

AECOM

Field Crew: CB, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1635, 1636 Turbine# EC63 C201
 Date: Dec 16/11 Start time: 14:45 End Time: 15:20

Weather Conditions:

Cloudy, 10C

Field Notes By:

CB

Site Location

Shupka Ln, North of South Rd.

UTM Co-ordinates

Easting: 0445484 Northing: 4791472 Description: Stream side
 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)

tile drain observed - flowing

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: Sl. turbid, wq meter not working.

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):	1.5	Mean Bankfull Width (m):	1.75
Mean Wetted Depth (m):	0.25	Mean Bankfull Depth (m):	0.60

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

Flow Description:

visible flow, mod levels

Notes:

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Stream Morphology (continued)

Substrate (<=>)

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

Description

Si, Cl, Gr > Co > Bo

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
		100	

Habitat

Instream Cover (%)

80

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

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

- Emergent grass + Cattails

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☒

90-60%

☐

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees

1

Shrubs

9

Man-made structures

Grasses

90

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

C63

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Other General Comments Regarding the Study Area:

- Channelized + uniform throughout

Photo log

Picture #	Description	Picture #	Description
131	East side moving west east west		
↓			
141			

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Watercourse Sketch

Study Area:

Jericho

Goshen

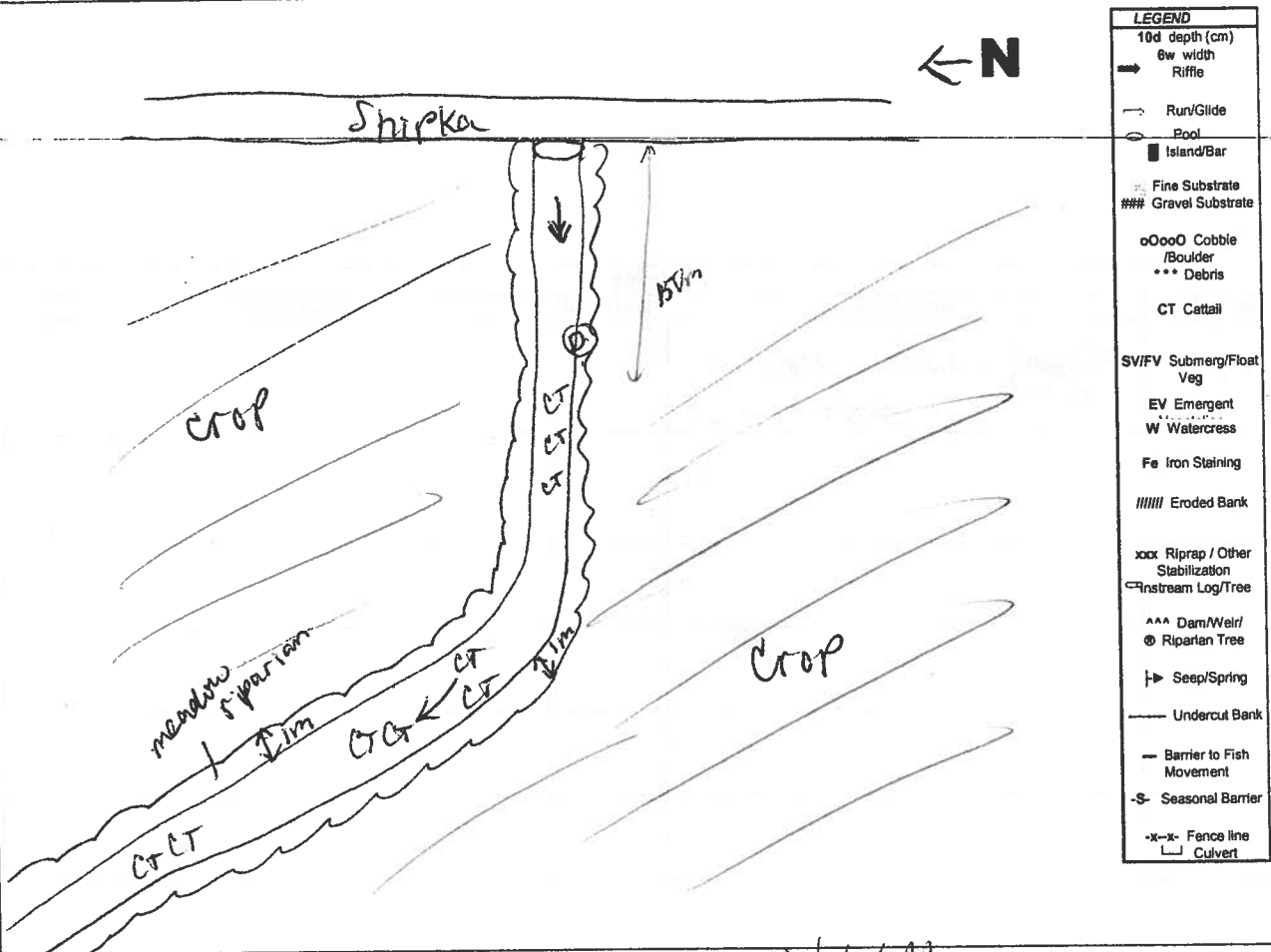
Bluewater

Land Parcel#

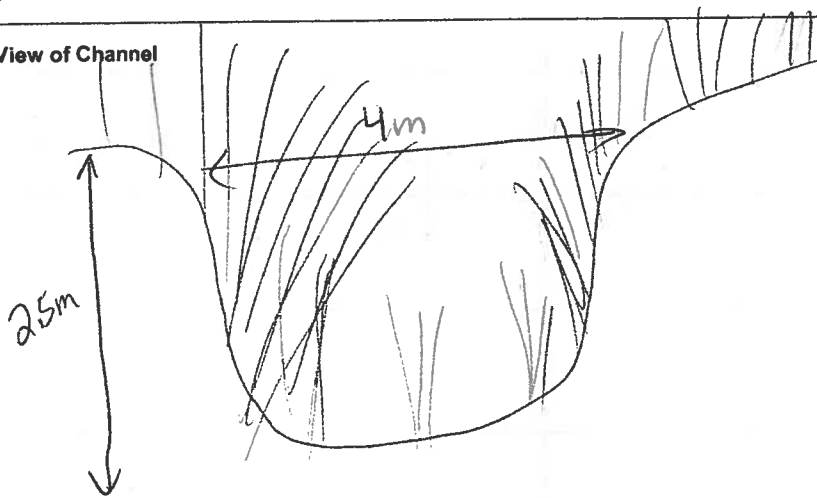
1635, 1636

Turbine #

C63



Horizontal View of Channel



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Field Crew: DART + Ferris

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH1079 Turbine # C63
 Date: NOV-18-2011 Start time: 10:00 GSH1635 End Time: 10:22

Weather Conditions:

Sunny, 0C

Field Notes By:

DART

Site Location

C63 - crosses Shipka.

UTM Co-ordinates

Easting: 445495 Northing: 4791472 Description: C63a

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)

Agriculture on both sides.

In-Situ Water Quality

WT (°C): 4.8 AT (°C): 0C
 pH: 7.01 Cond (µs/cm): 746
 Water Clarity: Clear ☐ Turbid ☒

Ground Water Indicators

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

Notes: water slightly grey.
algae in water.

Stream Morphology

Site Length (m):

Bank Height = 2.0 Bankwidth = 50m

Channel Dimensions

Mean Wetted Width (m): 1.5 Mean Bankfull Width (m): 2.7
 Mean Wetted Depth (m): 0.15 Mean Bankfull Depth (m): 0.60

Bank Stability:

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

Flow Description:

1.5/1m - flowing west. CSP - not perched either side.
2 tile drains - east side. north bank - flowing + on south bank.
vegetated banks - cattails, grasses, some trees
Buffer on top of bank ~2m either side.

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Stream Morphology (continued)

Substrate (< = >)

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

Description

Cl > Si > Sa

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
		20	80

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
				10		Overhanging veg = 5%

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

cattail

Canopy Cover (% closed cover):

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

Types of Cover (% cover)

Trees 5 Shrubs 5 Man-made structures _____
Grasses 80 Herbaceous _____ Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☐ Man-Made ☐
Natural ☒

Description:

vegetation cattails and
shallow narrow flow
areas

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

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Other General Comments Regarding the Study Area:

west side channel becomes more
narrow + shallow with increased
vegetation (cattails) in stream

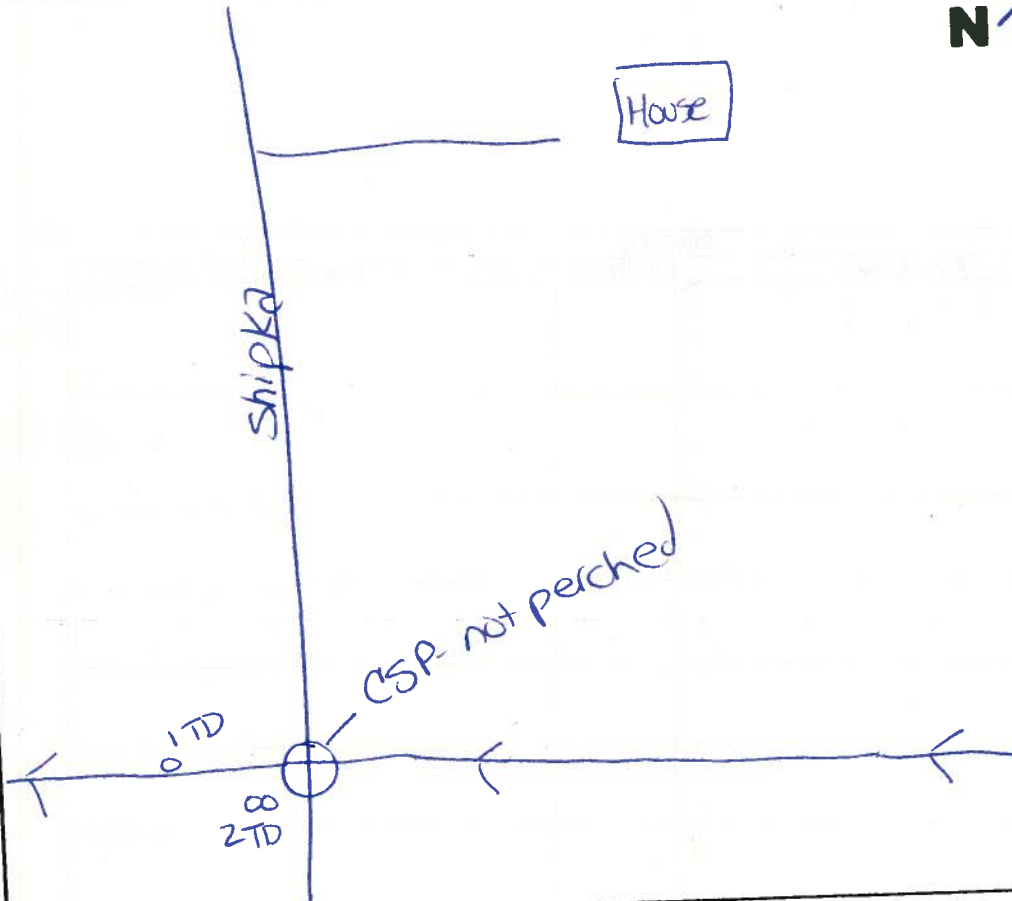
Photo log

Picture #	Description	Picture #	Description
157- 159	From road - east		
160- 161	From road - west		

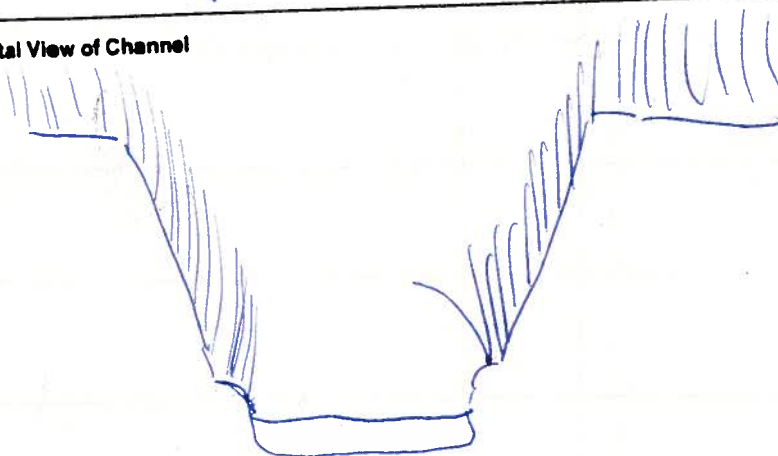
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Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# GSM1079 Turbine # C63



Horizontal View of Channel



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Field Crew: CB, JP

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1016 & 1532 Turbine # 608-C64
 Date: Sept 7/11 Start time: 10:50 End Time: 12:00

Weather Conditions:

Cloudy, 15°C

Field Notes By:

CB

Site Location

Collection line for G052

UTM Co-ordinates

Easting: 9442026 Northing: 4790405 Description: west side of reach

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)

~25 m buffer on south side & ~25 m buffer on north side

In-Situ Water Quality

WT (°C): / AT (°C): 15°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

Stream Morphology

Site Length (m): ~200 m

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): 1.5 Mean Bankfull Width (m): 2.5
 Mean Wetted Depth (m): 0.25 Mean Bankfull Depth (m): 0.5

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

Flow Description: moderate flow

Notes:

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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~~ >> gr, Co

Morphological Structure (%)

Pool	Riffle	Run	Fiat
20	5	25	50

Notes:

some areas of riffle included
woody debris and sand substrate

Habitat

Instream Cover (%)

50

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	50		20	30		

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

algae - filamentous, some grasses

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☒

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees

60

Shrubs

10

Man-made structures

Grasses

10

Herbaceous

20

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:

- adjacent lands

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

- JP completed EIS at the same time

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G05-C64

Sep 7/11

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Other General Comments Regarding the Study Area:

- many fish observed in big pool
- frogs observed.

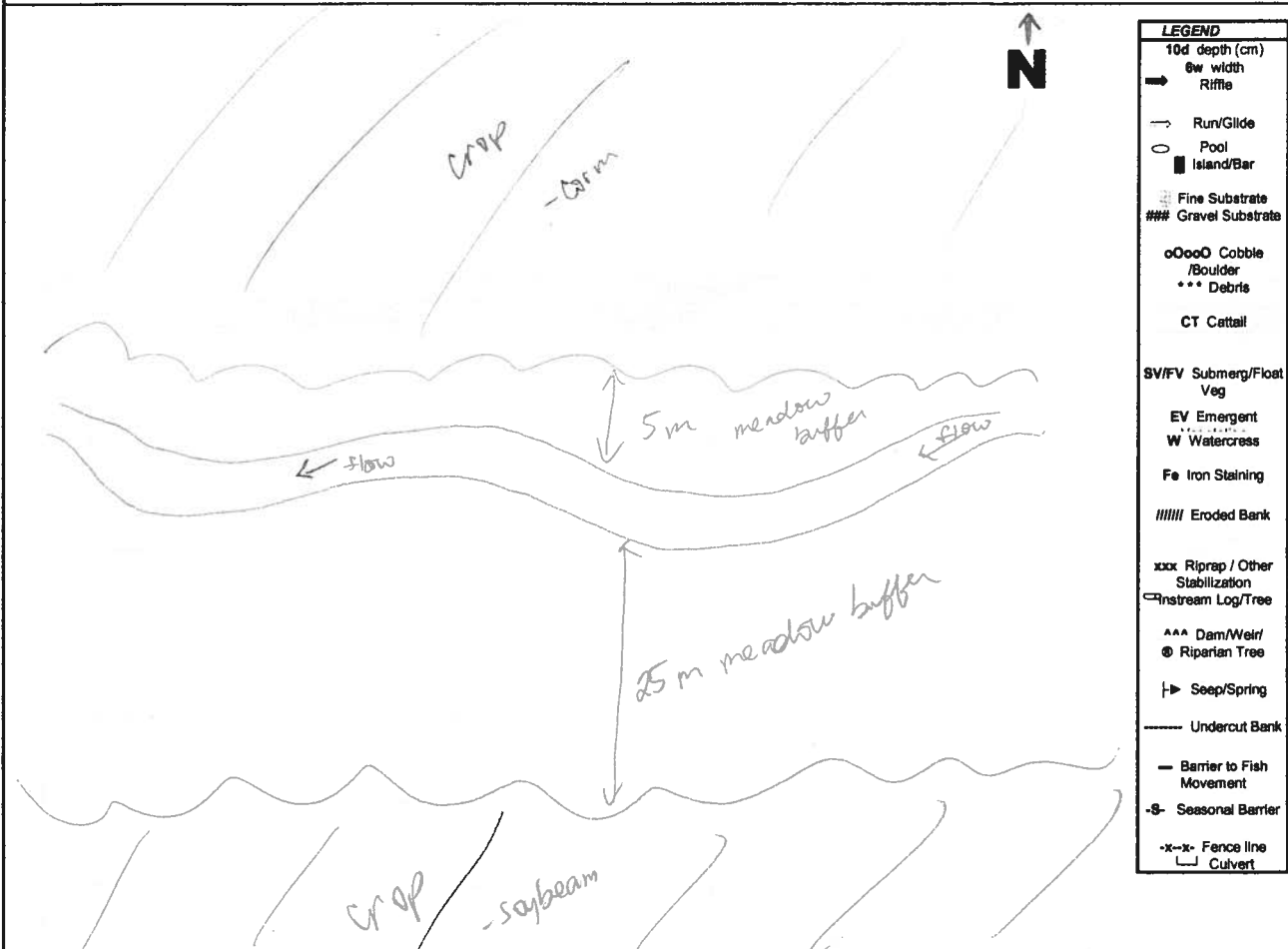
Photolog

Picture #	Description	Picture #	Description
1	- looking downstream @ west end.		
2	looking up/s @ west end.		
3	substrate		
4	mid-way through site		
5	"		
6	"		
7	large pool where fish were observed.		
8	mid-way through site		
9	looking up/s @ east end.		
10	looking down/s @ east end.		

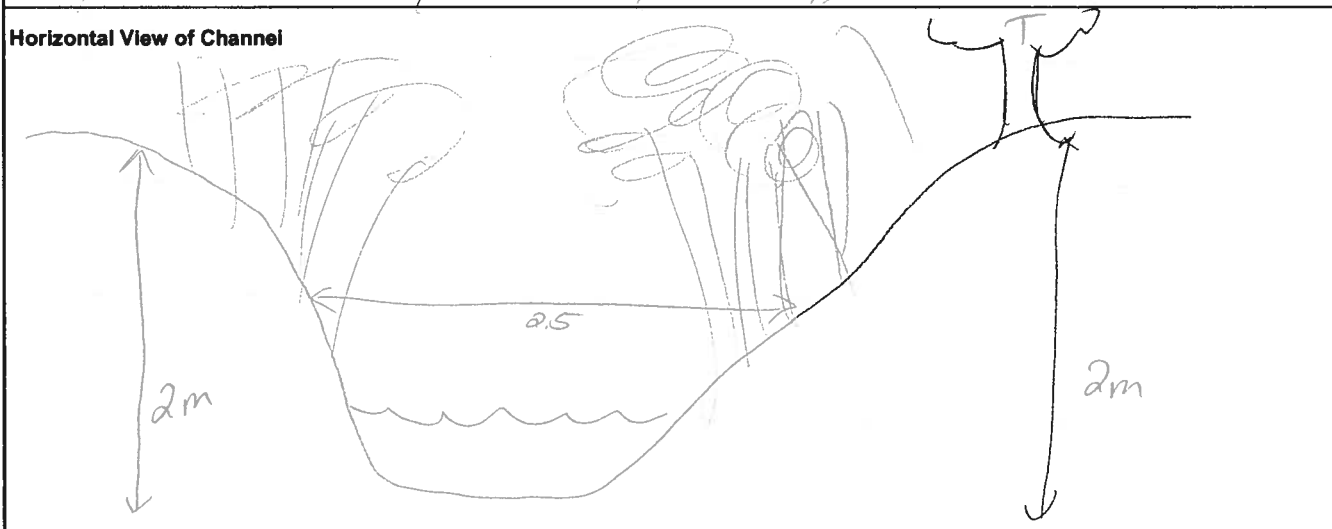
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Watercourse Sketch

Study Area: Jericho Goshen Bluewater Land Parcel# 1016+1532 Turbine # Gos-264

Horizontal View of Channel



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Field Crew: SA, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 2176+1022 Turbine # C66Date: Nov 17, 2011 Start time: 14:09 End Time: 14:45

Weather Conditions:

overcast, windy

Field Notes By:

SA

Site Location

Mollard Line

UTM Co-ordinates

Easting: _____ Northing: _____

Description: C66B (end)

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)

In-Situ Water Quality

WT (°C): 4.5°CAT (°C): 1.5°CpH: 8.31Cond (µs/cm): 702Water Clarity: Clear ☒Turbid ☐

Ground Water Indicators

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

Notes:

Stream Morphology

Site Length (m): 400 m

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): 2.10Mean Bankfull Width (m): 3.10Mean Wetted Depth (m): 0.33Mean Bankfull Depth (m): 1.50

Stable

Slightly unstable

Moderately unstable

Unstable

Left Bank

☐☐☒☐

Right Bank

☐☐☒☐

Flow Description:

good flow - moderate

Notes:

exposed soils, some slumping, exposed roots
TOBW - 5.0m
TOBH - 3.0m

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Stream Morphology (continued)

Substrate (<=>)

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

Description

Cl > Sa = Si & Gr

Morphological Structure (%)

Pool	Rifle	Run	Flat
30	30	30	

Notes:

riffle / pool / run

Habitat

Instream Cover (%)

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

*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

40

Shrubs

15

Grasses

20

Herbaceous

20

Man-made structures

Other

Notes:

Obstructions to Fish Passage

No Obstructions

☐

Man-Made

☐

Natural

☐

Description:

debris dams

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

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Other General Comments Regarding the Study Area:

Photo log 76-82			
Picture #	Description	Picture #	Description
76	DIS		

C66

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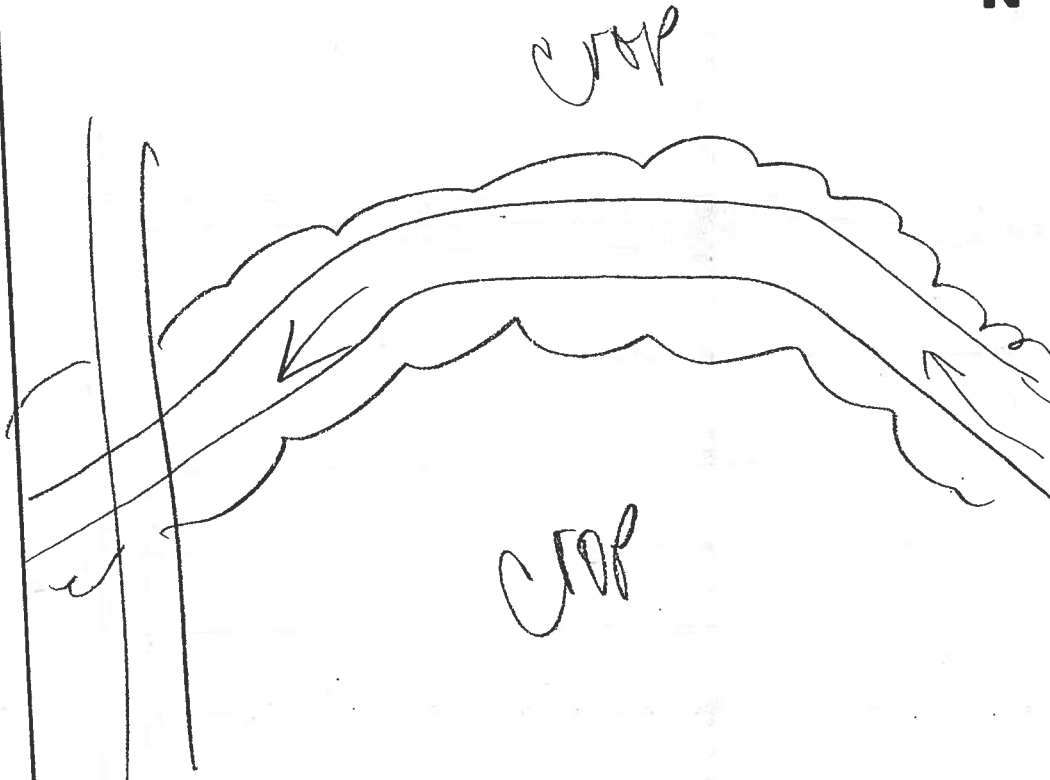
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Watercourse Sketch

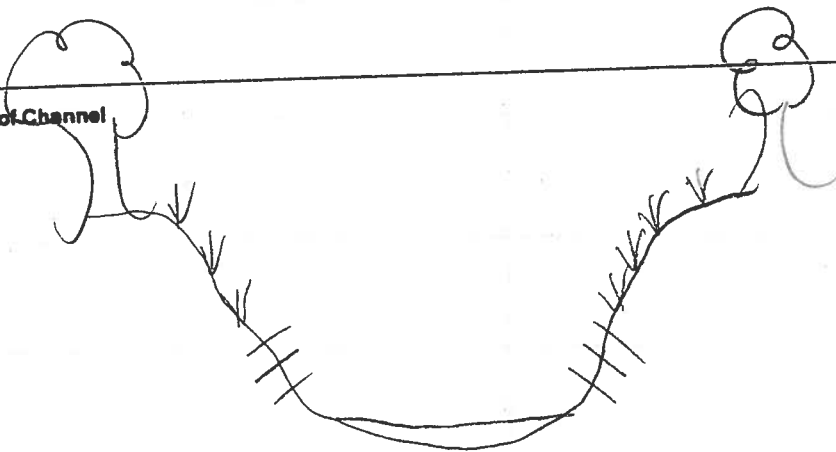
Study Area: Jericho Goshen Bluewater Land Parcel# 2176 + 1022 Turbine # C66



LEGEND	
100 depth (cm)	
6w width	
Rifle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble	
Boulder	
Debris	
Catfish	
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	



Horizontal View of Channel



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Field Crew: SA, TS

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1020+2176 Turbine # C67
 Date: Nov 17/11 Start time: 13:50 End Time: 13:50

Weather Conditions: overcast, snowField Notes By: SA**Site Location**West of Mollard Line**UTM Co-ordinates**

Easting: <u>438011</u>	Northing: <u>4790349</u>	Description: <u>C67</u>
Easting: <u>438160</u>	Northing: <u>4790329</u>	Description: <u>C67B-crossing</u>
Easting:	Northing:	Description:
Easting:	Northing:	Description:

Surrounding Landuse/Pollution Sources

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

Intermittent ☐ Channelized ☐
 Permanent ☒ Natural Channel ☐
 Ephemeral ☐

Other:

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

tile drains observed**In-Situ Water Quality**

WT (°C): 4.6 AT (°C):
 pH: 8.15 Cond (µs/cm): 703
 Water Clarity: Clear ☐ Turbid ☐

Ground Water Indicators

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

Notes: yellow/brown colour. slight sedimentation**Stream Morphology**Site Length (m): 250 m

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):	<u>3.03</u>	Mean Bankfull Width (m):	<u>5.90</u>
Mean Wetted Depth (m):	<u>0.30</u>	Mean Bankfull Depth (m):	<u>0.65</u>

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

Flow Description: evidence of high flows

Notes:

bank scouring observed, exposed tree roots
TOBH - 2.5 m
TOBW - 7.0 m

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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

Notes:

Morphological Structure (%)

Pool	Riffle	Run	Flat
15	50	50	

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	30%	0	0	0	5%	

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

large + small woody debris
both downed trees & exposed roots

Canopy Cover (% closed cover):

100-90% ☐
90-80% ☒
80-30% ☐

30-1% ☐
0% ☐

Types of Cover (% cover)

Trees 70 Shrubs 20
Grasses 10 Herbaceous 10

Man-made structures _____
Other _____

Notes:

Obstructions to Fish Passage

No Obstructions ☐
Natural ☐

Man-Made ☐

Description:

none observed

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

relatively flat

Terrestrial features Present

Yes No

Terrestrial Recon Form Filled out

Yes No

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Other General Comments Regarding the Study Area:

- relatively straight, minor meanders
- channelized, uniform
- poor quality fish habitat
- riparian at TOB ~2.0m then agri field

Photo log

(61-75)

Picture #	Description	Picture #	Description
61			

C67

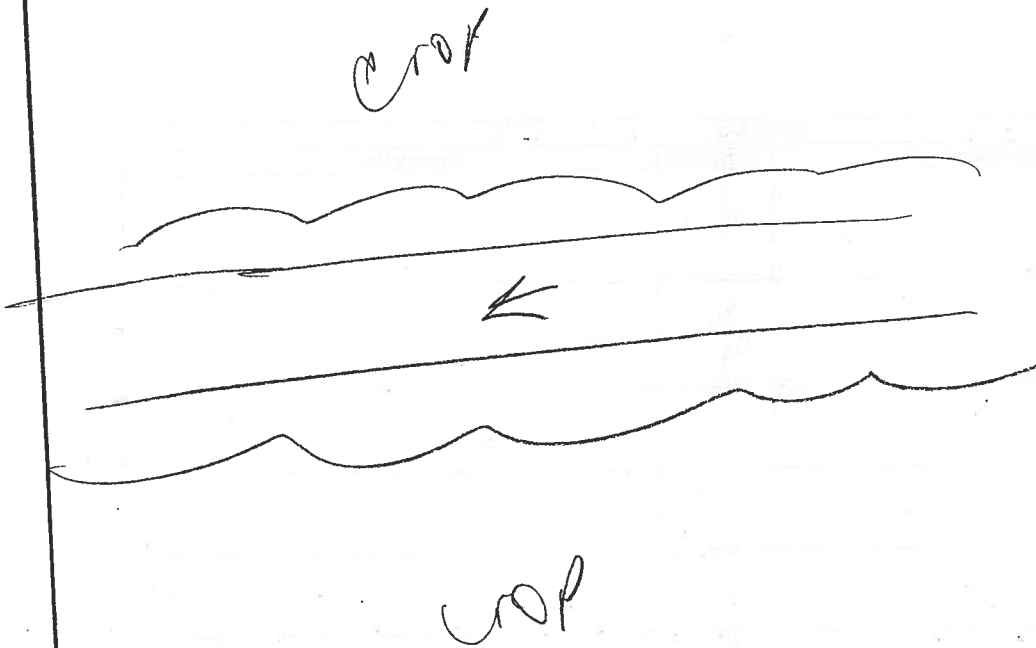
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Watercourse Sketch

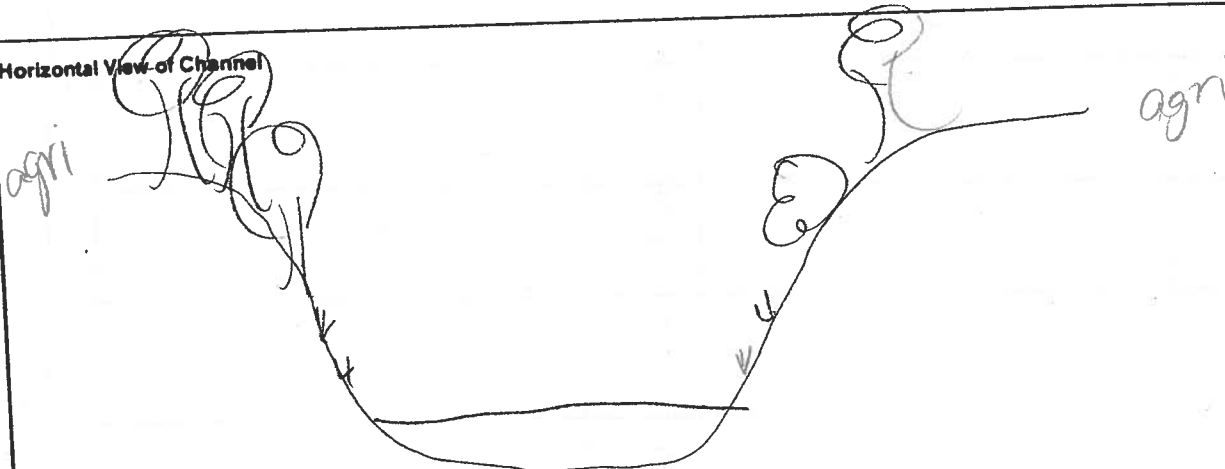
Study Area: Jericho Goshen Bluewater Land Parcel# 1020 + 2176 Turbine # C107



LEGEND	
10d depth (cm)	
Bar width	
Rifle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
Catfall	
Submerg/Float Veg	
Emergent	
Watercress	
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



AECOM

Field Crew: SA, BG

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1020 Turbine # 61260 C68
 Date: July 14/11 Start time: 9:45 End Time: 10:45
 Weather Conditions: Sunny Field Notes By: SA

Site Location

accessed off of Mollard line through wheat field

UTM Co-ordinates

Easting: 438032 Northing: 4789930 Description: Goshen 66
 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 water at time of assessment
naturalized channel

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: no GW indicators observed
no flow/no water

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): Mean Bankfull Width (m):
 Mean Wetted Depth (m): 0.5 Mean Bankfull Depth (m): 1.0

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

Flow Description: no flow

Notes: Banks steep and well vegetated
channel width ~1.5m wide

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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:
	50			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

25

Shurbs

30

Man-made structures

Grasses

25

Herbaceous

25

Other

Notes:

~~100%~~ 50% open
50% covered

Obstructions to Fish Passage

No Obstructions

☐

Man-Made

☐

Natural

☐

Description:

low flow barrier

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

C68

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Other General Comments Regarding the Study Area:

dry agri channel
overgrown

Photolog

Picture #	Description	Picture #	Description
18	facing N/S Cattail Channel		
19	facing N/S Cattail Channel		
20	overview facing W		
21	overview facing E		
22	facing N/S		
23	view of Channel		
24	dry Channel		
25	dry Channel		

C68

July 14/11

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Watercourse Sketch

Study Area:

Jericho

Goshen

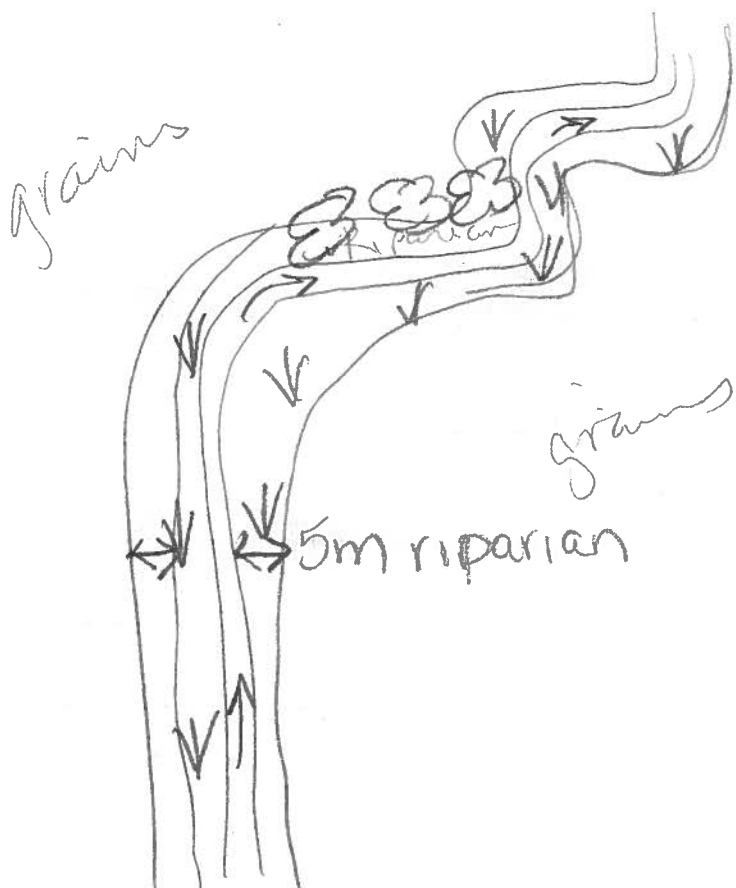
Bluewater Land Parcel#

1020

Turbine #

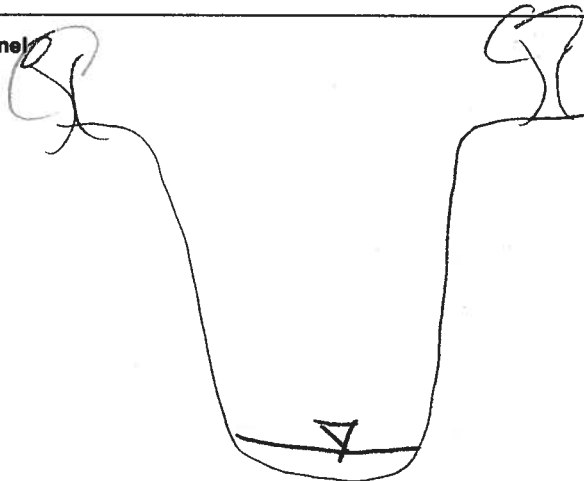
~~1020~~

C68



LEGEND	
10d depth (cm)	
8w width	
Riffle	→
Run/Glide	→
Pool	○
Island/Bar	■
Fine Substrate	~
Gravel Substrate	###
Cobble/Boulder	oOooO
Debris	***
Cattail	CT
Submerg/Float Veg	SV/FV
Emergent	EV
Watercress	W
Iron Staining	Fe
Eroded Bank	
Riprap / Other Stabilization	xxx
Instream Log/Tree	—
Dam/Weir	AAA
Riparian Tree	⊗
Seep/Spring	↳
Undercut Bank	---
Barrier to Fish Movement	—
Seasonal Barrier	-S-
Fence line	-x-x-
Culvert	┌

Horizontal View of Channel



C68

Page 1 of 4

AECOM

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# GSH 1020 Site ID: 210
 Date: Apr. 26/2012 Start time: 4:43 PM End Time: 4:50 PM
 Weather Conditions: sunny, windy 10°C Field Crew: S. LOHNES S. AITKEN
 Field Notes By: S. LOHNES

Site Location

South road & Mollard line

UTM Co-ordinates (continue on page 3 if necessary) none taken

Easting:	Northing:	Description:

Surrounding Landuse
 Residential ☐ Meadow ☐
 Agriculture ☒ Wetland ☐
 Forest ☐ Livestock ☐
 Other ☐
 Description: row crops

Type of Watercourse
 Intermittent ☒ Channelized ☒
 Permanent ☐ Natural Channel ☐
 Ephemeral ☐
 Description: no flow under road
cattail choked.

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

road drainage, outputs from drain

Is any portion of the water body underground or not as mapped? Y / (N)
 If Yes describe:

GPS Coordinate: Easting -

Northing -

Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

flat

In-Situ Water Quality

WT (°C):	AT (°C):
pH:	Cond (s/cm):
D.O. (mg/L)	

Water Clarity: Clear ☒ Turbid ☐

Water Colour: colourless - stagnant
in areas

Notes:

- NO WQ Taken -
Shallow stagnant water

Ground Water and Seepage Indicators

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

Details:

Water Bodies Assessment Field Collection Form

Stream Morphology																		
Site Length (m): 500m		Bank Stability:																
Channel Dimensions		<table border="1" style="width: 100%; text-align: center;"> <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	☒	☐	☐	☐														
Mean Wetted Width (m): 0.8	Mean Wetted Depth (m): 0.1	Description: red-osier dogwood, grasses																
Mean Bankfull Width (m): 1.0	Mean Bankfull Depth (m): 0.2																	
Mean Top of Bank Width (m): 2.5	Mean Top of Bank Depth (m): 1.5																	
Flow Description: (high or low flow conditions, stagnant, etc)																		
very low gradient (flat) - no flow																		
Substrate (<=>)		Habitat																
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus	Description: Sa = Si	<table border="1" style="width: 100%; text-align: center;"> <tr> <th colspan="4">Morphological Structure (%)</th> </tr> <tr> <th>Pool</th> <th>Riffle</th> <th>Run</th> <th>Flat</th> </tr> <tr> <td></td> <td></td> <td></td> <td>100</td> </tr> </table>		Morphological Structure (%)				Pool	Riffle	Run	Flat				100			
Morphological Structure (%)																		
Pool	Riffle	Run	Flat															
			100															
		Notes: no flow past Mollard isolated pools w/ fish obs.																
Instream Cover (%)																		
Other	Woody Debris	Boulders	Cobble															
			Aquatic Vegetation* CT DS															
			None															
			Undercut Banks															
			Average Depth: (% Cover)															
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																		
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)																		
cattails, emergent veg																		
Canopy Cover (% closed cover):		Types of Cover (% cover)																
100-90% ☐	30-1% ☒	Trees	Shrubs 50															
90-60% ☐	0% ☐	Grasses	Herbaceous 50															
60-30% ☐			Man-made structures Other															
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																		
Notes: (vegetation species, types of structures)																		
cattails, some dogwood + willow																		
Riparian Vegetation																		
Width of riparian vegetation: ~5m.																		
Description of vegetation community surrounding 30 m from watercourse:																		
agricultural cropland.																		
Obstructions to Fish Passage																		
No Obstructions ☐	Man-Made ☐	Natural ☐	Low Flow Barrier ☒															
Description of Barrier: v. low flow - none through culverts.																		
Height of Barrier (m)		GPS Coordinates:																

C68

AECOM

Date:

Apr 26, 2012

Land Parcel/Site ID:

1000

Page 3 of 4

Other General Comments Regarding the Study Area:

- fish observed - cyprinids
- intermittent channel - choked w/ cattail in reaches closest to the road.
- mats of emergent vegetation
- appears to be tile drain fed, no connectivity to other channels

Additional UTM Coordinates:

Photo log			
Picture #	Description	Picture #	Description
1	Sheet		
2	Mollard roadside ditch		
3	looking d/s		
4	cattail choked channel		
5	looking u/s.		
6	looking d/s.		
7	emergent veg.		
8	open channel hab		
9	grasses, riparian shrub		
10	looking u/s dogwood/ willow		

Water Bodies Assessment Field Collection Form

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater

Land Parcel#

1020

Site ID

D10

C68

N

LEGEND	
10d depth (cm)	
0w width	
Rifle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
Cattail	
Submerg/Float Veg	
Emergent Vegetation	
Watercress	
Iron Staining	
Eroded Bank	
Riprap / Other Stabilization	
Instream Log/Tree	
Dam/Weir/ Obstruction	
Riparian Tree	
Seep/Spring	
Undercut Bank	
Barrier to Fish Movement	
Seasonal Barrier	
Fence line	
Culvert	

GSH2175

GSH 1020

Corn

Corn

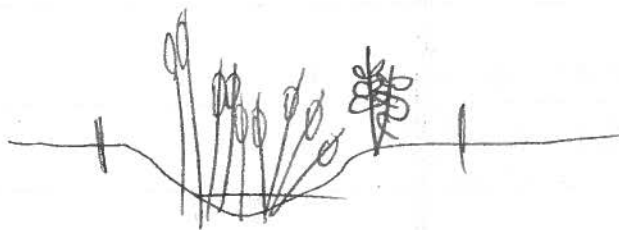
farm access road (South Rd)

fish observed
(isolated pools)

roadside ditch (dry)

Mollard

Horizontal View of Channel



Initial QA/QC By:

L. Bentley

Date:

May 4, 2012

Technical QA/QC By:

J. Palmer

Date:

Aug 2nd 2012

C73

AECOM		Page 1 of 4																
General Information		Field Crew: SA, BG																
Study Area: Jericho <u>Goshen</u> Bluewater	Land Parcel# <u>2174</u>	Turbine # <u>5011119667</u>																
Date: <u>July 13/2011</u>	Start time: <u>13:15</u>	End Time: <u>13:50</u>																
Weather Conditions: <u>Sunny, Breez</u>		Field Notes By: <u>SA</u>																
Site Location																		
<u>West of Mollard Road</u>																		
UTM Co-ordinates																		
Easting:	Northing:	Description: <u>GPS not working</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>appears to be an agricultural drain that receives runoff from adjacent fields - dry at time of investigation lower half had cattails</u>																		
In-Situ Water Quality		Ground Water Indicators																
WT (°C):	AT (°C):	Watercress ☐	Bank Seepage ☐															
pH:	Cond (s/cm):	Iron Staining ☐	None ☒															
Water Clarity: <u>Clear</u> ☐	Turbid ☐	Bubbling ☐	Other ☐															
Notes:																		
Stream Morphology																		
Site Length (m):		Bank Stability:																
Channel Dimensions		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Stable</th> <th>Slightly unstable</th> <th>Moderately unstable</th> <th>Unstable</th> </tr> </thead> <tbody> <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> </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>1.50</u>	Mean Bankfull Width (m):																	
Mean Wetted Depth (m): <u>0.50</u>	Mean Bankfull Depth (m):																	
Flow Description: <u>no flow</u>																		
Notes: <u>~ channel width 1.0 meter Steep well vegetated banks</u>																		

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 = Si

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

none.

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
				160		

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

Cattails

Canopy Cover (% closed cover):

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

Types of Cover (% cover)

Trees 5 Shrubs 15 Man-made structures _____
Grasses 30 Herbaceous 15 Other _____

Notes:

consists of poplars, dogwoods, teasels, goldenrods

Obstructions to Fish Passage

No Obstructions ☐ Man-Made ☐
Natural ☐

Description:

none observed
no flow

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

field is very flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

C73

AECOM

July 13 / 2011

SPRINT, GE 67 Page 3 of 4

Other General Comments Regarding the Study Area:

- very straight naturalize channelized feature
- choked to upland veg at beginning transitioning to cattails

Photolog

Picture #	Description	Picture #	Description
1292	overview		
1293	view channel		
1294	dry channel		
1295	cattails		
1296	cattails no water		
1297	tree cover - no water potholes		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater

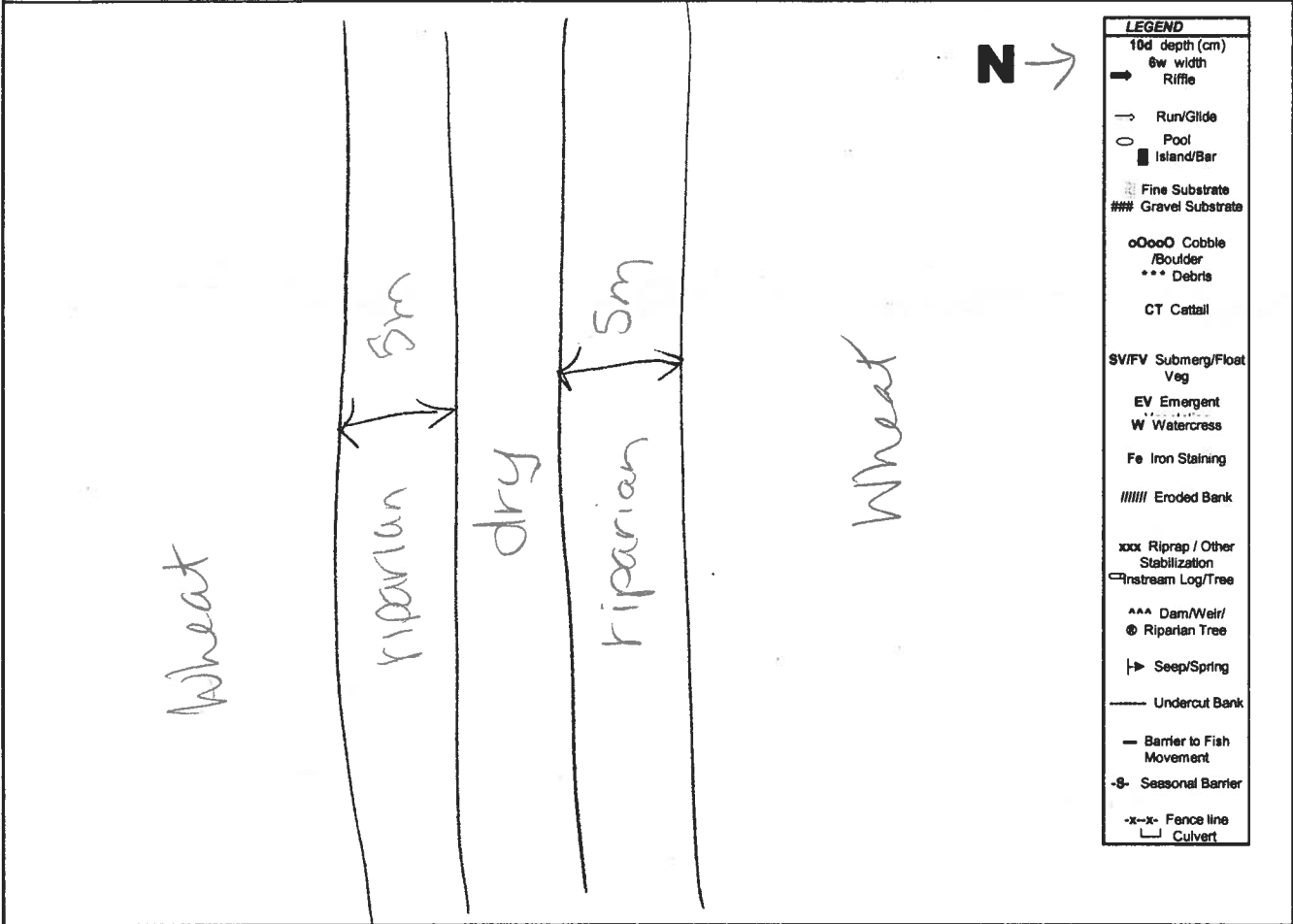
Land Parcel#

2174

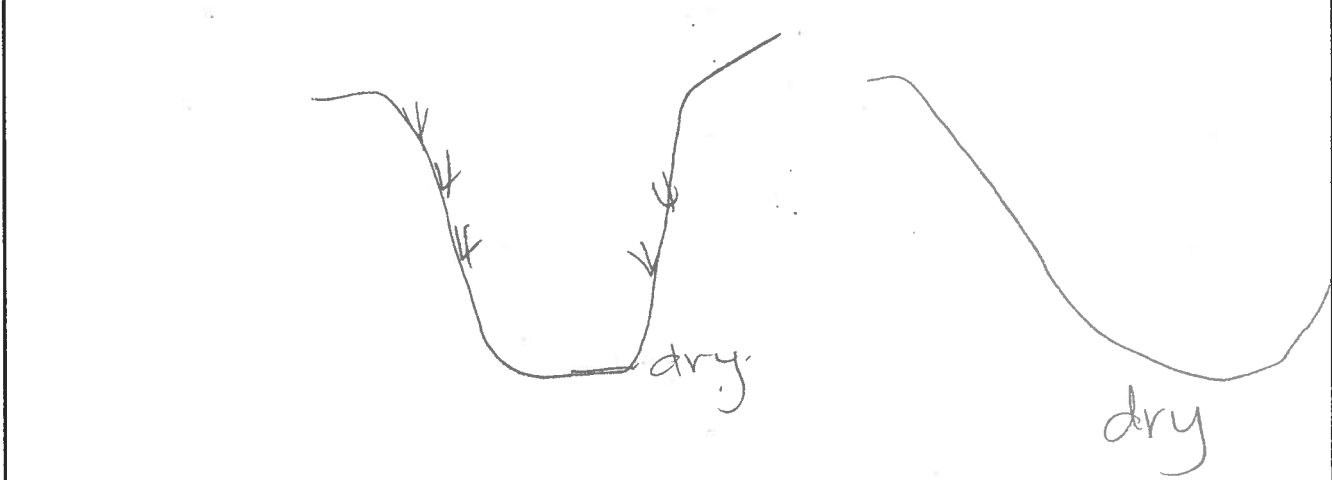
Turbine #

~~SMN 444-6162~~

C78



Horizontal View of Channel



AECOM

Field Crew:

SA, Blm

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1068 Turbine # GE69-SMN 45 C74

Date: July 18/2011 Start time: 14:00 End Time: 14:25

Weather Conditions: Sunny, very windy

Field Notes By:

SA

Site Location

West of Mollard Rd.

UTM Co-ordinates

Easting: 437085 Northing: 4788793 Description:

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)

dry channel

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:

no water
no WQ

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):

☒

Mean Bankfull Width (m):

1.50

Mean Wetted Depth (m):

☒

Mean Bankfull Depth (m):

0.60

Stable

Slightly unstable

Moderately unstable

Unstable

Left Bank

☒
☐
☐
☐

Right Bank

☒
☐
☐
☐

Flow Description:

no 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 = Sa

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

none

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	40			30		

*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

5

Shrubs

5

Man-made structures

Grasses

30

Herbaceous

30

Other

Notes:

Obstructions to Fish Passage

No Obstructions

☐

Man-Made

☐

Natural

☐

Description:

how flow

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

C74

AECOM

Page 3 of 4

Other General Comments Regarding the Study Area:

Willow trees
100% cover
substrate Sand + silt was wet- when stepped in

Photolog

Picture #	Description	Picture #	Description
302	overview pic		
303	overview		
304	facing d/s		
305	facing u/s		

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

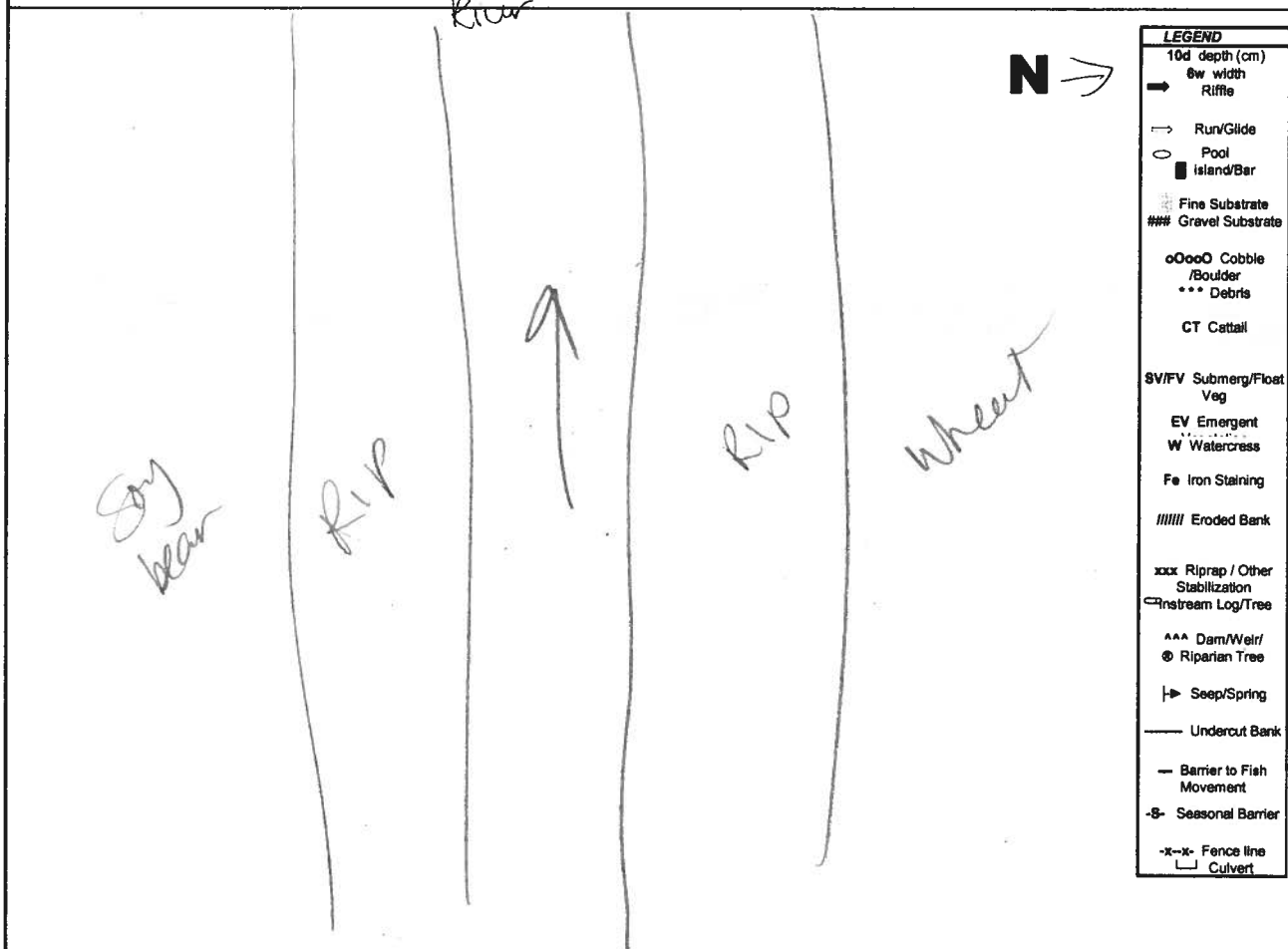
Bluewater Land Parcel#

1068

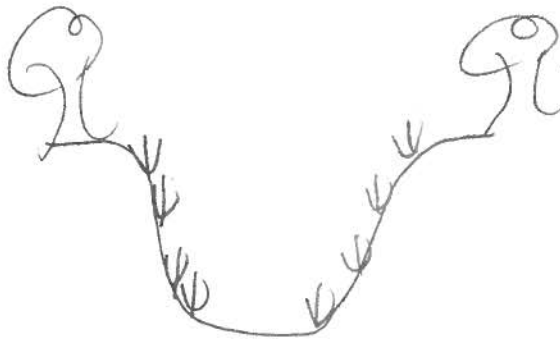
Turbine #

~~6751-150000~~

C74



Horizontal View of Channel



AECOM

Page 1 of 3

Field Crew:

SA, BG

General Information

Study Area: Jericho

Goshen

Bluewater

Land Parcel#

1068

Turbine #

~~0122~~ ~~0123~~ ~~0124~~ ~~0125~~ ~~0126~~ ~~0127~~ ~~0128~~ ~~0129~~ ~~0130~~ ~~0131~~ ~~0132~~ ~~0133~~ ~~0134~~ ~~0135~~ ~~0136~~ ~~0137~~ ~~0138~~ ~~0139~~ ~~0140~~ ~~0141~~ ~~0142~~ ~~0143~~ ~~0144~~ ~~0145~~ ~~0146~~ ~~0147~~ ~~0148~~ ~~0149~~ ~~0150~~ ~~0151~~ ~~0152~~ ~~0153~~ ~~0154~~ ~~0155~~ ~~0156~~ ~~0157~~ ~~0158~~ ~~0159~~ ~~0160~~ ~~0161~~ ~~0162~~ ~~0163~~ ~~0164~~ ~~0165~~ ~~0166~~ ~~0167~~ ~~0168~~ ~~0169~~ ~~0170~~ ~~0171~~ ~~0172~~ ~~0173~~ ~~0174~~ ~~0175~~ ~~0176~~ ~~0177~~ ~~0178~~ ~~0179~~ ~~0180~~ ~~0181~~ ~~0182~~ ~~0183~~ ~~0184~~ ~~0185~~ ~~0186~~ ~~0187~~ ~~0188~~ ~~0189~~ ~~0190~~ ~~0191~~ ~~0192~~ ~~0193~~ ~~0194~~ ~~0195~~ ~~0196~~ ~~0197~~ ~~0198~~ ~~0199~~ ~~0200~~ ~~0201~~ ~~0202~~ ~~0203~~ ~~0204~~ ~~0205~~ ~~0206~~ ~~0207~~ ~~0208~~ ~~0209~~ ~~0210~~ ~~0211~~ ~~0212~~ ~~0213~~ ~~0214~~ ~~0215~~ ~~0216~~ ~~0217~~ ~~0218~~ ~~0219~~ ~~0220~~ ~~0221~~ ~~0222~~ ~~0223~~ ~~0224~~ ~~0225~~ ~~0226~~ ~~0227~~ ~~0228~~ ~~0229~~ ~~0230~~ ~~0231~~ ~~0232~~ 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Habitat						
Instream Cover (%)						
None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	30			15		
*Aquatic Vegetation Types Present (algae, submergent, emergent etc.)						
Canopy Cover (% closed cover):				Types of Cover (% cover)		
100-90%	☐	30-1%	☐	Trees	20	Shurbs
90-60%	☒	0%	☐	Grasses	30	Herbaceous
60-30%	☒				30	Man-made structures
						Other
Notes:						
Obstructions to Fish Passage				Drainage Features within Study Area		
No Obstructions ☐ Man-Made ☐ Natural ☐				Observations of Land Topography: flat.		
Description: none observed low flow barrier						
Terrestrial features present: yes No						
Other Comments:						
Photolog						
Picture #	Description	Picture #	Description			

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Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater

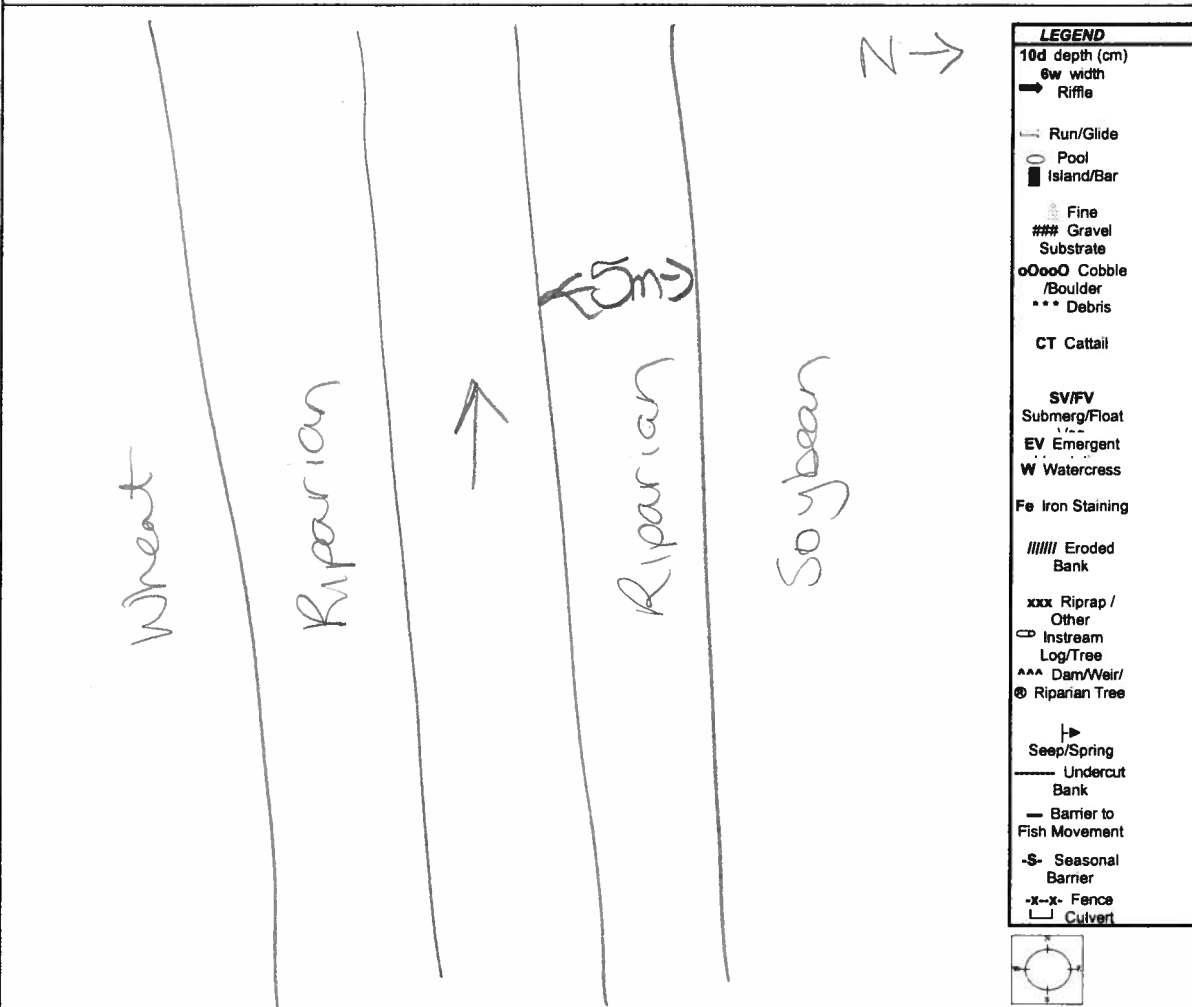
Land Parcel#

1068

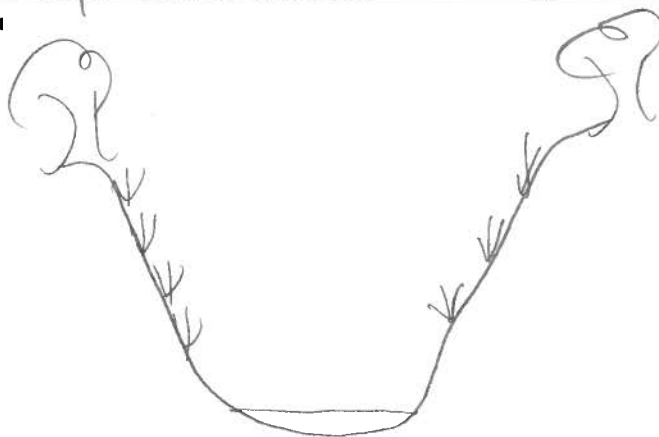
Turbine #

~~C74~~

C75



Horizontal View of Channel



C75

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Field Crew:

SA, BG

General Information

Study Area: Jericho Goshen Bluewater Land Parcel# 1068 Turbine # 5170-SMA-48
 Date: July 13/2011 Start time: 14:35 End Time: 14:45

Weather Conditions: sunny
very windy

Field Notes By:

SA

Site Location

West from Mollard Rd.

UTM Co-ordinates

Easting: 0437034 Northing: 4788596 Description: 60870
 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)

water in channel

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: maybe watercress in channel

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m): 1.00 Mean Bankfull Width (m):
 Mean Wetted Depth (m): 0.40 Mean Bankfull Depth (m):

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

Flow Description:

water in channel very low flow

Notes:

banks are high & steep well vegetated
large trees, shrubs, herbaceous & grasses

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Stream Morphology (continued)

Substrate (< = >)

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

Description

Sa & Si

Morphological Structure (%)

Pool	Riffle	Run	Flat
			100

Notes:

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	50			20		

*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

5

Shrubs

15

Man-made structures

Grasses

20

Herbaceous

50

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:

flat
not sloping towards
water course

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

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Other General Comments Regarding the Study Area:

Photolog

Picture #	Description	Picture #	Description
	d/s		
	u/s		
	potential WC		
	view of channel facing d/s		

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Watercourse Sketch

Study Area:

Jericho

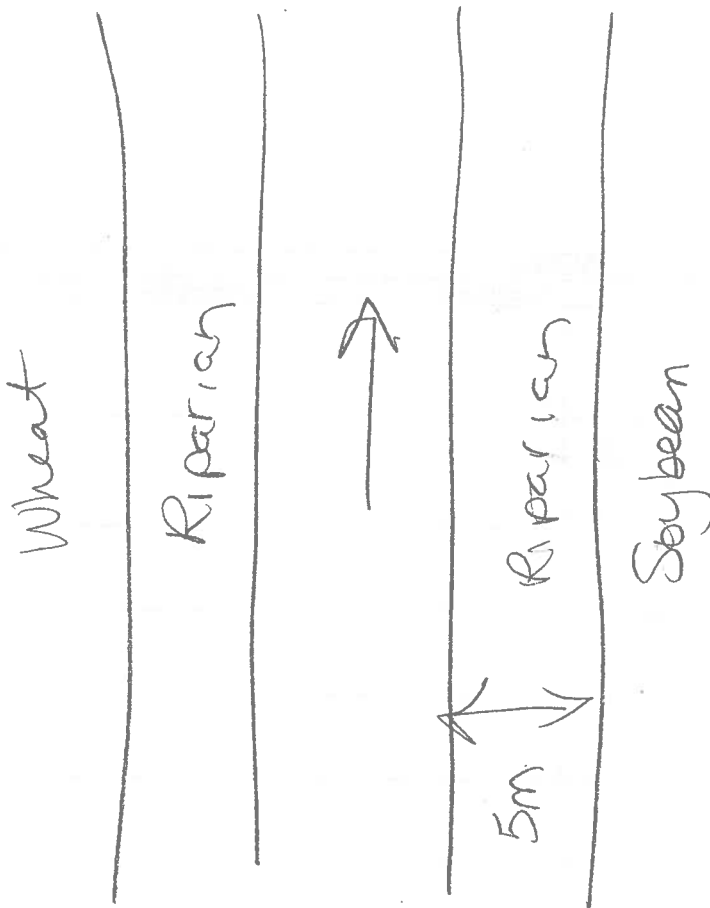
Goshen

Bluewater Land Parcel#

1068

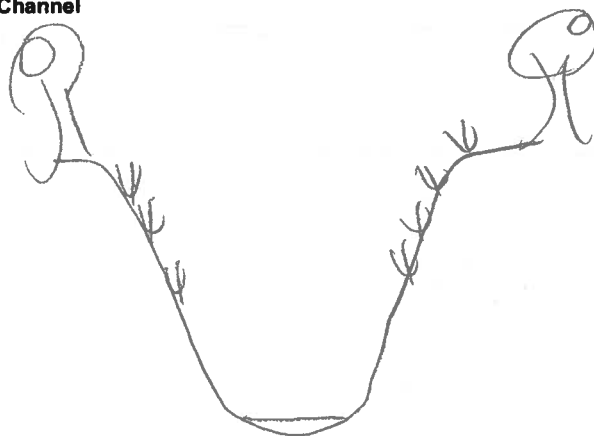
Turbine #

~~6770~~ C75



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

Horizontal View of Channel



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Field Crew:

SA, BG

General Information

Study Area: Jericho Gosher Bluewater Land Parcel# 1068 Turbine # 61714
 Date: July 13/2011 Start time: 15:00 End Time: 15:20

Weather Conditions: Sunny, WindyField Notes By: SA

Site Location

West of Mollard Rd., North of Greenway Dr

UTM Co-ordinates:

Easting: <u>437914</u>	Northing: <u>478 7869</u>	Description:
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)

there was water in channel

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:

Stream Morphology

Site Length (m):

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):	<u>0.30</u>	Mean Bankfull Width (m):	<u>1.50</u>
Mean Wetted Depth (m):	<u>0.05</u>	Mean Bankfull Depth (m):	<u>0.30</u>

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

Flow Description:

standing water, no flow

Notes:

very stable, well vegetated banks

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Stream Morphology (continued)

Substrate (<=>)

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

Description

Sa = Si

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

none

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	20			30		

*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

10

Shrubs

15

Man-made structures

Grasses

20

Herbaceous

20

Other

Notes:

Obstructions to Fish Passage

No Obstructions ☐
Natural ☐

Man-Made

☐

Description:

Low flow

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

C76

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Other General Comments Regarding the Study Area:

Photolog

Picture #	Description	Picture #	Description

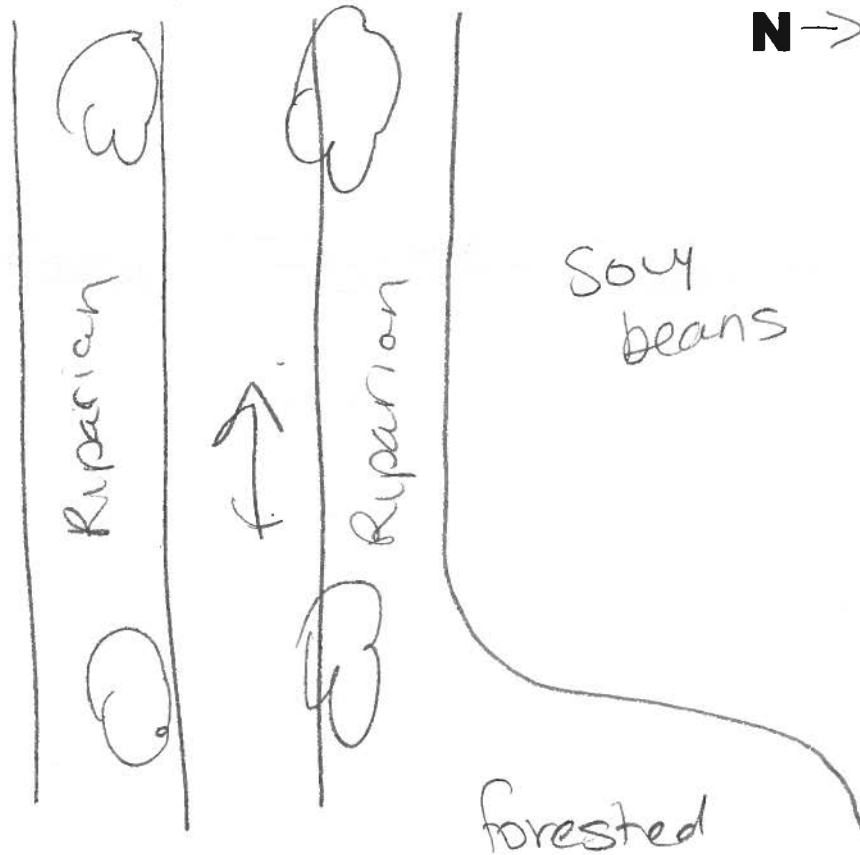
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Watercourse Sketch

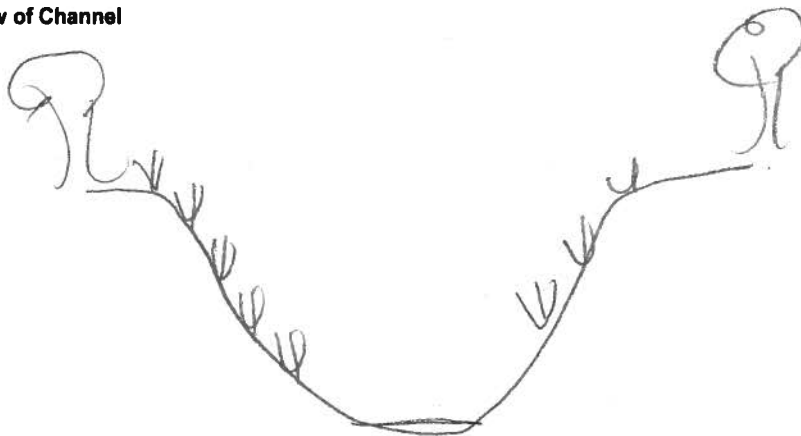
Study Area: Jericho Bosham Bluewater Land Parcel# 1068 Turbine# 511714599116

C76



LEGEND	
10d depth (cm)	
6w width	
Riffle	
Run/Glide	
Pool	
Island/Bar	
Fine Substrate	
Gravel Substrate	
Cobble/Boulder	
Debris	
Cattail	
Submerg/Floater Veg	
Emergent	
Watercress	
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



Water Bodies Assessment Field Collection Form

C78

Page 1 of 4

AECOM

General Information

Study Area: Jericho	Goshen	Bluewater	Land Parcel# by GSH 1068	Site ID: D02
Date: April 18/12	Start time: 7:00	End Time: 8:35		
Weather Conditions: Sunny, 5°C		Field Crew: C. Boros, S. Lohmes		
		Field Notes By: C. Boros		

Site Location

Greenway drive, +1's w Hagimier Rd.

UTM Co-ordinates (continue on page 3 if necessary)

Easting: 0437851	Northing: 4787448	Description: North end Start
Easting: 0438106	Northing: 4787487	Description: South-end
Easting:	Northing:	Description:
Easting:	Northing:	Description:

Surrounding Land Use

Residential ☐	Meadow ☐
Agriculture ☒	Wetland ☐
Forest ☐	Livestock ☐
Other ☐	
Description: also roadside	

Type of Watercourse

Intermittent ☐	Channelized ☒
Permanent ☒	Natural Channel ☐
Ephemeral ☐	
Description:	

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

- only at ~~the~~ portion, after the fork in watercourse east

Is any portion of the water body underground or not as mapped? Y / (N)

If Yes describe:

GPS Coordinate: Easting -

Northing -

Description -

Description of Land Topography Surrounding Water Body (rolling hills, sloping towards water body)

crop field flat, adjacent road

In-Situ Water Quality

WT (°C): 3.31	AT (°C): 5°C
pH: 7.23	Cond (µs/cm): 533
D.O. (mg/L): 8.9	
Water Clarity: Clear ☒	Turbid ☐
Water Colour: clear	
Notes:	

Ground Water and Seepage Indicators

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

Water Bodies Assessment Field Collection Form

Stream Morphology																				
Site Length (m): 300m				Bank Stability:																
Channel Dimensions				<table border="1" style="width:100%; text-align: center;"> <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	☒	☐	☐	☐																
Mean Wetted Width (m): 1	Mean Wetted Depth (m): 0.10		Description: well veg banks																	
Mean Bankfull Width (m): 1.4	Mean Bankfull Depth (m): 0.5																			
Mean Top of Bank Width (m): 3	Mean Top of Bank Depth (m): 2																			
Flow Description: (high or low flow conditions, stagnant, etc)																				
visible flow only observed in one location in west end, all other areas stagnant → low flow observed in west East end as there is tile drain input																				
Habitat																				
Substrate (<=>)		Morphological Structure (%)																		
Bo - Boulder Co - Cobble Gr - Gravel Sa - Sand Si - Silt Cl - Clay MK - Muck DT - Detritus		<table border="1" style="width:100%; text-align: center;"> <tr> <td>Pool</td> <td>Riffle</td> <td>Run</td> <td>Flat</td> </tr> <tr> <td></td> <td></td> <td></td> <td>100</td> </tr> </table>				Pool	Riffle	Run	Flat				100							
		Pool	Riffle	Run	Flat															
			100																	
Description: si, cl, mk		Notes: straight channel																		
Instream Cover (%)																				
Other	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	None	Undercut Banks														
				90%		Average Depth: (% Cover)														
Note: Low = 0 - 30%; Moderate = 30 - 75%; High = 75 - 100%																				
*Aquatic Vegetation Species Present (algae, submergent, emergent etc.)																				
70% cattail 5% algae 15% grasses, shrubs																				
Canopy Cover (% closed cover):				Types of Cover (% cover)																
100-90%	☐	30-1%	☐	Trees	Shrubs 50	Man-made structures														
90-60%	☐	0%	☐	Grasses 50	Herbaceous	Other														
60-30%	☒ potential																			
Note: Low = 0 - 30%; Moderate = 30 - 60%; High = 60 - 100%																				
Notes: (vegetation species, types of structures)																				
trees present but no leaves - in trees , cattail, shrub																				
Riparian Vegetation																				
Width of riparian vegetation: South - 1m grasses North - grasses, 1m, roadside																				
Description of vegetation community surrounding 30 m from watercourse:																				
grasses, some trees.																				
Obstructions to Fish Passage																				
No Obstructions	☒	Man-Made	☐	Natural	☐	Low Flow Barrier														
Description of Barrier: → potential low flow barrier																				
Height of Barrier (m)				GPS Coordinates:																

AECOM

Date: April 18, 2012

Land Parcel/Site ID:

GSH1068
D02

Page 3 of 4

Other General Comments Regarding the Study Area:

- No pools observed.
- Standing water in culvert under Hagenmuer Road.
- golden saxifrage observed at bend

Additional UTM Coordinates:

Watercourse straight channelized feature with high
instream cover (cattail), soft substrate.

Photo log			
Picture #	Description	Picture #	Description
1	at west end looking west East		
2-3	Culvert at Hagenmuer Rd		
4-7	Overview		
8-9	Fork of watercourse		
10	15 m past (East) ^{watercourse} of fork		

Water Bodies Assessment Field Collection Form

C78

AECOM

Page 4 of 4

Study Area:

Jericho

Goshen

Bluewater

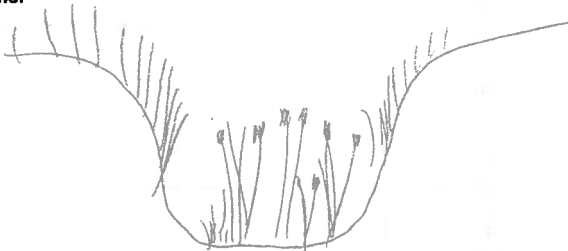
Land Parcel# 1068

Site ID

D02



Horizontal View of Channel



Initial QA/QC By: AMS

Date: Apr. 19/12

Technical QA/QC By: Sautkin Date: May 3/12

AECOM		Page 1 of 4	
		Field Crew: SA, BG	
General Information			
Study Area:	Jericho <u>Goshen</u> Bluewater	Land Parcel# <u>1019</u>	Turbine # <u>673 (C78)</u>
Date: <u>July 13 - 2011</u>	Start time: <u>5:18 PM</u>	End Time: <u>5:25</u>	
Weather Conditions: <u>Sunny, ~30°C</u>		Field Notes By: <u>SA</u>	
Site Location			
<u>Greenway Dr, East of Mollard Rd.</u>			
UTM Co-ordinates			
Easting: <u>438826</u>	Northing: <u>4787374</u>	Description: <u>Goshen</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>Chocked cattail Channel</u> <u>moist substrates</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>dry channel, some areas of standing water</u>			
Stream Morphology			
Site Length (m):		Bank Stability:	
Channel Dimensions			
Mean Wetted Width (m): <u> </u>	Mean Bankfull Width (m): <u>2.00</u>	Stable ☒	Slightly unstable ☐
Mean Wetted Depth (m): <u> </u>	Mean Bankfull Depth (m): <u>0.50</u>	Left Bank ☒	Moderately unstable ☐
		Right Bank ☒	Unstable ☐
Flow Description: <u>no 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

Si

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

None

Habitat

Instream Cover (%)

None	Woody Debris	Boulders	Cobble	Aquatic Vegetation*	Undercut Bank	Other:
	/	/	/	75	/	

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

Choked w cattails

Canopy Cover (% closed cover):

100-90%

☐

30-1%

☐

90-60%

☒

0%

☐

60-30%

☐

Types of Cover (% cover)

Trees

5

Shurbs

Man-made structures

Grasses

20

Herbaceous

20

Other

Notes:

Obstructions to Fish Passage

No Obstructions

☐

Man-Made

☐

Natural

☐

Description:

low flow barrier

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

C78

C78

AECOM

~~SEIS~~

Page 3 of 4

Other General Comments Regarding the Study Area:

Photolog

Picture #	Description	Picture #	Description

C78

AECOM

Page 4 of 4

Watercourse Sketch

Study Area:

Jericho

Goshen

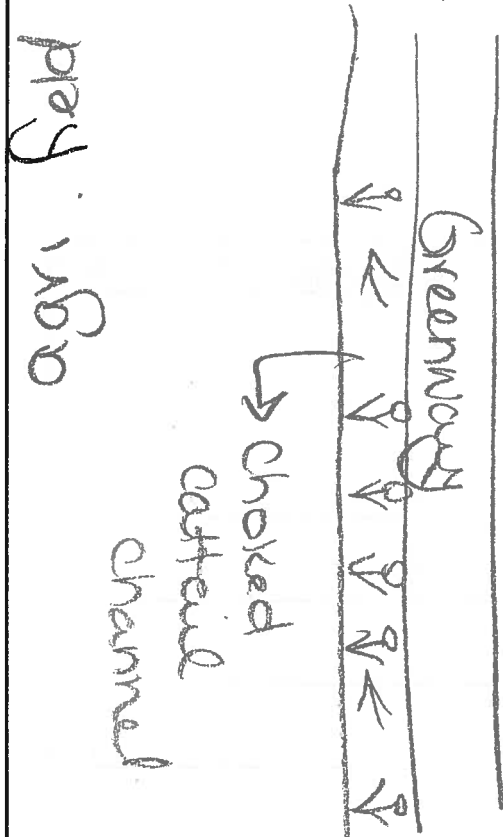
Bluewater

Land Parcel#

1019

Turbine #

C78



LEGEND	
10d depth (cm)	
9w width	
Riffle	→
Run/Glide	→
Pool	○
Island/Bar	■
Fine Substrate	□
Gravel Substrate	###
Cobble/Boulder	o o o o o
Debris	***
Cattail	CT
Submerg/Float 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

C80

AECOM		Page 1 of 4																
		Field Crew: SA, Blg																
General Information																		
Study Area:	Jericho <u>Goshen</u> Bluewater	Land Parcel#	1091															
Date:	July 14/2011	Start time:	8:15															
		Turbine #	6EL6 / SMN42															
Weather Conditions: Sunny. ~18°C		Field Notes By: SA																
Site Location																		
entered from Eaglecrest Rd through Corn field																		
UTM Co-ordinates																		
Easting:	0437925	Northing:	4787473															
		Description:	Goshen															
Easting:		Northing:																
		Description:																
Easting:		Northing:																
		Description:																
Easting:		Northing:																
		Description:																
Surrounding Landuse/Pollution Sources		Type of Watercourse																
Residential ☐	Meadow ☐	Intermittent ☒	Channelized ☐															
Agriculture ☒ W	Wetland ☐	Permanent ☐	Natural Channel ☐															
Forest ☒ E	Livestock ☐	Ephemeral ☐																
Other:																		
Notes: (include any inputs into the system i.e. tile drainage, seepages, overland flow)																		
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 water, no water flow																		
Stream Morphology																		
Site Length (m):		Bank Stability:																
Channel Dimensions																		
Mean Wetted Width (m):	0.30	Mean Bankfull Width (m):	2.00															
Mean Wetted Depth (m):	0.05	Mean Bankfull Depth (m):	0.70															
		<table border="0" style="width: 100%;"> <tr> <td></td> <td style="text-align: center;">Stable</td> <td style="text-align: center;">Slightly unstable</td> <td style="text-align: center;">Moderately unstable</td> <td style="text-align: center;">Unstable</td> </tr> <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> </table>			Stable	Slightly unstable	Moderately unstable	Unstable	Left Bank	☒	☐	☐	☐	Right Bank	☒	☐	☐	☐
	Stable	Slightly unstable	Moderately unstable	Unstable														
Left Bank	☒	☐	☐	☐														
Right Bank	☒	☐	☐	☐														
Flow Description:																		
no flow, standing water ~0.05m deep																		
Notes: stable 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 > Co

Morphological Structure (%)

Pool	Riffle	Run	Flat

Notes:

none
low flow disconnected

Habitat

Instream Cover (%)

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

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

attached & floating algae

Canopy Cover (% closed cover):

100-90%



30-1%



90-60%



0%



60-30%



Types of Cover (% cover)

Trees

80

Shrubs

15

Man-made structures

Grasses

Herbaceous

15

Other

Notes:

Obstructions to Fish Passage

No Obstructions



Man-Made



Natural



Description:

low flow

Drainage Features within Study Area

Observations of Land Topography within 120 m buffer area:

relatively 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:

U/S of farm culvert channel is dry
 areas of pooled water
 low flow disconnect

Photolog

Picture #	Description	Picture #	Description
1	U/S	12	facing U/S
2	d/S	13	facing d/S
3	overview to W	14	U/S - dry channel
4	overview to south	15	d/S - dry channel
5	algae in standing water		
6	facing d/S woody debris		
7	facing U/S		
8	facing d/S		
9	view of channel		
10	facing d/S w		
11	facing d/S		

AECOM

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Watercourse Sketch

Study Area:

Jericho

Goshen

Bluewater Land Parcel#

1091

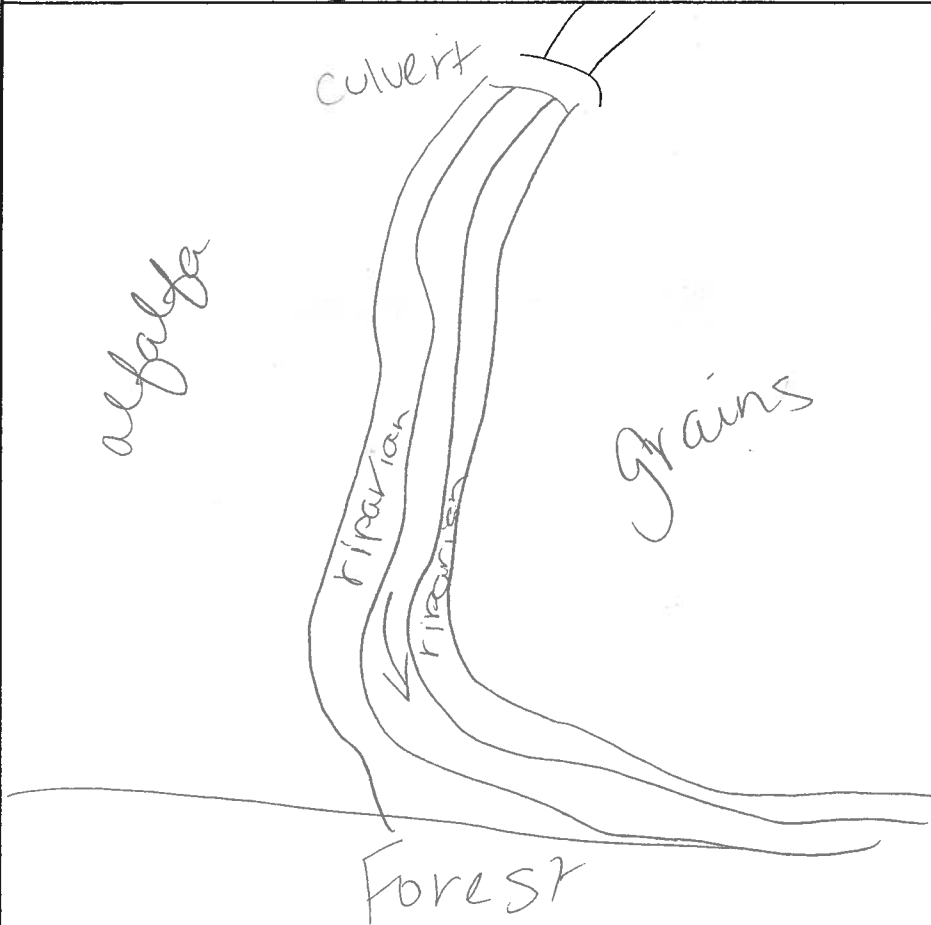
Turbine #

GF 65 / SMN 42

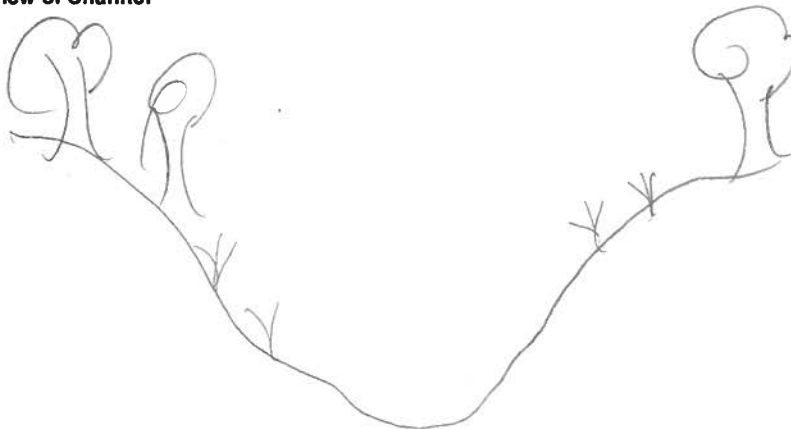
LEGEND

10d depth (cm)	10d depth (cm)
6w width	6w width
Riffle	Riffle
Run/Glide	Run/Glide
Pool	Pool
Island/Bar	Island/Bar
Fine Substrate	Fine Substrate
Gravel Substrate	Gravel Substrate
Cobble/Boulder	Cobble/Boulder
Debris	Debris
CT Cattail	CT Cattail
SV/FV Submerg/Float Veg	SV/FV Submerg/Float Veg
EV Emergent	EV Emergent
W Watercress	W Watercress
Fe Iron Staining	Fe Iron Staining
Eroded Bank	Eroded Bank
Riprap / Other Stabilization	Riprap / Other Stabilization
Instream Log/Tree	Instream Log/Tree
Dam/Weir	Dam/Weir
Riparian Tree	Riparian Tree
Seep/Spring	Seep/Spring
Undercut Bank	Undercut Bank
Barrier to Fish Movement	Barrier to Fish Movement
Seasonal Barrier	Seasonal Barrier
Fence line	Fence line
Culvert	Culvert

N



Horizontal View of Channel



AECOM

Page 1 of 4

Field Crew: SA, TS

General Information

Study Area: Jericho

Goshen

Bluewater

Land Parcel# 1091

Turbine # C80

Date: Dec 22/11

Start time: 11:50

End Time: 11:20

Weather Conditions: Sunny

Field Notes By: SA

Site Location

located east of Mollard Line

UTM Co-ordinates

Easting: _____ Northing: _____ Description: C80-A (Start)

Easting: _____ Northing: _____ Description: C80TD (Tile Drain)

Easting: _____ Northing: _____ Description: C80B (End)

Easting: _____ Northing: _____ Description: _____

Surrounding Landuse/Pollution Sources

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

Intermittent ☐ Channelized ☒
 Permanent ☐ Natural Channel ☐
 Ephemeral ☐

Other: _____

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

- tile drain - lots of water

In-Situ Water Quality

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

Ground Water Indicators

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

Notes: _____

Stream Morphology

Site Length (m): _____

Bank Stability:

Channel Dimensions

Mean Wetted Width (m):	1.35	Mean Bankfull Width (m):	2.5
Mean Wetted Depth (m):	0.22	Mean Bankfull Depth (m):	0.60

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

Flow Description: high flow

well vegetated banks

Notes: TOB W - 3m
 TOB H - 2.5m

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 = Si > Gr

Notes:

Morphological Structure (%)

Pool	Rifle	Run	Flat
10	20	20	10

Habitat

Instream Cover (%)

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

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

- large & small woody debris
- overhanging & fallen shrubs

Canopy Cover (% closed cover):

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

Types of Cover (% cover)

Trees 5 Shrubs 10 Man-made structures _____
Grasses 30 Herbaceous 30 Other _____

Notes:

ash, apple; dogwood, grasses, asters, goldenrods

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:

relatively flat

Terrestrial features Present

Yes

No

Terrestrial Recon Form Filled out

Yes

No

C80