☒Forest ☐Meadow ☐Wetland ☐Livestock ☐

Type of Watercourse

Intermittent ☐Permanent ☐Ephemeral ☐Channelized ☐Natural Channel ☒

Other:

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

No obvious signs of drainage from surrounding land

In-Situ Water Quality

WT (°C):

AT (°C):

pH:

Cond (s/cm):

Water Clarity:

Clear ☒Turbid ☐

Ground Water Indicators

Watercress ☐Iron Staining ☐Bubbling ☐Bank Seepage ☐None ☐Other ☐

Notes: couldn't access water to take WQ. v. steep banks.

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):

1.5

Mean Bankfull Width (m):

2m

Mean Wetted Depth (m):

15cm

Mean Bankfull Depth (m):

50cm

Stable

Slightly unstable

Moderately unstable

Unstable

Left Bank

☒☐☐☐

Right Bank

☐☒☐☐

Flow Description: slow moving - almost no flow at all - standing water / stagnant

Notes:

EST. from top of bank

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Cl = Si > Co

Morphological Structure (%)

Pool	Riffle	Run	Flat
			100

Notes:

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	30		10	5	10	

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Submergent

Canopy Cover (% closed cover):

100-90% ☐ 30-1% ☐
90-60% ☐ 0% ☐
60-30% ☒

Types of Cover (% cover)

Trees 10 Shurbs 30 Man-made structures _____
Grasses _____ Herbaceous 20 Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☐ Man-Made ☐
Natural ☒

Description:

Some low-flow barriers due to LWD

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

Probably some surface runoff from east cornfield, but area is generally flat + no obvious signs of drainage.

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

July 13 / 11

~~GE #~~

CS

Page 3 of 4

Other General Comments Regarding the Study Area:

Photolog

Picture #	Description	Picture #	Description
209	overview of site + surrounding landscape		
210	downstream		
211	upstream		
212	upstream - different vantage point		
213	downstream @ top of bank		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

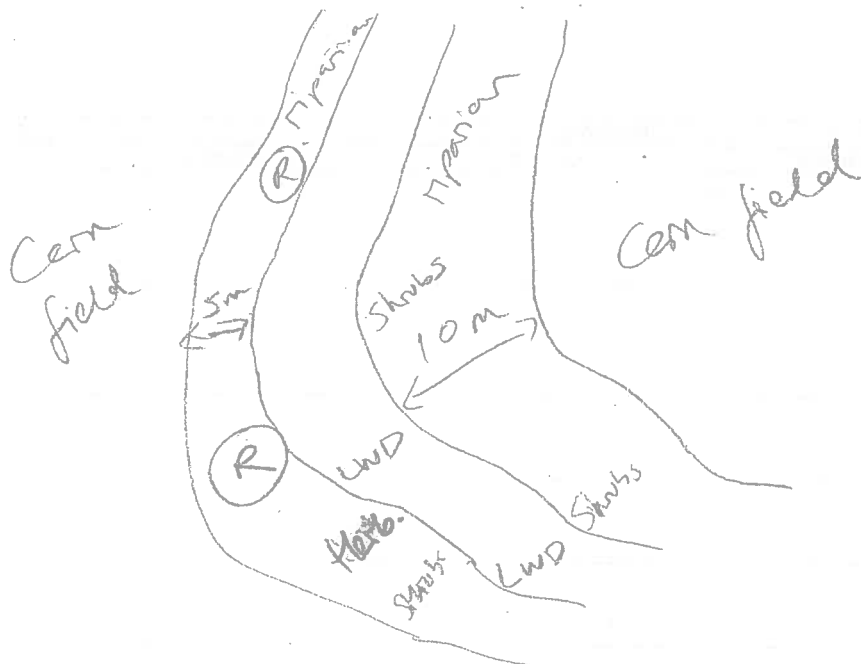
Goshen

Bluewater Land Parcel#

1059

Turbine #

C5



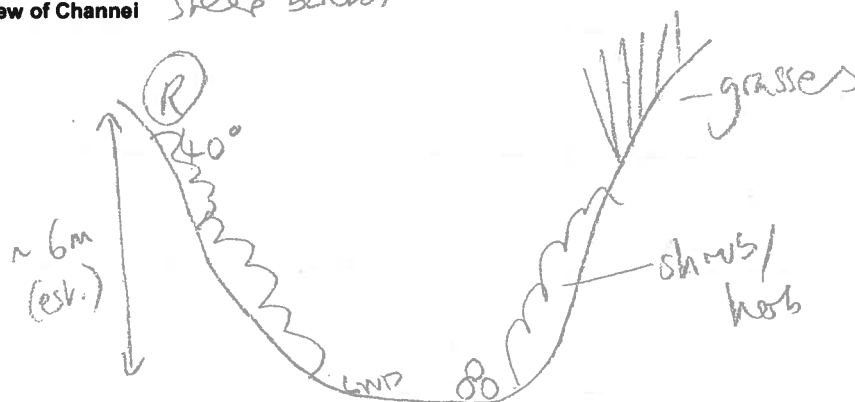
N

LEGEND	
10d depth (cm)	
Sw width	
Riffle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
Cattail	
SV/FV Submerg/Float Veg	
EV Emergent	
W Watercress	
Fe Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	
Dam/Weir	
Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	

LWD - large woody debris

Horizontal View of Channel

steep banks



AECOM

Page 1 of 4

Field Crew: AD, TS

General Information

Study Area: Jericho

Goshan

Bluewater

Land Parcel#

GSH1459

Turbine #

10

C5

Date: 17-Nov-11

Start time:

11:00 a.m

End Time:

11:48

Weather Conditions:

overcast, windy, OC

Field Notes By:

DART

Site Location

C5 - north east end of GSH 1459

UTM Co-ordinates

Easting: 448511

Northing: 484735

Description:

C5-2 west end

Easting: 448691

Northing: 484775

Description:

C5-b east end

Easting:

Northing:

Description:

Easting:

Northing:

Description:

Surrounding Landuse/Pollution Sources

Residential

☐

Meadow

☐

Agriculture

☒

Wetland

☐

Forest

☐

Livestock

☐

Other:

Type of Watercourse

Intermittent

☐

Permanent

☒

Ephemeral

☐

Channelized

☒

Natural Channel

☐

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

agriculture on both sides of creek

In-Situ Water Quality

WT (°C): 4.4

AT (°C): OC

pH: 7.01

Cond (µS/cm): 665

Water Clarity: Clear

☒

Turbid

☐

Ground Water Indicators

Watercress

☐

Bank Seepage

☐

Iron Staining

☐

None

☒

Bubbling

☐

Other

☐

Notes:

water chemistry taken @ C52-west end.

Stream Morphology

Site Length (m):

Bank Stability:

Bank Height: 2.4m Bank width: 7m

Channel Dimensions

Mean Wetted Width (m):

0.75

Mean Bankfull Width (m):

2.30

Mean Wetted Depth (m):

0.08

Mean Bankfull Depth (m):

0.80

Left Bank

Stable

☐

Slightly unstable

☒

Moderately unstable

☐

Unstable

☐

Right Bank

☐

Slightly unstable

☒

Moderately unstable

☐

Unstable

☐

Flow Description:

steady flow ~ 105/m - flowing west

Notes:

Uniform channel - vegetated banks

Bank near C5b become steep on east bank ~ 10m high - 8m wide (top of bank)

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (<=>)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Gr > Sa > Si

Notes:

Morphological Structure (%)

Pool	Rifle	Run	Flat
	50%	50%	

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank x	Other:
				40%	90%	overhang grasses 90%

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Some algae on rocks

Canopy Cover (% closed cover):

100-90%



30-1%



90-60%



0%



60-30%



Types of Cover (% cover)

Trees

Shrubs

Man-made structures

Grasses

Herbaceous

Other

100% of cover is grass

Notes:

vegetated islands within channel.
Buffer ~ 3m on either side.

Obstructions to Fish Passage

No Obstructions



Man-Made



Natural



Description:

small forming land
bridges occur throughout
reach spanning almost
entire width of channel.

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

land from south + north sloping
to creek. And from the east

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

slight perched culvert D/S of C52 (not within boundary) @ land bridge for farmer.

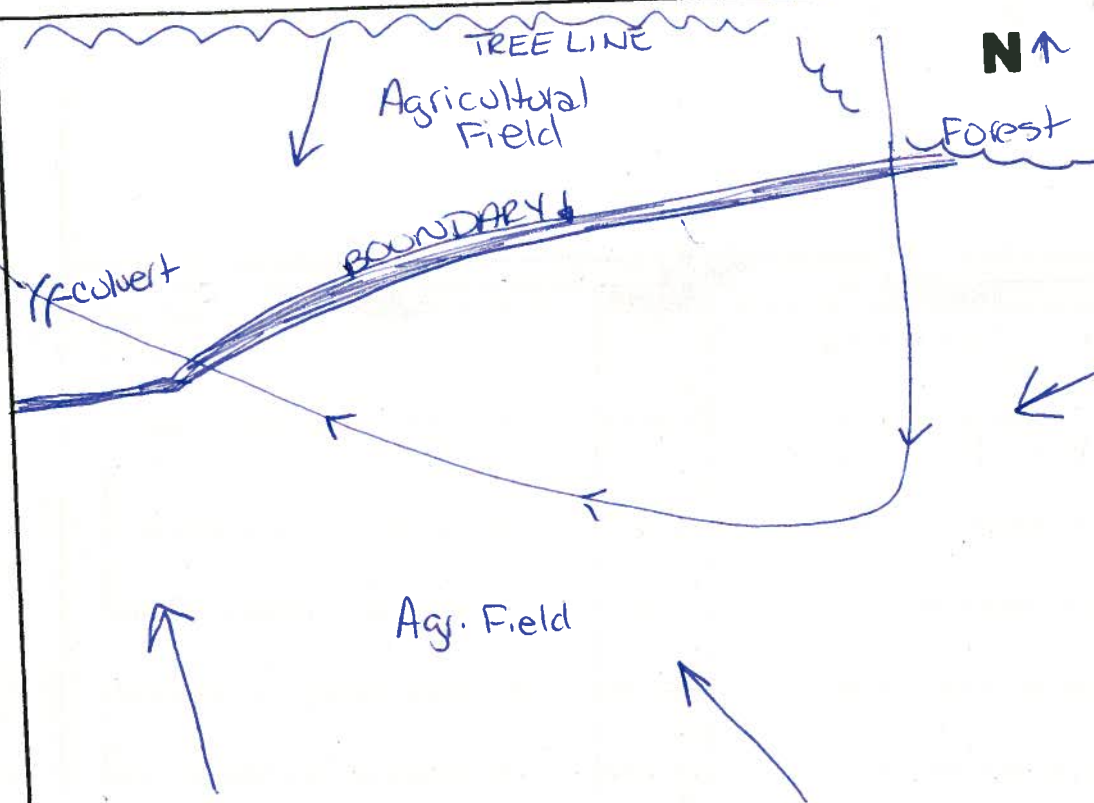
Photo log

Picture #	Description	Picture #	Description
46-48	Taken from C52		
49-50	@ bend in creek.		
51-52	from bend looking towards C5b		
53-55	From C5b		

AECOM

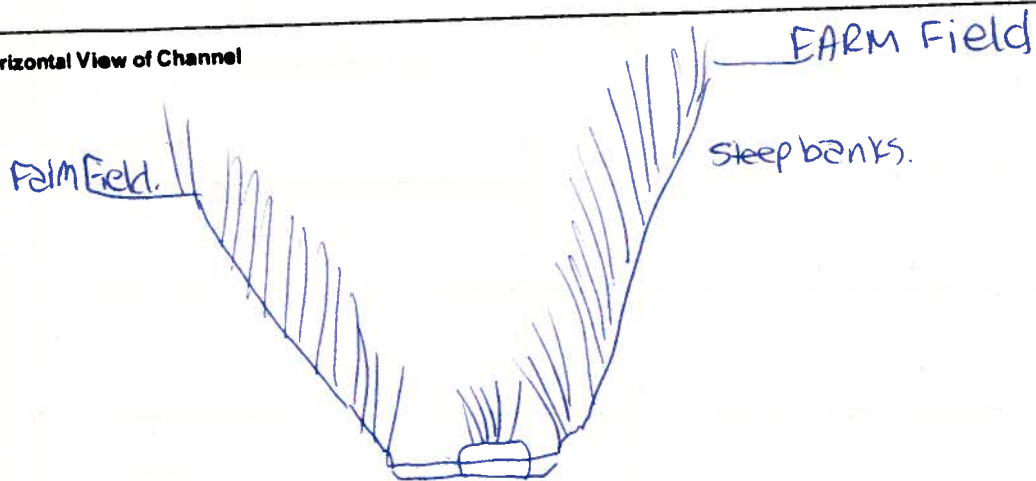
Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# GSH 1059 Turbine # C5



LEGEND	
10d depth (cm)	
Bar width	
Riffle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
CT Catfall	
SV/FV Submerge/Float Veg	
EV Emergent	
W Watercress	
Fe Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Stream Log/Tree	
Dam/Wall	
Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	

Horizontal View of Channel



AECOM

Field Crew: CB, MO

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1059 Turbine # 605-16
 Date: Sep 13 / 11 Start time: 9:15 End Time: 10:55

Weather Conditions:

Cloudy 15°C

Field Notes By:

CB, MO

Site Location

Bronson Line - north of pepper Rd.

UTM Co-ordinates

Easting: 0447785 Northing: 4804742 Description: road culvert

Easting: Northing: Description:

Easting: Northing: Description:

Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☐ Livestock ☐

Type of Watercourse

Intermittent ☐ Channelized ☒
 Permanent ☐ Natural Channel ☒
 Ephemeral ☐

Other:

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

- no tile drains noted

In-Situ Water Quality

WT (°C): / AT (°C): /
 pH: / Cond (s/cm): /
 Water Clarity: Clear ☒ Turbid ☒

Ground Water Indicators

Watercress ☐ Bank Seepage ☐
 Iron Staining ☐ None ☒
 Bubbling ☐ Other ☐

Notes:

w/g meter not available

- water turbid near bridge, clear further up/s.

Stream Morphology

Site Length (m): ~100m

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): 1.5 Mean Bankfull Width (m): 3
 Mean Wetted Depth (m): 0.10 Mean Bankfull Depth (m): 0.70

Stable Slightly unstable Moderately unstable Unstable

Left Bank ☐ ☒ ☐ ☐Right Bank ☐ ☒ ☐ ☐

Flow Description:

no visible flow

Notes:

bank slumping and erosion evident on both sides

AECOM

Page 2 of 4

Stream Morphology (continued)**Substrate (< = >)**

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Si, U, m >> Co

Morphological Structure (%)

Pool	Riffle	Run	Flat
50	/		50

Notes:**Habitat****Instream Cover (%)** 20

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	20		40	40		

***Aquatic Vegetation Types Present (algae, submergent, emergent etc.)**

algae, grasses

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☐

0%

☐

60-30%

☒**Types of Cover (% cover)**

Trees

10

Shrubs

20

Man-made structures

Grasses

70

Herbaceous

Other

Notes:

random trees in riparian meadow

Obstructions to Fish Passage

No Obstructions ☒
Natural ☐

Man-Made

☐**Description:****Drainage Features within Study Area****Observations of Land Topography within 120 m buffer area:**

- flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

Sep 18/11

Grass - C6

Page 3 of 4

Other General Comments Regarding the Study Area:

- fishes observed on pool
- series of pools broken up by flat/narrow areas
run

Photo log

Picture #	Description	Picture #	Description
1	down/s west side of		
2	culvert		
3	up/s side of culvert (E)		
4	^{east side} upstream, culvert, (S)		
5	^{east side} upstream, culvert (N)		
6	^{east side} up/s, culvert (S)		
7	^{east side} up/s, culvert, looking at stream		
8	^{east side} up/s, culvert (S)		

C6

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

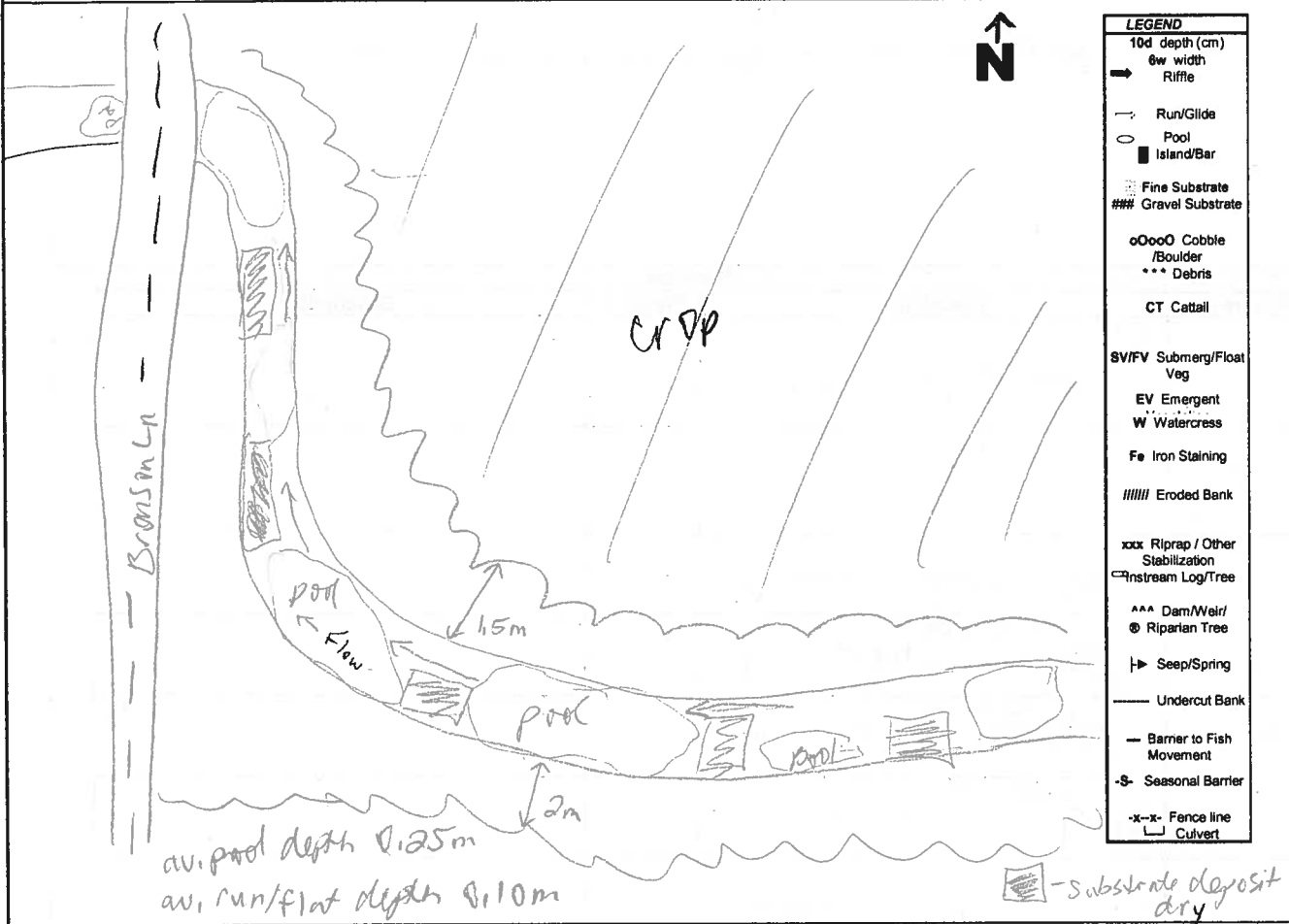
Jericho

Goshen

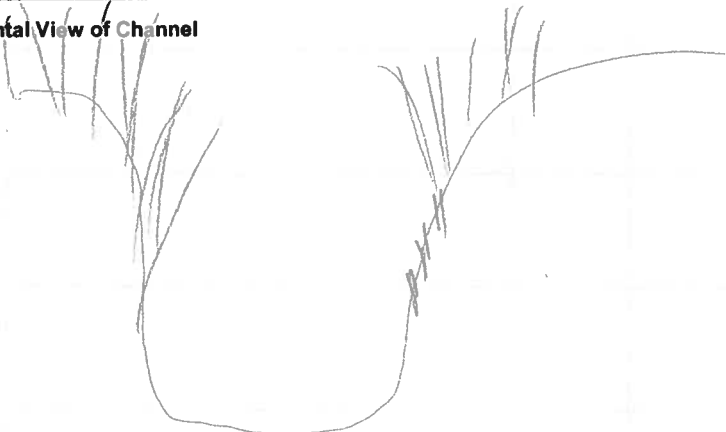
Bluewater Land Parcel#

1059

Turbine #

GAS-
C6

Horizontal View of Channel



AECOM

Page 1 of 4

Field Crew:

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GOS1059 Turbine # C6
 Date: Nov 17, 2011 Start time: 10:20 a.m. End Time: 11:00

Weather Conditions: overcast, windy Field Notes By: DART
0°C

Site Location

C6 - creek flowing north through GOS1059.

UTM Co-ordinates

Easting: <u>447821</u>	Northing: <u>4804658</u>	Description: <u>C6-2 North end</u>
Easting: <u>448432</u>	Northing: <u>4804431</u>	Description: <u>C6-10 South end</u>
Easting: _____	Northing: _____	Description: _____
Easting: _____	Northing: _____	Description: _____

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☐ Livestock ☐

Type of Watercourse

Intermittent ☐ Channelized ☒
 Permanent ☒ Natural Channel ☐
 Ephemeral ☐

Other:

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

agriculture on both sides of creek-C6

In-Situ Water Quality

WT (°C): 5.0 AT (°C): 0°C
 pH: 7.50 Cond (µs/cm): 769
 Water Clarity: Clear ☒ Turbid ☐

Ground Water Indicators

Watercress ☐ Bank Seepage ☐
 Iron Staining ☐ None ☒
 Bubbling ☐ Other ☐

Notes: Steady flow
water chemistry taken u/s of road @ C62

Stream Morphology

Site Length (m):

Bank Height = 2.0m, Bank Width = 5m

Channel Dimensions

Mean Wetted Width (m): 1.5 Mean Bankfull Width (m): 3.2

Mean Wetted Depth (m): 0.12 Mean Bankfull Depth (m): 1.0

Bank Stability:

	Stable	Slightly unstable	Moderately unstable	Unstable
Left Bank	☐	☒	☐	☐
Right Bank	☐	☒	☐	☐

Flow Description:

Steady - 8sec/m.

Notes:

Banks become very high + steep mid way down creek
~ 8m height + 10m wide
vegetated banks

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Sa = Gr > Si

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
30%	25%	30%	15%

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
			3%		10%	overhanging bank vegetation - 50%

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

100-90%



30-1%



90-80%



0%



60-30%



Types of Cover (% cover)

Trees

2%

Shrubs

15%

Grasses

70%

Herbaceous

Man-made structures

Other

Notes:

Vegetated banks = grasses w some shrubs + trees
Buffer strip ~ 2m either side

Obstructions to Fish Passage

No Obstructions



Man-Made



Natural



Description:

perched culvert @
driveway ~ 0.5m from
streambed - north side
only

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

Land sloping west towards
creek

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

Photos # 27-29 C-2

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

- Spoke w farmer + Ausable C.A. member while in field
- ↳ general conversation - inquired about monitoring

Photo log

Picture #	Description	Picture #	Description
27-29	C6-a - north end		
30-31	mid way - south of C6a.		
32-33	C6-a just north of driveway		
34-	perched culvert - north		
35	north view from drive way.		
36	south side of creek		
37	South from driveway		
38-40	C6-B		

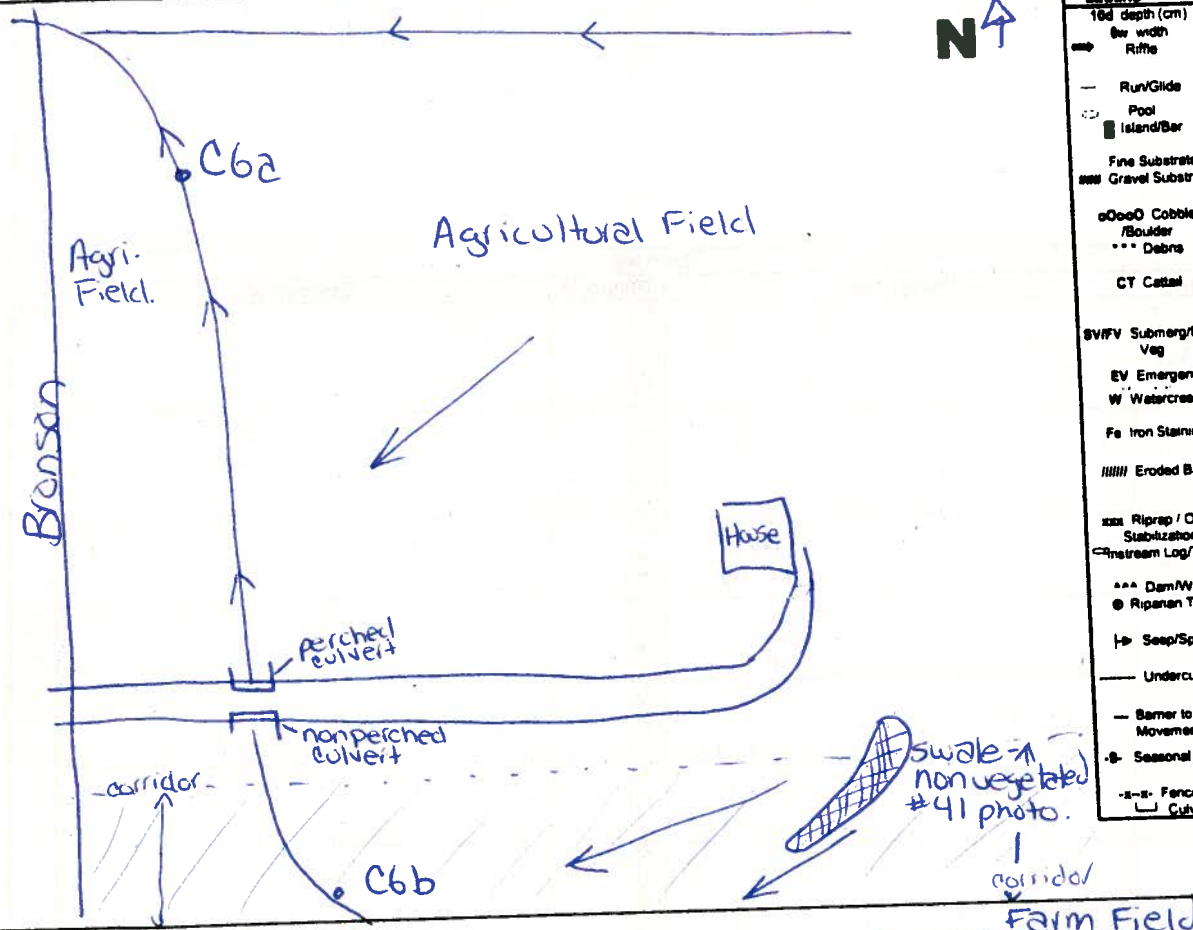
AECOM

Watercourse Sketch

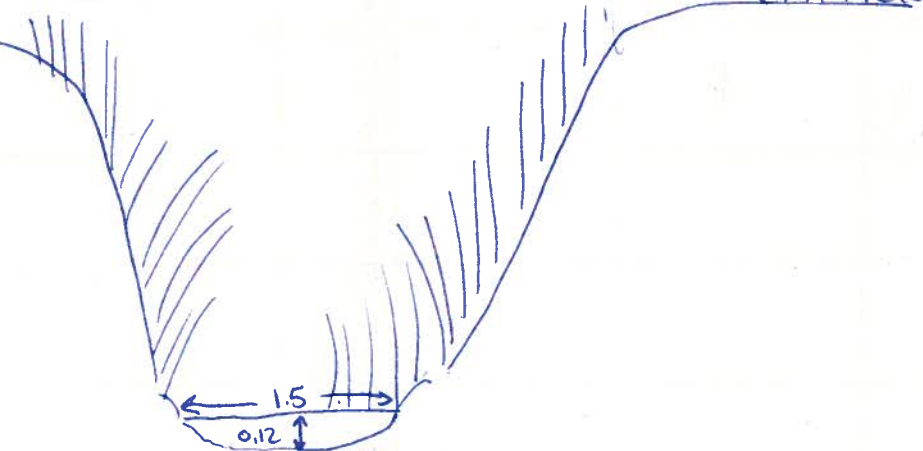
Study Area: Jericho Goshen Bluewater Land Parcel# 05051859 Turbine # C6
C6



LEGEND	
10d depth (cm)	
Bar width	
Rifle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
Catall	
SVFV Submerg/Float Veg	
EV Emergent	
W Watercress	
Fe Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	
Dam/Wear/Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	



Horizontal View of Channel
Farm Field



AECOM		Page 1 of 4																
		Field Crew: SA, JN																
General Information																		
Study Area:	Jericho <u>Goshen</u> Bluewater	Land Parcel#	1038															
Date:	July 13/2011	Start time:	10:30															
		Turbine #	CAF-12 C7															
		End Time:	11:16															
Weather Conditions: Sunny N 26°C		Field Notes By: SA																
Site Location																		
entered from Pepper Road through Soybean field																		
UTM Co-ordinates																		
Easting:	Northing:	Description:																
Easting:	Northing:	Description:																
Easting:	Northing:	Description:																
Easting:	Northing:	Description:																
Surrounding Landuse/Pollution Sources		Type of Watercourse																
Residential ☐	Meadow ☐	Intermittent ☐	Channelized ☐															
Agriculture ☒	Wetland ☐	Permanent ☒	Natural Channel ☐															
Forest ☒	Livestock ☐	Ephemeral ☐																
Other:																		
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)																		
large valley w deciduous trees + shrubs																		
In-Situ Water Quality		Ground Water Indicators																
WT (°C):	AT (°C):	Watercress ☐	Bank Seepage ☐															
pH:	Cond (s/cm):	Iron Staining ☐	None ☒															
Water Clarity: Clear ☒	Turbid ☐	Bubbling ☐	Other ☐															
Notes: no GW indicators observed																		
Stream Morphology																		
Site Length (m):		Bank Stability:																
Channel Dimensions																		
Mean Wetted Width (m):	2	Mean Bankfull Width (m):	6															
Mean Wetted Depth (m):	0.20	Mean Bankfull Depth (m):	1.5															
		<table border="0" style="width: 100%;"> <tr> <td></td> <td>Stable</td> <td>Slightly unstable</td> <td>Moderately unstable</td> <td>Unstable</td> </tr> <tr> <td>Left Bank</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☒</td> </tr> <tr> <td>Right Bank</td> <td>☐</td> <td>☐</td> <td>☐</td> <td>☒</td> </tr> </table>			Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	☐	☐	☐	☒	Right Bank	☐	☐	☐	☒
	Stable	Slightly unstable	Moderately unstable	Unstable														
Left Bank	☐	☐	☐	☒														
Right Bank	☐	☐	☐	☒														
Flow Description: fast flow moderate																		
Notes: high steep banks, slumping, exposed roots no veg																		

AECOM

Page 2 of 4

Stream Morphology (continued)**Substrate (< = >)**

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Sa > Co = Gr > Bo

Morphological Structure (%)

Pool	Riffle	Run	Flat
	50	50	

Notes:

Habitat**Instream Cover (%)**

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	10	40	50			

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed/cover):

100-90%



30-1%



90-60%



0%



60-30%

**Types of Cover (% cover)**

Trees

100

Shrubs

Man-made structures

Grasses

Herbaceous

Other

Notes:

Obstructions to Fish Passage

No Obstructions



Man-Made



Natural



Description:

none observed

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

Sloping towards watercourse

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

July 13/11

GETR C7

Page 3 of 4

Other General Comments Regarding the Study Area:

- deep valley w severe erosion
- nice meandering water course w lots of morphological structure, Good fish habitat cover.
- lots of birds - ovenbird

Photolog

Picture #	Description	Picture #	Description
7	at start facing d/s		
8	at start facing u/s		
9	at end of site facing u/s		
10	at end of site facing d/s		
11	view of eroded banks		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

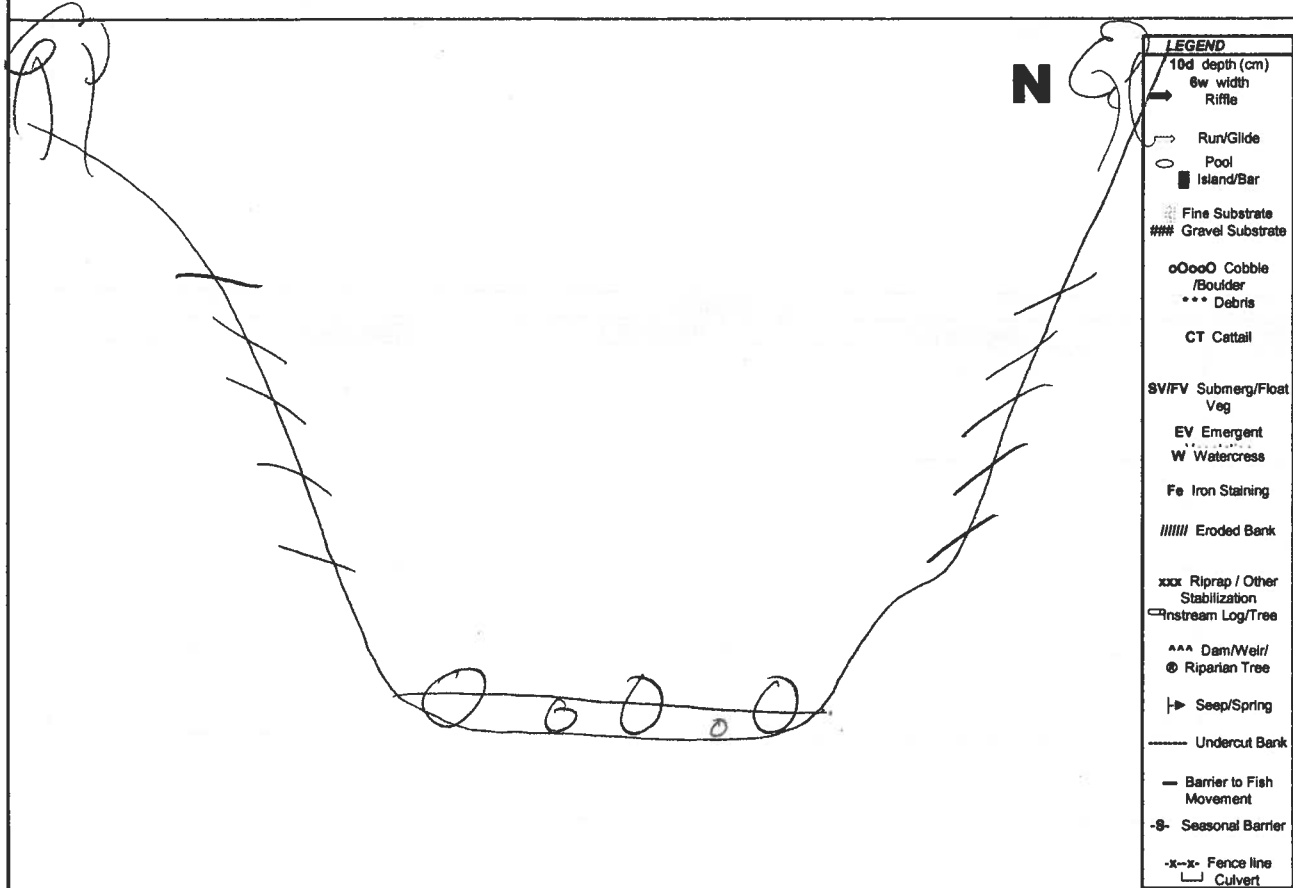
Bluewater Land Parcel#

1038

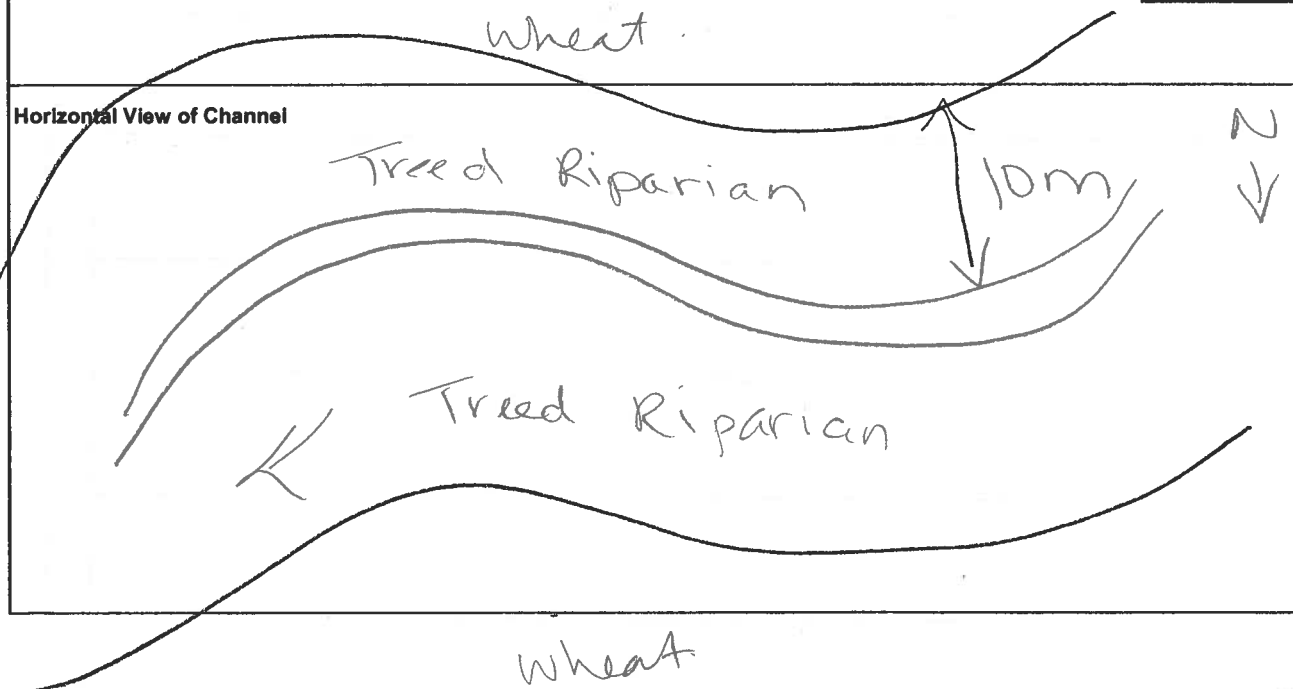
Turbine #

DE 12

C7



Horizontal View of Channel



AECOM				Page 1 of 4																
General Information				Field Crew: <u>CB, MP</u>																
Study Area: Jericho <u>Goshen</u> Bluewater		Land Parcel# <u>1038 & 1170</u>		Turbine # <u>GOS-C7</u>																
Date: <u>Sep 13/11</u>		Start time: <u>12:20</u>		End Time: <u>1:00</u>																
Weather Conditions: <u>Cloudy, 15°C</u>			Field Notes By: <u>CB, MP</u>																	
Site Location																				
<u>Pepper Ln → West of Goshen</u>																				
UTM Co-ordinates																				
Easting: _____		Northing: _____		Description: <u>→ GPS dead</u>																
Easting: _____		Northing: _____		Description: _____																
Easting: _____		Northing: _____		Description: _____																
Easting: _____		Northing: _____		Description: _____																
Surrounding Landuse/Pollution Sources			Type of Watercourse																	
Residential ☐ Meadow ☐ Agriculture ☒ Wetland ☐ Forest ☒ Livestock ☐ Other: <u>(riparian)</u>			Intermittent ☐ Channelized ☒ Permanent ☒ Natural Channel ☒ Ephemeral ☐																	
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow) <u>→ tile drain inputs on both E + W sides noted</u>																				
In-Situ Water Quality			Ground Water Indicators																	
WT (°C): _____		AT (°C): _____		Watercress ☐ Bank Seepage ☐																
pH: _____		Cond (s/cm): _____		Iron Staining ☒ None ☐																
Water Clarity: Clear ☒ Turbid ☒				Bubbling ☐ Other ☐																
Notes: <u>w/g meter not available</u> <u>→ turbid in pools, clean in riffle/run</u>																				
Stream Morphology																				
Site Length (m): <u>~ 200m</u>			Bank Stability:																	
Channel Dimensions			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Stable</th> <th style="text-align: center;">Slightly unstable</th> <th style="text-align: center;">Moderately unstable</th> <th style="text-align: center;">Unstable</th> </tr> </thead> <tbody> <tr> <td>Left Bank</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☒</td> </tr> <tr> <td>Right Bank</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☒</td> </tr> </tbody> </table>				Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	☐	☐	☐	☒	Right Bank	☐	☐	☐	☒
	Stable	Slightly unstable	Moderately unstable	Unstable																
Left Bank	☐	☐	☐	☒																
Right Bank	☐	☐	☐	☒																
Mean Wetted Width (m): <u>2</u>	Mean Bankfull Width (m): <u>6.2</u>																			
Mean Wetted Depth (m): <u>0.2</u>	Mean Bankfull Depth (m): <u>1.50</u>																			
Flow Description: <u>no visible flow</u>																				
Notes:																				

AECOM

Page 2 of 4

Stream Morphology (continued)**Substrate (<=>)**

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Co >> Sa, gr > cl, mk, dt

Morphological Structure (%)

Pool	Riffle	Run	Flat
40			60

Notes:

* diagram provide in second page.

Habitat**Instream Cover (%)**

40

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	20	10	65	5		

***Aquatic Vegetation Types Present (algae, submergent, emergent etc.)**

- algae.

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☒

0%

☐

60-30%

☐**Types of Cover (% cover)**

Trees

80

Shrubs

10

Man-made structures

Grasses

10

Herbaceous

Other

Notes:

forest riparian

Obstructions to Fish Passage

No Obstructions

☒

Man-Made

☐

Natural

☐**Description:****Drainage Features within Study Area****Observations of Land Topography within 120 m buffer area:**

- slight rolling hills

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

GOS (C7)

AECOM

Sep 18/11

Page 3 of 4

Other General Comments Regarding the Study Area:

→ appears to be a 'flashy' system → extreme erosion occurring v. high.

→ can be used for 'C8' as well.

Photo log

Picture #	Description	Picture #	Description
1	Overview, looking N	12	tile drain input W side
2	looking N veg, algae, low water	13	tile drain input E side
3	looking N, clay, erosion	14	site overview
4	undercutting	15	site overview
5	substrate	16	site overview
6	stream overview	17	scale shot/steep bank
7	Inukshuk	18	iron staining
8	Inukshuk + Carline	19/20	overview northern end of site
9	looking S by eroded bend	20	
10	looking N by eroded bend		
11	tree roots looking N		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

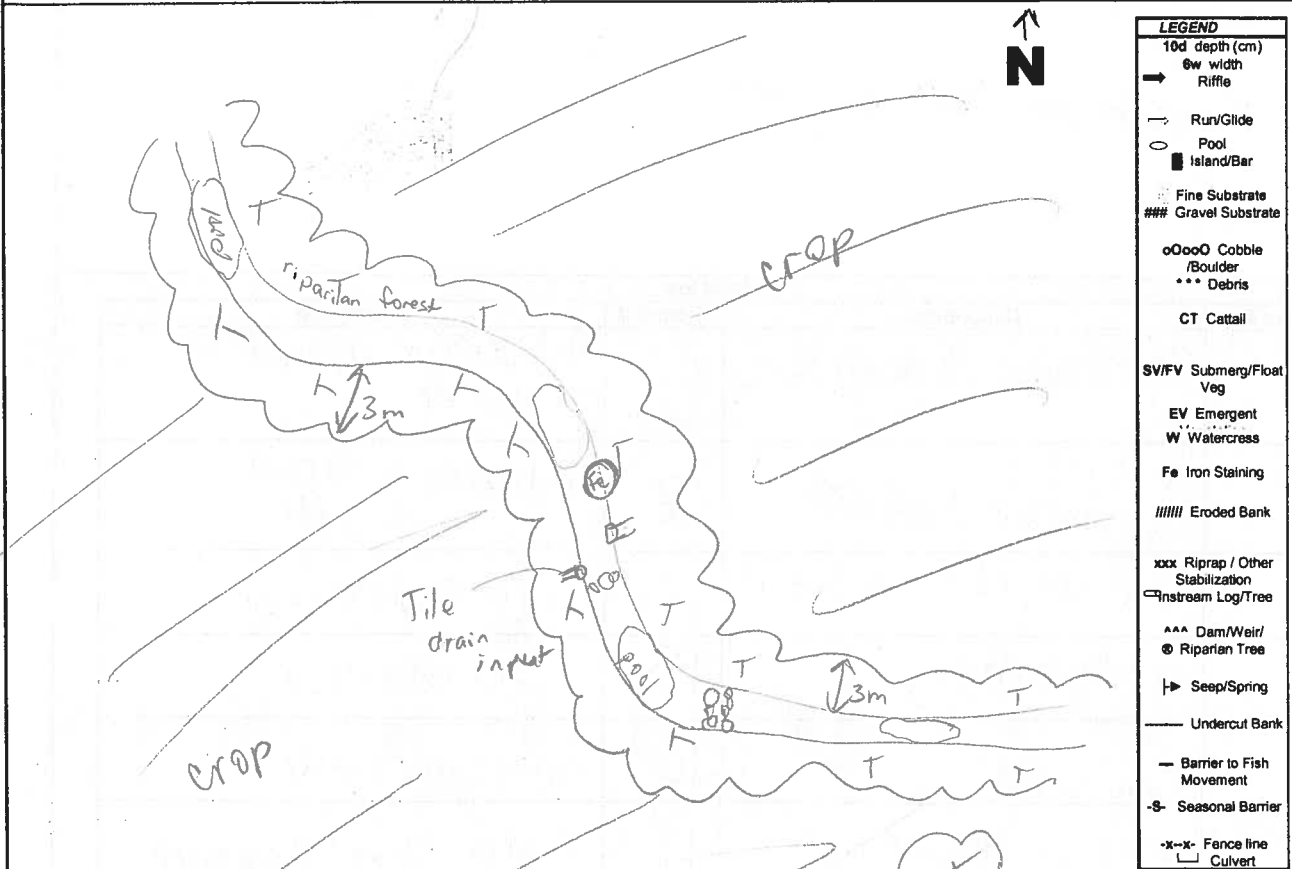
Bluewater

Land Parcel#

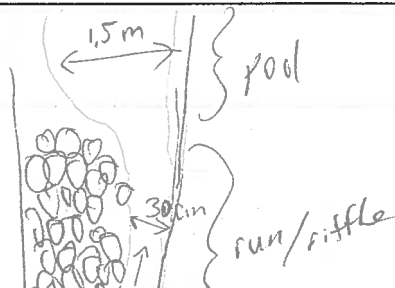
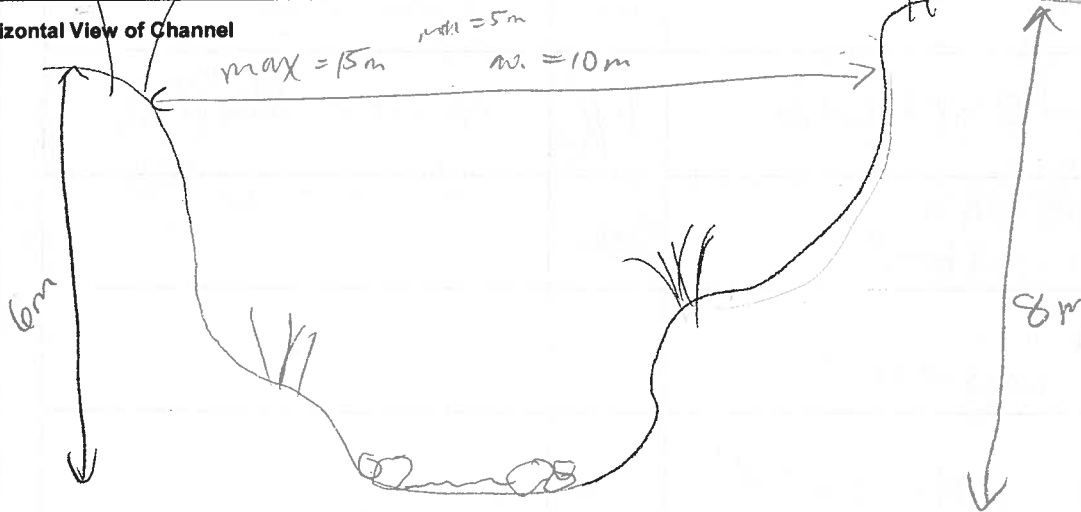
1038 + N70

Turbine #

Gras - 87



Horizontal View of Channel



AECOM

Field Crew: CB, JP

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1358 Turbine # QAS - CA
 Date: Sep 8/11 Start time: 13:45 End Time: 14:25

Weather Conditions:

Cloudy, 16°C

Field Notes By:

CB

Site Location

Pepper Rd. - east of Goshen

UTM Co-ordinates

Easting: 0450720 Northing: 4803838 Description: at road Culvert

Easting: Northing: Description:

Easting: Northing: Description:

Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☐ Livestock ☐

Type of Watercourse

Intermittent ☐ Channelized ☐
 Permanent ☐ Natural Channel ☐
 Ephemeral ☒

Other:

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

In-Situ Water Quality

WT (°C): / AT (°C): /
 pH: / Cond (s/cm): /
 Water Clarity: Clear ☐ Turbid ☐

Ground Water Indicators

Watercress ☒ Bank Seepage ☐
 Iron Staining ☐ None ☒
 Bubbling ☐ Other ☐

Notes:

→ dry channel along road and then plowed through in field.

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): / Mean Bankfull Width (m): /
 Mean Wetted Depth (m): / Mean Bankfull Depth (m): /

	Stable	Slightly unstable	Moderately unstable	Unstable
Left Bank	☐	☐	☐	☐
Right Bank	☐	☐	☐	☐

Flow Description:

Dry.

Notes:

AECOM

Page 2 of 4

Stream Morphology (continued)**Substrate (< = >)**

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Morphological Structure (%)

Pool	Riffle	Run	Flat
_____	_____	_____	_____

Notes:**Habitat****Instream Cover (%)**

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
_____	_____	_____	_____	_____	_____	_____

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☐

0%

☐

60-30%

☐**Types of Cover (% cover)**

Trees _____

Shrubs _____

Man-made structures _____

Grasses _____

Herbaceous _____

Other _____

Notes:**Obstructions to Fish Passage**

No Obstructions ☐
Natural ☐

Man-Made ☐**Description:**

Drainage Features within Study Area**Observations of Land Topography within 120 m buffer area:**

Terrestrial features PresentYes ☒No ☐

ELC Completed by JP

Terrestrial Recon Form Filled outYes ☐No ☒

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

- watercourse dry but evidence of ephemeral flow
 ↳ ^{dark} green patches in the crop show a flooding & flowing pattern of water

Photo log

Picture #	Description	Picture #	Description
1	overview looking East West		
2	"		
3	Culvert on South side of road		
4	"		
5	overview looking South from road		
6	overview looking East.		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

Blewater

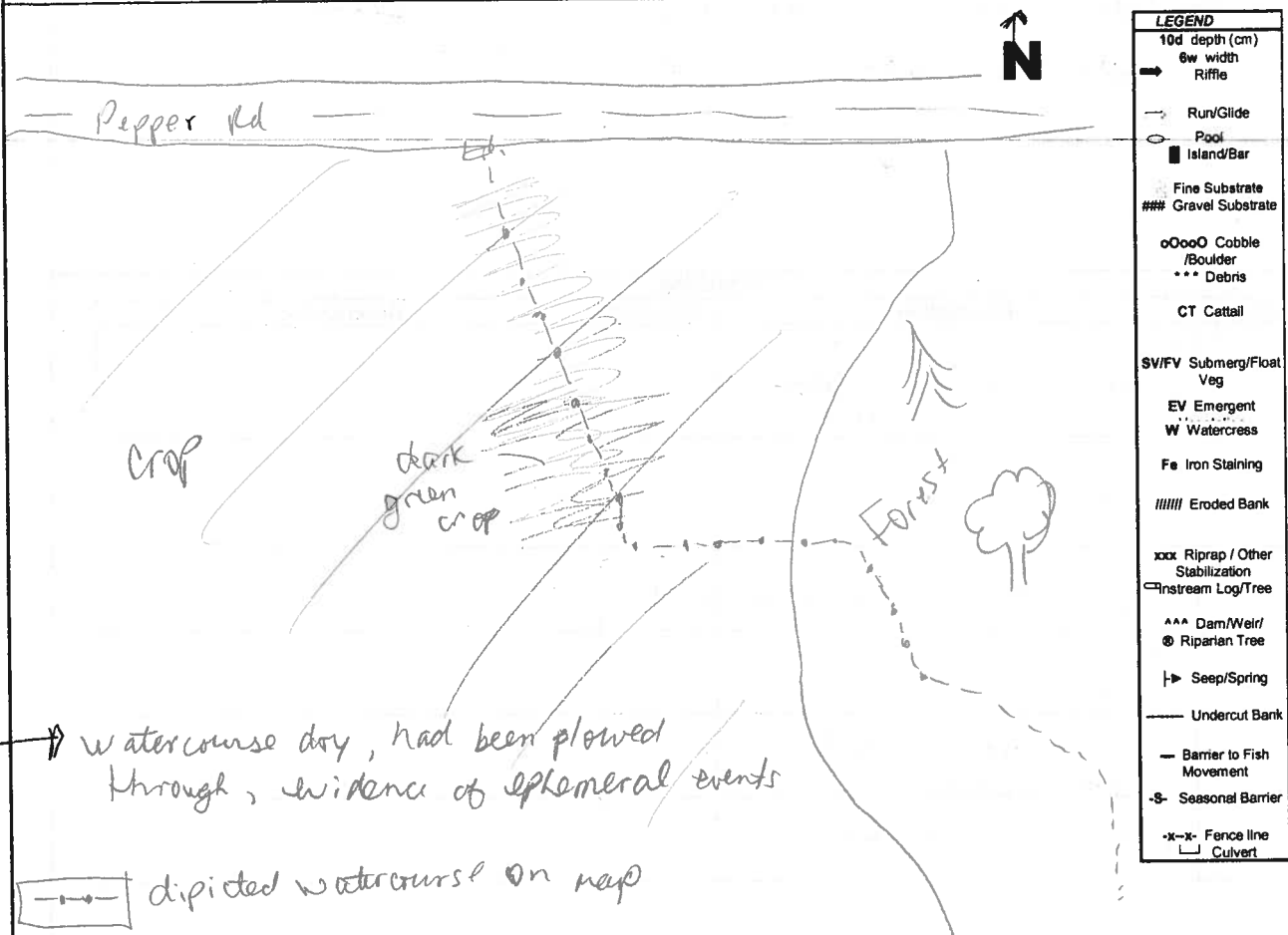
Land Parcel#

1358

Turbine #

G05-

C9



Horizontal View of Channel

AECOM

Page 1 of 4

Field Crew:

CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1005, 1166 ~~Turbine#~~ C11

Date: Dec 15/11 Start time: 10:40 End Time: 11:20

Weather Conditions:

Cloudy, 11°C

Field Notes By:

CB

Site Location

Bronson Line, South of Pepper Rd.

* See notes
on second
sheet

UTM Co-ordinates

Easting: 0448003 Northing: 4803205

Description: ~~nearest~~ at road.

Easting: 0448050 Northing: 4802847

Description:

Easting: Northing:

Description:

Easting: Northing:

Description:

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☐ Livestock ☐

Type of Watercourse

Intermittent ☐ Channelized ☒
 Permanent ☒ Natural Channel ☐
 Ephemeral ☐

Other:

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drain inputs observed - flowing

In-Situ Water Quality

WT (°C): 8.1 AT (°C):
 pH: 8.03 Cond (µs/cm): 539
 Water Clarity: Clear ☐ Turbid ☒

Ground Water Indicators

Watercress ☐ Bank Seepage ☐
 Iron Staining ☐ None ☒
 Bubbling ☐ Other ☐

Notes: turbid, brown

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): 2 Mean Bankfull Width (m): 2.5
 Mean Wetted Depth (m): n/a Mean Bankfull Depth (m): n/a

Stable Slightly unstable Moderately unstable Unstable

Left Bank ☒ ☐ ☐ ☐
 Right Bank ☒ ☐ ☐ ☐

Flow Description:

good flow

Notes:

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (<=>)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

gr, sa > muck, clay

Notes:

high flow

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

*hard to see bc water too turbid but instream veg high (675%)

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☒

90-60%

☐

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees

Shrubs

10

Grasses

90

Herbaceous

Man-made structures

Other

Notes:

Obstructions to Fish Passage

No Obstructions

☒

Man-Made

☐

Natural

☐

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

- on Property 1005 no watercourse was observed. The stream appears to be buried → still able to follow where the stream may have been due to grassed swale. → walked entire area where water course was supposed to be.
↳ tile drain input noted at Road Culvert
- Property 1146 - appears to be newly buried due to colour of soil. No watercourse observed. - tile drain input noted at road culvert
- Property 1167, 1166 no access ∴ roadside survey completed for watercourse 1147

Photo log

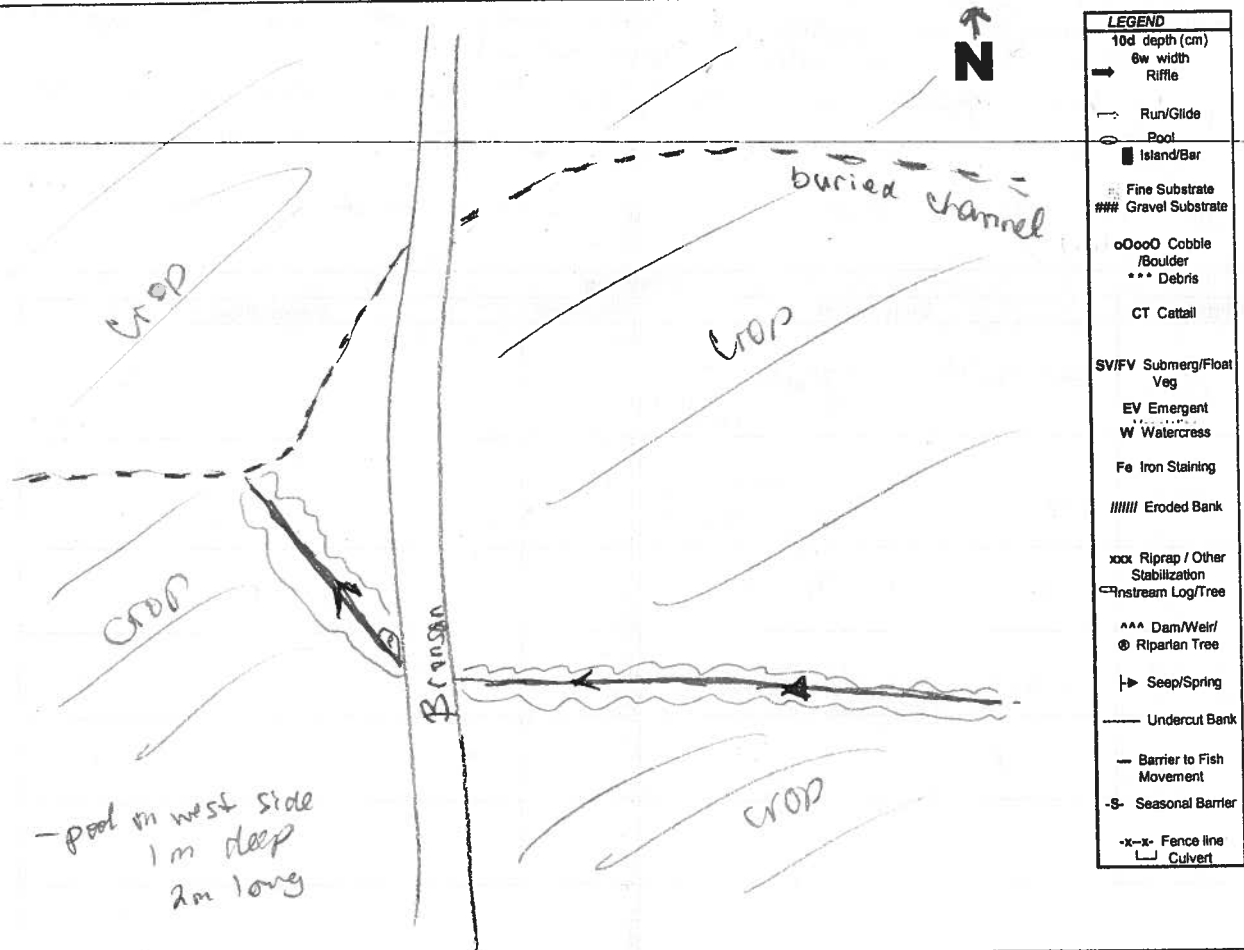
Picture #	Description	Picture #	Description
6-13	East side (North Branch)		
14-15	West side (North Branch)		
16-17	West (South branch)		
18-19	East (South branch)		

AECOM

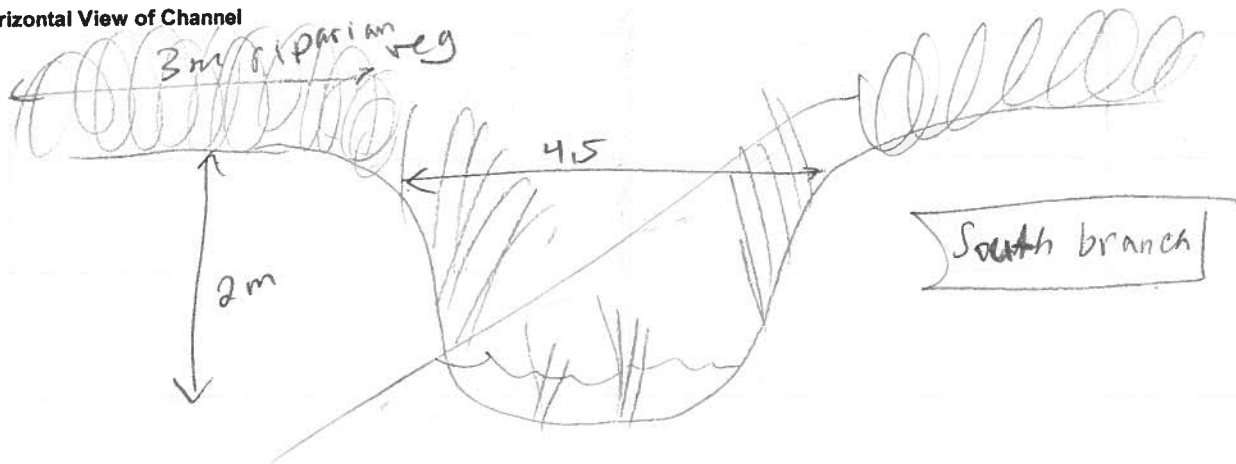
Page 4 of 4

Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 1005 + 1166 Turbine # C11



Horizontal View of Channel



AECOM

Page 1 of 4

Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1091 Turbine # C14
 Date: Dec 15/11 Start time: 13:15 End Time: 13:25

Weather Conditions:

Raining, 11°C

Field Notes By:

CB

Site Location

Bronson Line, North of McDonald

UTM Co-ordinates

Easting: 0448099 Northing: 4802263 Description: Advent of Bronson
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☒ Livestock ☐

Other: ↳ one patch

Type of Watercourse

Intermittent ☐ Channelized ☒
 Permanent ☒ Natural Channel ☐
 Ephemeral ☐

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

tile drain inputs observed at west end of site

In-Situ Water Quality

WT (°C): 8.6 AT (°C): 11°C
 pH: 7.96 Cond (µs/cm): 517
 Water Clarity: Clear ☐ Turbid ☒

Ground Water Indicators

Watercress ☐ Bank Seepage ☐
 Iron Staining ☐ None ☒
 Bubbling ☐ Other ☐

Notes:

grayish in colour

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):	<u>1.3</u>	Mean Bankfull Width (m):	<u>2.5</u>
Mean Wetted Depth (m):	<u>0.35</u>	Mean Bankfull Depth (m):	<u>0.85</u>

	Stable	Slightly unstable	Moderately unstable	Unstable
Left Bank	☒	☐	☐	☐
Right Bank	☒	☐	☐	☐

Flow Description:

higher flow, velocity mod-high

Notes:

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (<=>)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

Si = Gr = Cl > Co, Bo, Sa

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Notes:

high flow

Habitat

Instream Cover (%)

85

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
		5	10	80	5	

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

emergent grasses

Canopy Cover (% closed cover):

100-90% ☐ 30-1% ☒
90-80% ☐ 0% ☐
60-30% ☐

Types of Cover (% cover)

Trees 10 Shrubs _____ Man-made structures _____
Grasses 90 Herbaceous _____ Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☐
Natural ☐

Man-Made ☒

Description:

potential low flow barrier
at culvert - at time of
investigation OK though

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

potential
low flow
barrier in
stream
at culvert
drop

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

- Active den (pass coyote / fox) at property line
- appears to be agri drain

Photo log

Picture #	Description	Picture #	Description
28-42	moving nest		
34	- excavation drop		
40	- tile drain on the ^W property		
42	"		

AECOM

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater Land Parcel #

1041

Turbine #

C 14

property line

N

LEGEND	
10d depth (cm)	
Bar width	
Riffle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble	
Boulder	
Debris	
Catall	
SVFV Submerg/Float Veg	
EV Emergent	
W Watercress	
Fe Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	
Dam/Weir	
Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	

Active wildlife den

Forest - deciduous

Crop

Crop

Bronson Cr

Horizontal View of Channel

5m

2m

AECOM		Page 1 of 4	
General Information		Field Crew: <u>CB, TS</u>	
Study Area: <u>Jericho</u> <u>Goshen</u> <u>Bluewater</u>	Land Parcel# <u>1040</u>	Turbine # <u>G5H1</u> <u>C15</u>	
Date: <u>July 27/11</u>	Start time: <u>8:45</u>	End Time: <u>9:45</u>	
Weather Conditions: <u>Sunny, 20°C</u>		Field Notes By: <u>CB</u>	
Site Location			
<u>Bronson + between Kepper + McDonald.</u>			
UTM Co-ordinates			
Easting: <u>0449016</u>	Northing: <u>4802372</u>	Description: <u>upstream</u>	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential ☐	Meadow ☐	Intermittent ☐	Channelized ☒
Agriculture ☒	Wetland ☐	Permanent ☒	Natural Channel ☒
Forest ☐	Livestock ☐	Ephemeral ☐	
Other:			
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)			
<u>Corn field.</u>			
In-Situ Water Quality		Ground Water Indicators	
WT (°C): <u>17.3</u>	AT (°C): <u>18°C</u>	Watercress ☒	Bank Seepage ☐
pH: <u>8.26</u>	Cond (ms/cm): <u>1.32</u>	Iron Staining ☐	None ☐
Water Clarity: <u>Clear</u> ☒ <u>Turbid</u> ☐		Bubbling ☐	Other ☐
Notes:			
Stream Morphology			
Site Length (m):		Bank Stability:	
Channel Dimensions			
Mean Wetted Width (m): <u>1.0</u>	Mean Bankfull Width (m): <u>1.5</u>	Stable ☒	Slightly unstable ☐
Mean Wetted Depth (m): <u>0.15</u>	Mean Bankfull Depth (m): <u>0.3</u>	Moderately unstable ☐	Unstable ☐
		Left Bank	Right Bank
		☒	☒
		☐	☐
		☐	☐
Flow Description:			
<u>flowing - not fast - only in confined beds</u>			
Notes:			

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

si-clay > gr-sa > bould-co

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
20%		40%	40%

30% 50%

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	/	5%	5%	90%	/	

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

grasses, cattail

Canopy Cover (% closed cover):

100-90% ☐ 30-1% ☐
90-60% ☒ 0% ☐
60-30% ☐

Types of Cover (% cover)

Trees 50% Shrubs _____
Grasses 50% Herbaceous _____
Man-made structures _____
Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☒ Man-Made ☐
Natural ☐

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- no rills or gullies noted to be draining in. No tile drains

Terrestrial features Present

Yes ☒No ☐

Terrestrial Recon Form Filled out

Yes ☐No ☒

- riparian

→ not big enough.

AECOM

July 27/11

~~G1511~~ C15

Page 3 of 4

Other General Comments Regarding the Study Area:

- ~2-3 fish noted - in pool (shaded)
- 1 frog

Photo log

Picture #	Description	Picture #	Description
1	Site entry		
2	Site overview		
3	"		
4	upstream		
5	downstream		
6	moving downstream		
7	Top of banks		
8	end of site downstream		
9	upstream end of site		

C15

AECOM

July 27/11

Page 4 of 4

Watercourse Sketch

Study Area:

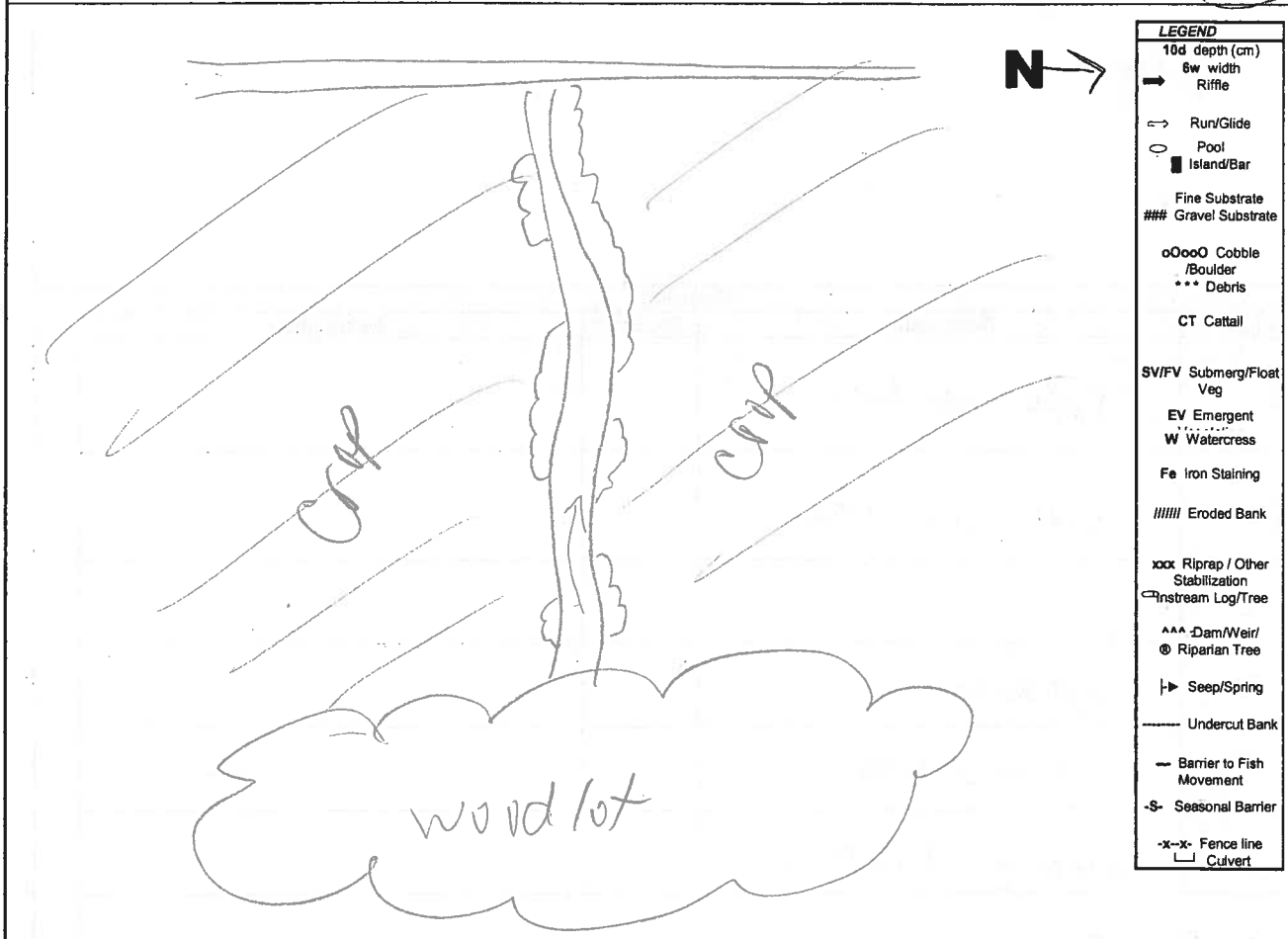
Jericho

Goshen

Bluewater Land Parcel#

1040

Turbine #

~~GE14~~ C15

LEGEND	
10d depth (cm)	
6w width	
Riffle	→
Run/Glide	⇌
Pool	○
Island/Bar	■
Fine Substrate	
Gravel Substrate	###
Cobble/Boulder	o o o o
Debris	***
Cattail	CT
Submerg/Floet Veg	SV/FV
Emergent	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxx
Instream Log/Tree	—
Dam/Weir	^^^
Riparian Tree	⊗
Seep/Spring	↳
Undercut Bank	—
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Culvert	—

Horizontal View of Channel

V. Step banks and shallower banks



AECOM		Page 1 of 4	
		Field Crew: <u>CB, TS</u>	
General Information			
Study Area: <u>Jericho</u> <u>Goshen</u> <u>Bluewater</u>	Land Parcel# <u>GSH 1040</u>	Turbine # <u>C 15</u>	
Date: <u>Dec 15 / 11</u>	Start time: <u>11:46</u>	End Time: <u>12:26</u>	
Weather Conditions: <u>Cloudy, 11°C → Rain</u>		Field Notes By: <u>CB</u>	
Site Location			
<u>Branson Line, North of McDonald Line.</u>			
UTM Co-ordinates			
Easting: <u>0448387</u>	Northing: <u>4802292</u>	Description: <u>in stream mid way.</u>	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential ☐	Meadow ☐	Intermittent ☐	Channelized ☒
Agriculture ☒	Wetland ☐	Permanent ☒	Natural Channel ☐
Forest ☐	Livestock ☐	Ephemeral ☐	
Other:			
Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow) <u>none observed</u> <u>note - corn fields surround the stream</u>			
In-Situ Water Quality		Ground Water Indicators	
WT (°C): <u>8.3</u>	AT (°C):	Watercress ☐	Bank Seepage ☐
pH: <u>7.14</u>	Cond (µs/cm): <u>527</u>	Iron Staining ☐	None ☒
Water Clarity: Clear ☐	Turbid ☒	Bubbling ☐	Other ☐
Notes: <u>grey/brown bottom</u>			
Stream Morphology			
Site Length (m):		Bank Stability:	
Channel Dimensions			
Mean Wetted Width (m): <u>2.3</u>	Mean Bankfull Width (m): <u>3</u>	Stable ☒	Slightly unstable ☐
Mean Wetted Depth (m): <u>0.3</u>	Mean Bankfull Depth (m): <u>0.75</u>	Moderately unstable ☐	Unstable ☐
		Left Bank	Right Bank
		☒	☒
		☐	☐
		☐	☐
Flow Description: <u>high flow, moderate speed</u>			
Notes:			

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

cl/mk > sand gr, co

Notes:

high flow

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Instream Cover (%) 80

Habitat

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
			5	95		

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

- emergent grasses

Canopy Cover (% closed cover):

100-90% ☐ 30-1% ☒
90-60% ☐ 0% ☐
60-30% ☐

Types of Cover (% cover)

Trees 10 Shrubs 10 Man-made structures _____
Grasses 80 Herbaceous _____ Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☒ Man-Made ☐
Natural ☐

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

- flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

C15

Page 3 of 4

Other General Comments Regarding the Study Area:

top

- dredged agri drain
- channel v. veg w grasses + becomes deeper incised as you move east

Photo log

Picture #	Description	Picture #	Description
20	at Road		
21-26 21-26 27	moving towards East		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

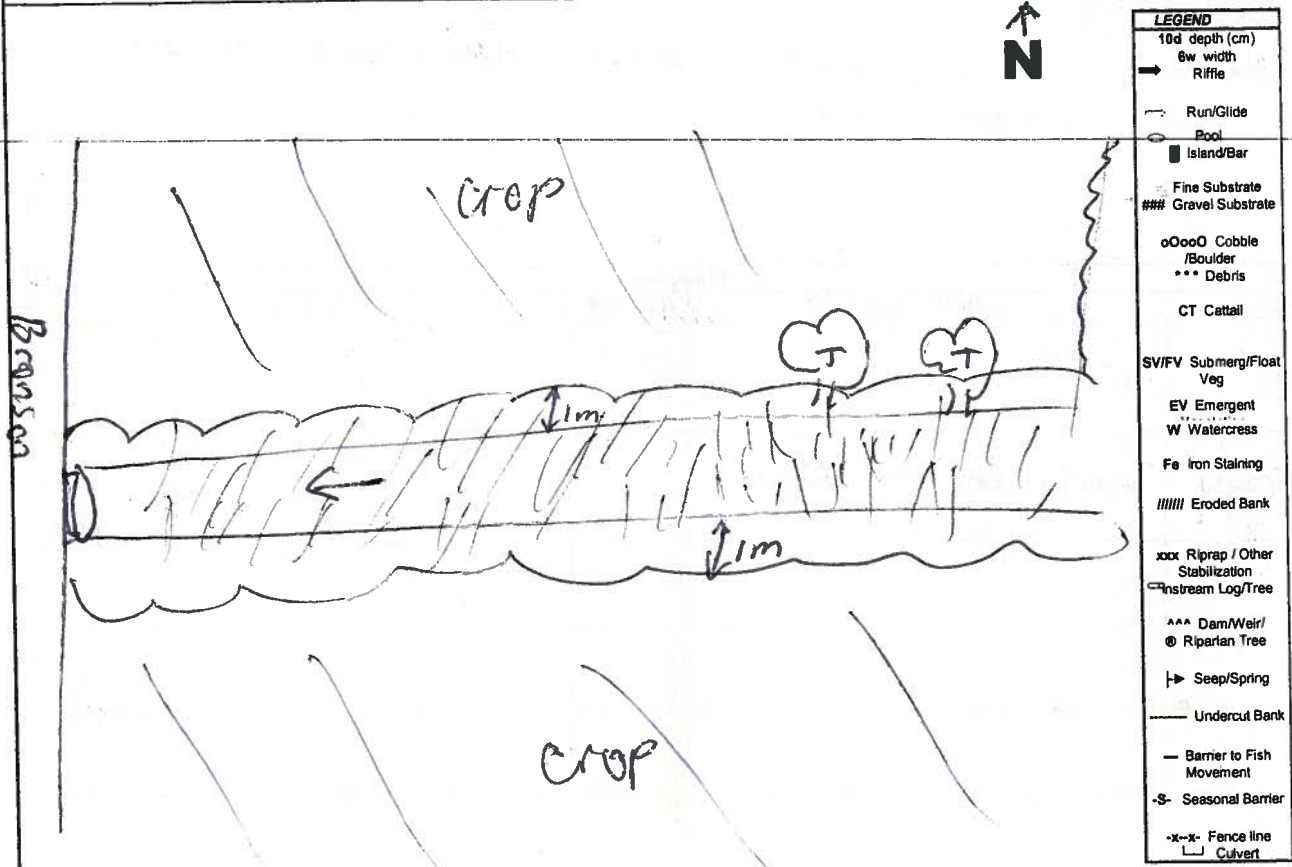
Goshen

Bluewater Land Parcel#

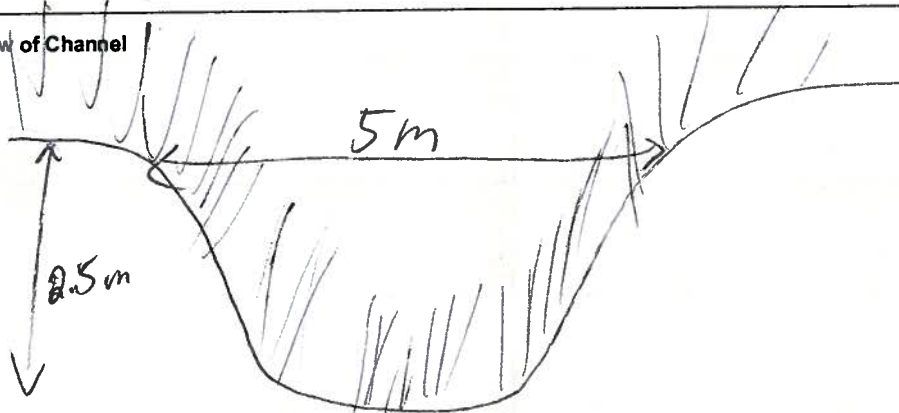
1040

Turbine#

C15



Horizontal View of Channel



AECOM		Page 1 of 4	
		Field Crew: <u>CB, TS</u>	
General Information			
Study Area: <u>Jericho</u> <u>Goshen</u> <u>Bluewater</u>	Land Parcel# <u>2099</u>	Turbine # <u>GE-37 C31</u>	
Date: <u>July 27/11</u>	Start time: <u>9:50</u>	End Time: <u>10:30</u>	
Weather Conditions: <u>Sunny</u>		Field Notes By: <u>CB</u>	
Site Location			
<u>Dashwood and Parr Line.</u>			
UTM Co-ordinates			
Easting: <u>0454250</u>	Northing: <u>4799397</u>	Description: <u>start of study area</u>	
Easting: <u>0454209</u>	Northing: <u>4799668</u>	Description: <u>end of study area</u>	
Easting: _____	Northing: _____	Description: _____	
Easting: _____	Northing: _____	Description: _____	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential ☐	Meadow ☐	Intermittent ☐	Channelized ☐
Agriculture ☒	Wetland ☐	Permanent ☐	Natural Channel ☐
Forest ☐	Livestock ☐	Ephemeral ☐	
Other: _____		<u>no channel</u>	
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)			
<u>Does not exist - p/overlaid over</u> STP			
In-Situ Water Quality		Ground Water Indicators	
WT (°C): _____	AT (°C): _____	Watercress ☐	Bank Seepage ☐
pH: _____	Cond (s/cm): _____	Iron Staining ☐	None ☒
Water Clarity: Clear ☐ Turbid ☐		Bubbling ☐	Other ☐
Notes: _____			
Stream Morphology			
Site Length (m): _____		Bank Stability:	
Channel Dimensions			
Mean Wetted Width (m): _____	Mean Bankfull Width (m): _____	Stable ☐	Slightly unstable ☐
Mean Wetted Depth (m): _____	Mean Bankfull Depth (m): _____	Moderately unstable ☐	Unstable ☐
		Left Bank	
		Right Bank	
Flow Description: _____			
Notes: _____			

AECOM

Page 2 of 4

Stream Morphology (continued)**Substrate (< = >)**

Description

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:**Habitat****Instream Cover (%)**

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☐

0%

☐

60-30%

☐**Types of Cover (% cover)**

Trees

Shrubs

Man-made structures

Grasses

Herbaceous

Other

Notes:**Obstructions to Fish Passage**

No Obstructions

☐

Man-Made

☐

Natural

☐**Description:****Drainage Features within Study Area****Observations of Land Topography within 120-m buffer area:****Terrestrial features Present**

Yes

No

Terrestrial Recon Form Filled out

Yes

No

AECOM

July 27/11

~~Site 37~~

C31

Page 3 of 4

Other General Comments Regarding the Study Area:

Photo log

Picture #	Description	Picture #	Description
1	Start of study area		
2	Shows filled stream + pond.		
3	depression - may have been pond - now plowed. (P3)		
4	interface of forest + crops		

C31

~~GE 37~~ C 31



AECOM

Page 1 of 4

Field Crew:

CB, MO

General Information

Study Area: Jericho

Goshen

Bluewater

Land Parcel# 1015

Turbine#

C33

Date: Dec 9/11

Start time: 11:00

End Time: 11:40

Weather Conditions:

Snow

Field Notes By:

CB

Site Location

Huron St, west of Babylon

UTM Co-ordinates

Easting: 0451591

Northing: 4797769

Description: in stream

Easting:

Northing:

Description:

Easting:

Northing:

Description:

Easting:

Northing:

Description:

Surrounding Landuse/Pollution Sources

Residential

☐

Meadow

☐

Agriculture

☒

Wetland

☐

Forest

☒

Livestock

☐

Other:

Type of Watercourse

Intermittent

☐

Channelized

☒

Permanent

☒

Natural Channel

☐

Ephemeral

☐

Notes: (Include any inputs into the system i.e. tile drainage, seepages, overland flow)

In-Situ Water Quality

WT (°C):

4.9°C

AT (°C):

NA

pH:

7.67

Cond (µS/cm):

394

Water Clarity:

Clear

☒

Turbid

☐

Ground Water Indicators

Watercress

☒

Bank Seepage

☐

Iron Staining

☐

None

☐

Bubbling

☐

Other

☐

- only at culvert area

Notes:

Stream Morphology

Site Length (m): 150m

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):

2m

Mean Bankfull Width (m):

3.5

Mean Wetted Depth (m):

0.23

Mean Bankfull Depth (m):

0.75

Stable

Slightly unstable

Moderately unstable

Unstable

Left Bank

☒☐☐☐

Right Bank

☒☐☐☐

Flow Description:

Although soil exposed b mks stable

Notes:

moderate flow

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (<=>)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

sa >> gr, cl > dt

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Notes:

Habitat

Instream Cover (%) 20

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	30			10		leaf debris 60

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

Waterlilies, grasses

Canopy Cover (% closed cover):

100-90%



30-1%



90-80%



0%



60-30%



Types of Cover (% cover)

Trees

70

Shrubs

30

Grasses

Herbaceous

Man-made

structures

Other

Notes:

Obstructions to Fish Passage

No Obstructions



Man-Made



Natural



Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat

Terrestrial features Present

Yes

No

2 possibly

Terrestrial Recon Form Filled out

Yes

No

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

- channel appears to have been dug out for adjacent farmers to use as drainage
- & multiple tile drain inputs

41-55

Photo log

Picture #	Description	Picture #	Description
41	looking North	52	All drains looking N
42	WC @ culvert	53	—
43	looking N	54	looking at South side
44	W g Sample	55	"
45	"		
46	looking S under culvert		
47	tile drain N/E side of channel		
48	looking S		
49	looking North		
50	channel input from West		
51	" looking up the channel		

C33

AECOM

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater Land Parcel#

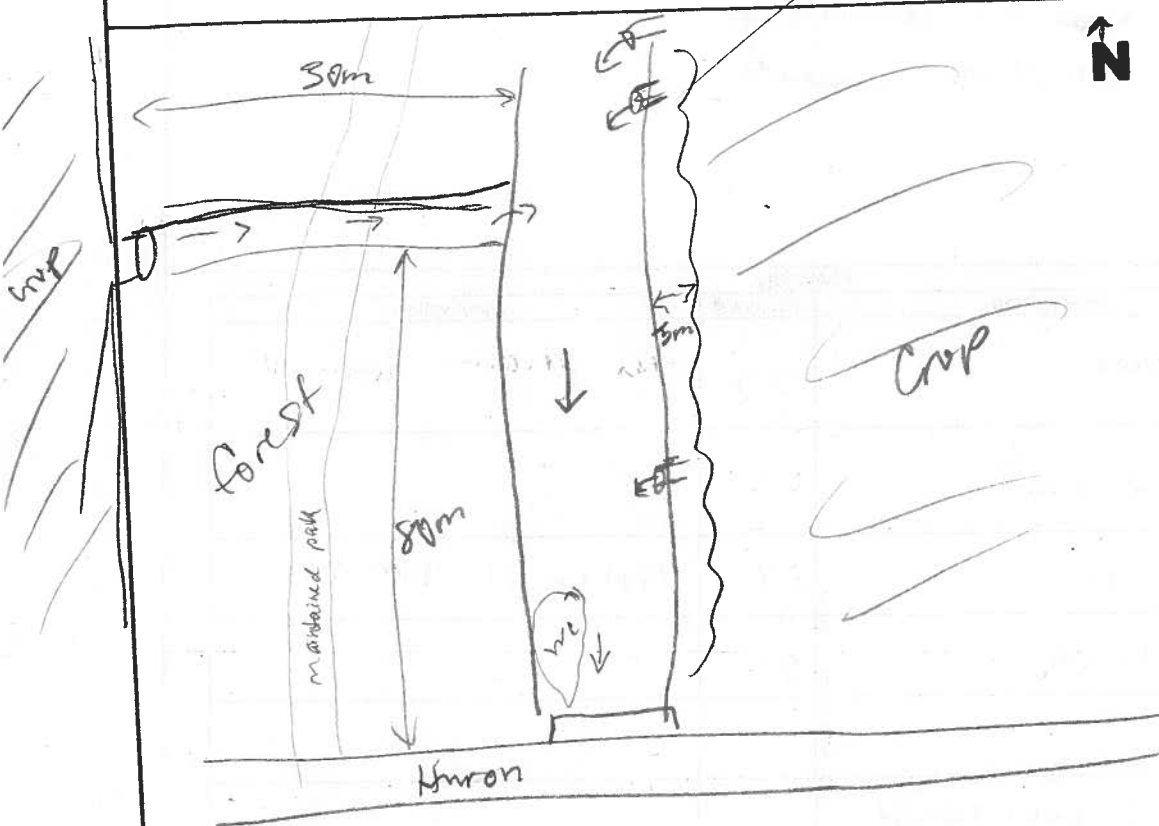
1015

Termines

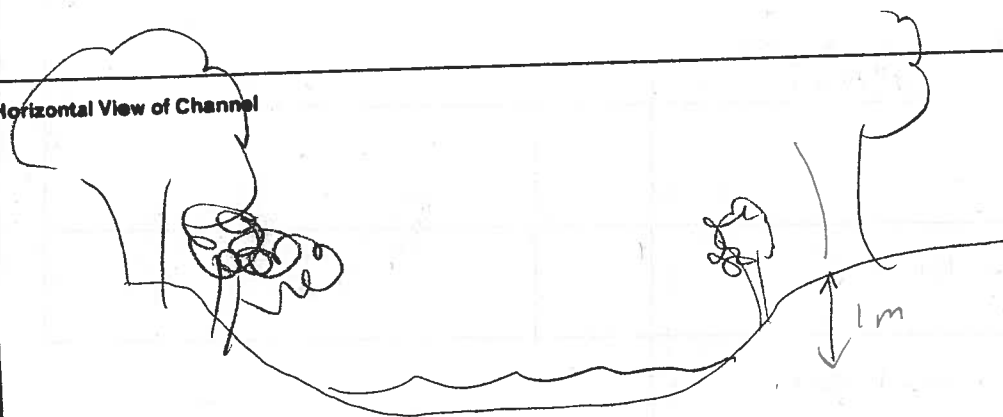
C38



LEGEND	
10d depth (cm)	
8w width	
Rifle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble	
Boulder	
Debris	
CT Catail	
SWFV Submerge/Float Veg	
EV Emergent	
W Watercress	
Fe Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	
Dam/Weir	
Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	



Horizontal View of Channel



Property ID: _____

C33-Roadside

Date: _____

Nov 18-2011

Property Access: _____

Huron

Start Time: _____

1:22

End Time: _____

1:27

Field Investigators: _____

Dalt + Ferris

Weather: _____

Overcast 0°C

Terrestrial Feature Present: No ☐ Yes ☒

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

on north side -

Photograph Numbers: _____

Aquatic Feature Present: No ☐ Yes ☒

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

Buffer-south ~ 4m either side. -north woodlot
Flowing south ~ 35/m. Mostly run (70%) flat (20%) field (10%)
Permanent-channelized - vegetated grass(s) + tree(w) bank
1.0m wide & 0.15m deep wetted width
GW Sheen south side + WC.
Canopy cover 90% seasonal tree, southside 10% grass

Photograph Numbers: _____

212-216



C36

AECOM		Page 1 of 4	
		Field Crew: CB, TS	
General Information			
Study Area: Jericho <u>Goshen</u> Bluewater	Land Parcel# 2108	Turbine # 36B ^{G08}	
Date: Sep 27/11	Start time: 13:20	End Time: 14:00	
Weather Conditions: Sunny, 18°C (last 24hrs 10mm rain)		Field Notes By: CB	
Site Location			
Off Babylon going West - North of Kirkton			
UTM Co-ordinates			
Easting: 045 3139	Northing: 479 6315	Description: down/s of culvert @ road.	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Easting:	Northing:	Description:	
Surrounding Landuse/Pollution Sources		Type of Watercourse	
Residential ☐	Meadow ☐	Intermittent ☐	Channelized ☒
Agriculture ☒	Wetland ☐	Permanent ☒	Natural Channel ☐
Forest ☐	Livestock ☐	Ephemeral ☐	
Other:			
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow) no tile drains noted, no gullies or wells			
In-Situ Water Quality		Ground Water Indicators	
WT (°C): 11°C	AT (°C): 18°C	Watercress ☐	Bank Seepage ☐
pH: /	Cond (s/cm): /	Iron Staining ☐	None ☒
Water Clarity: Clear ☒	Turbid ☐	Bubbling ☐	Other ☐
Notes: w/g meter not available			
Stream Morphology			
Site Length (m) 200m ~300m		Bank Stability:	
Channel Dimensions			
Mean Wetted Width (m): 1.5	Mean Bankfull Width (m): 2.75	Stable ☒	Slightly unstable ☐
Mean Wetted Depth (m): 0.15	Mean Bankfull Depth (m): 0.40	Moderately unstable ☐	Unstable ☐
		Left Bank	Right Bank
		☒	☒
		☐	☐
		☐	☐
Flow Description: visible flow			
Notes:			

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

si, cl >> sa > co, bo

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Habitat

Instream Cover (%) ~~30~~ 50

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
		5	5	90 90		

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

emergents (cattail), grasses

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☒

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees 10

Shrubs

Man-made structures

Grasses 90

Herbaceous

Other

Notes:

Channel choked w cattail

Obstructions to Fish Passage

No Obstructions

☒

Man-Made

☐

Natural

☐

Description:

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

C36

AECOM

Sep 27/11

HAS ~~436B~~

Page 3 of 4

Other General Comments Regarding the Study Area:

- it is a channelized watercourse dividing 2 properties
 - NW

Photo log

Picture #	Description	Picture #	Description
59	site overview		
60	culvert on east side		
61	" on west side		
62	west culvert		
63	channel - showing veg		
64	culvert for crossing		
65	"		
66	channel		
67	"		
68	looking east at " channel		
69	looking west - channel		

C 36B

AECOM

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater

Land Parcel#

2108

Turbine #

Gos C36B

N →

LEGEND	
10d depth (cm)	Sw width
→	Riffle
—	Run/Glide
○	Pool
■	Island/Bar
Fine Substrate	
###	Gravel Substrate
o o o o	Cobble
/	Boulder
***	Debris
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent
W	Watercress
Fe	Iron Staining
	Eroded Bank
xxx	Riprap / Other Stabilization
—	Instream Log/Tree
***	Dam/Weir
●	Riparian Tree
↳	Seep/Spring
—	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence line
—	Culvert

CROP

1.5m

riparian meadow

shw

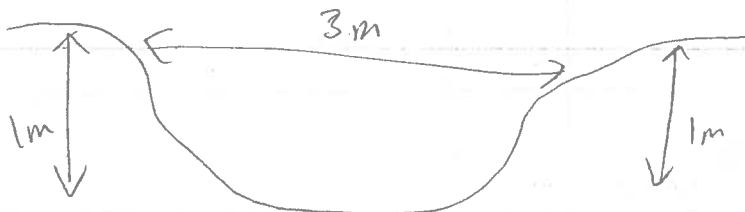
1.5m

farmer crossing

~90 m from road

→ cattail and grasses
choked entire stream

Horizontal View of Channel



Property ID: Gas 2044 (C87) Date: Dec 9/11

Property Access: Roadside acc. Start Time: 15:40
End Time: 16:20

Field Investigators: CB, MD Weather: Snow

Terrestrial Feature Present: No ☐ Yes ☐

Provide brief description of observations (i.e. hedgerow, treerow, woodlot, valleylands, deciduous vs coniferous, crop)

Photograph Numbers: _____

Aquatic Feature Present: No ☐ Yes ☒

Provide brief description (i.e. drainage ditch, watercourse, intermittent, permanent)

(West) 0453862 ± 4m // (East) 0454542 ± 3m
#795992 // 4796089

Photos #82-84 - At culvert // #87 - Channel overview
#85-86 - C37 West // #88 - site overview
#89-90 - Channel + ditch

Photograph Numbers: 62-90

Notes on back →

* Aquatic mammal
(possibly muskrat)
observed (West)
* Pheasant or turkey
observed (East)

- Watercourse is a channelized feature and same at both culverts

[MWW - 2m MSW - 2.5m
 mws - ? MSW - ?

- Substrate - fins w cobbles + boulders at culverts
- Channel choked w cattails in some areas
- riparian buffer 15m
- Visible flow
- water clear
- poor canopy cover.

C42

AECOM

Page 1 of 4

Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1759 2252 Turbine # ~~C-45~~ C-42.5
 Date: Sep 27/11 Start time: 15:00 End Time: 15:40

Weather Conditions:

Sunny, 18°C (last 24 hrs
10 mm rain)

Field Notes By:

CB

Site Location

On Blackbush Lane - north of Kirkton

UTM Co-ordinates

Easting: 0447032 Northing: 4795291 Description: culvert @ road
 Easting: Northing: Description:
 Easting: Northing: Description:
 Easting: Northing: Description:

Surrounding Landuse/Pollution Sources

Residential ☐ Meadow ☐
 Agriculture ☒ W Wetland ☐
 Forest ☒ E Livestock ☐

Other:

Type of Watercourse

Intermittent ☐ Channelized ☒ W
 Permanent ☒ Natural Channel ☒ E
 Ephemeral ☐

Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)

- none noted on agri side or forest besides roadside ditches

In-Situ Water Quality

WT (°C): 11 AT (°C): 18
 pH: Cond (s/cm):
 Water Clarity: Clear ☒ Turbid ☒

Ground Water Indicators

Watercress ☒ Bank Seepage ☐
 Iron Staining ☐ None ☒ f
 Bubbling ☐ Other ☐

Notes:

- water sl. turbid

~ 30m down/s of culvert on agri side large patch of watercress

Stream Morphology

Site Length (m): ~50m

West East
 ~100m

Channel Dimensions

Channel Dimensions		Bankfull Dimensions	
Mean Wetted Width (m)	Mean Bankfull Width (m)	Mean Wetted Depth (m)	Mean Bankfull Depth (m)
1m	2.5	0.25	0.5
		0.30	0.5

Bank Stability:

	Stable	Slightly unstable	Moderately unstable	Unstable
Left Bank	☒ f	☐	☐	☐
Right Bank	☒ f	☐	☐	☐

Flow Description:

- in the forest visible flow

Notes:

AECOM

Page 2 of 4

Stream Morphology (continued)

Substrate (< = >)

Bo - Boulder
Co - Cobble
Gr - Gravel
Sa - Sand
Si - Silt
Cl - Clay
MK - Muck
DT - Detritus
Other

Description

f = si, mk, dt

a = si, cl.

Morphological Structure (%)

Pool	Riffle	Run	Flat
		f - 70 a - 50	f - 30 a - 50

Notes:

agri channel highly veg so
approximation of Run/flat difficult

Habitat

Instream Cover (%)

f = 20 a = 35

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other: detritus
	f = 80 a = 10	a = 5	a = 5	a = 80		f = 20

*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)

emergents, grasses, submergents

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

f = 20 a

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees f = 95

Shrubs f = 5

Man-made structures

Grasses a = 50

Herbaceous a = 50

Other

Notes:

Obstructions to Fish Passage

No Obstructions

☒

Man-Made

☐

Natural

☐

Description:

culvert not
perched.

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

C42

AECOM

Sep 27/11

Gas C42

Page 3 of 4

Other General Comments Regarding the Study Area:

- fishes observed. (east side)
- forest channel not veg present
- agri channel banks + bed completely veg.
- ↳ watercress present in large clumps in a couple locations

Photo log

Picture #	Description	Picture #	Description
84	site overview on west side		
85	east side culvert		
86	east forest / dwn/s		
87	forest up/s		
88	forest dwn/s		
89	west culvert		
90	agri dwn/s		
91, 92	watercress on agri side		
93	agri dwn/s		
94	"		
95	agri dwn/s end.		

C42

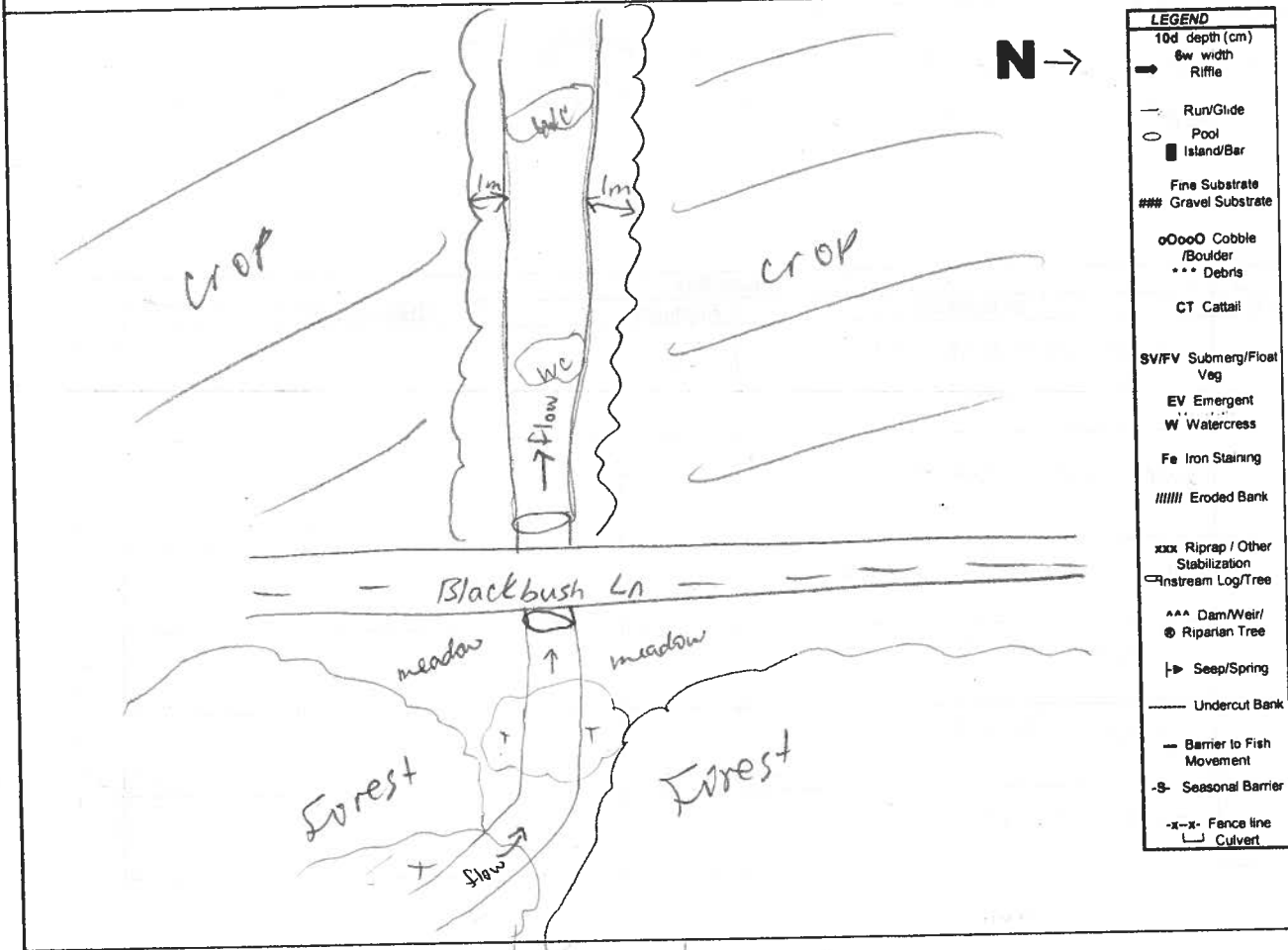
C42

AECOM

Page 4 of 4

Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 1759 2252 Turbine # G05-C42P



Horizontal View of Channel

