

**TETLP OPEN PROJECT  
STREAM SUMMARY**

A12-52-51 (1-9)  
(10-18)

OPEN Facility:  30"  36" MP: 69.8  Compressor Station

Observers: J Gravel, J Balduz Date: 7/12/12

Town: Switzerland Twn. County: Monroe

Crossing Name/ID: A12-52-51 Recent Rain Event (date/amount): Dry spell

**Flow Characteristics**

Bank Full Width (average): 140" Flow Conditions:  Flowing  Subsurface  Moist Channel  Dry

<u>Flow Type</u>		<u>Flow Velocity</u>		<u>Comments:</u>
<input type="checkbox"/> Perennial	<input type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential	<input type="checkbox"/> Mod/Slow	
<input checked="" type="checkbox"/> Interstitial	<input type="checkbox"/> Ephemeral	<input type="checkbox"/> Fast	<input type="checkbox"/> Eddies	<input checked="" type="checkbox"/> No Flow

Max Pool Depth:  > 40 cm/15.8 in  < 40 cm/15.8 in Max Pool Depth: 5"

Max Run Depth: 2.5"

Riffle and Pool Width:  Same  Wider Pool  Wider Riffle

**Channel and Bank Characteristics**

<u>Channel Substrate %:</u>	<u>Origin</u>	<u>Quality</u>	<u>Bank Height</u>
30 BLDR Slab ✓	<input checked="" type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	1' ft
___ Boulder	<input type="checkbox"/> Tills	<input type="checkbox"/> High	<b>Bank Erosion</b>
___ Bedrock	<input type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	<b>L R</b>
40 Cobble ✓	<input type="checkbox"/> Hardpan	<input type="checkbox"/> Normal	<input checked="" type="checkbox"/> None- Some
38 Gravel ✓	<input type="checkbox"/> Sandstone	<input checked="" type="checkbox"/> Free	<input type="checkbox"/> Moderate
20 Sand ✓	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input type="checkbox"/> High-Severe
___ Silt Mud	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
___ Clay Hardpan	<input type="checkbox"/> Shale	<input type="checkbox"/> Moderate	
___ Peat-Muck	<input type="checkbox"/> Coal Fines	<input type="checkbox"/> Normal	
___ Artificial		<input checked="" type="checkbox"/> None	
2 Woody/Leaf Debris ✓			
___ Fine Detritus			

Embedded Riffle/Run: NO

**Stream Cover**

<u>Instream Cover</u> (presence 0-3 [ranges 0, 1-33%, 33-66%, 66-100%])	<u>Instream Total Cover</u>	<u>Canopy Cover</u>
0 Undercut Bank	1 Boulders	<input checked="" type="checkbox"/> 90-100% Closed
0 Overhanging Veg.	0 Backwater	<input type="checkbox"/> 70-90%
0 Shallows (slow moving)	0 Aquatic Macrophytes	<input type="checkbox"/> 45-70%
0 Rootmats	1 Logs or Woody Debris	<input type="checkbox"/> 10-45%
1 Rootwads		<input type="checkbox"/> 0-10% Open

**Stream Morphology and Riparian Zone**

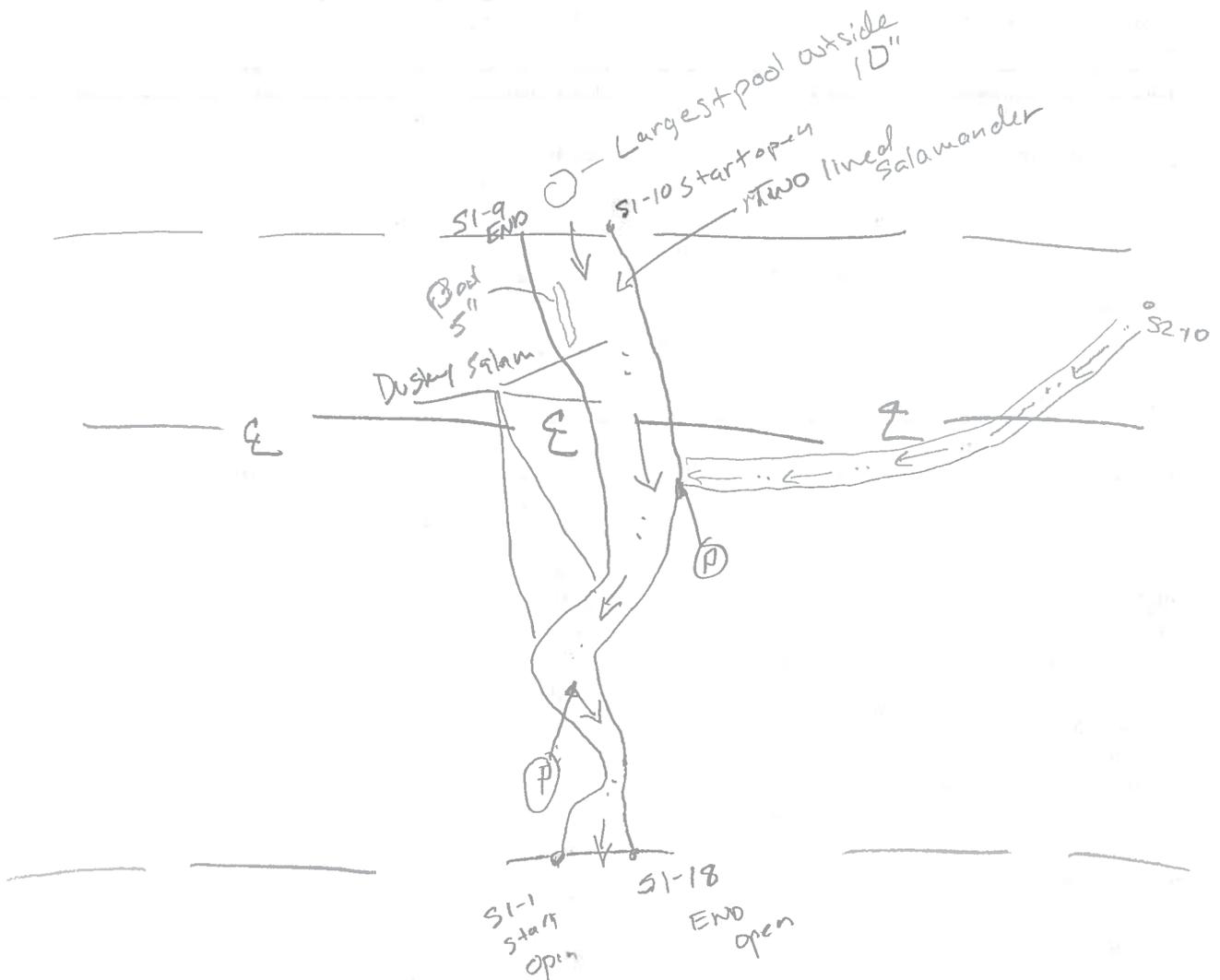
<u>Sinuosity</u>	<u>Gradient</u> (estimate)	<u>Riparian Zone</u> (Right/Left)	<u>Flood Plain Quality</u>
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	<input checked="" type="checkbox"/> Wide >50 m	<input checked="" type="checkbox"/> Forested
<input type="checkbox"/> Mod	<input type="checkbox"/> Mod Flat	<input type="checkbox"/> Mod 10-50 m	<input type="checkbox"/> Shrub or old field
<input checked="" type="checkbox"/> Low	<input checked="" type="checkbox"/> Mod (2/100 ft)	<input type="checkbox"/> Narrow 5-10 m	<input type="checkbox"/> Hay field
<input type="checkbox"/> None	<input type="checkbox"/> Mod Severe	<input type="checkbox"/> Very Narrow <5	<input type="checkbox"/> Active Pasture
# of Bends 1	<input type="checkbox"/> Severe (10/100 ft)		<input type="checkbox"/> Row crops
			<input type="checkbox"/> Development

**Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):**

- ① 5 Dusky
- ② 5 Twoline (2 Juvenile, 3 Adult)
- ③ Crayfish

STREAM SKETCH

STA: 3691+00  
MP: 69.8



SI TOP	S2 @	
(1-9)	(1-10)	In SI
(10-18)		

Checklist:

- Stream ID# = A12-52-S1
- North arrow.
- Detailed sketch of stream (Riffle, Run, Pool).
- Natural and man-made features - roads, culverts, outcrops, structures, etc.
- Photo locations.
- Location of important wildlife sign.

**TTLP OPEN PROJECT**  
**STREAM SUMMARY**  
 Sta: 3800 to 0

Extension

OPEN Facility:  30"     36"    MP:     Compressor Station

Observers: L. Leclerc, K. Caron    Date: 4/16/13

Town: Switzerland Township    County: Monroe

Crossing Name/ID: A12-52-S1 Extension    Recent Rain Event (date/amount): 4/12/13 <1/4" of rain

**Flow Characteristics**

Bank Full Width (average): 20'    Flow Conditions:  Flowing     Subsurface     Moist Channel     Dry

<u>Flow Type</u>	<u>Flow Velocity</u>	<u>Comments:</u>
<input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential <input checked="" type="checkbox"/> Mod/Slow	
<input type="checkbox"/> Interstitial <input type="checkbox"/> Ephemeral	<input type="checkbox"/> Fast <input type="checkbox"/> Eddies	

Max Pool Depth:     > 40 cm/15.8 in     < 40 cm/15.8 in    Max Pool Depth: 7"

Max Run Depth: 4"

Riffle and Pool Width:     Same     Wider Pool     Wider Riffle

**Channel and Bank Characteristics**

<u>Channel Substrate %:</u>	<u>Origin</u>	<u>Quality</u>	<u>Bank Height</u>
<input type="checkbox"/> BLDR Slab	<input type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	<u>3</u> ft
<u>2</u> Boulder <input checked="" type="checkbox"/>	<input type="checkbox"/> Tills	<input type="checkbox"/> High	<b>Bank Erosion</b>
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	<b>L R</b>
<u>15</u> Cobble <input checked="" type="checkbox"/>	<input type="checkbox"/> Hardpan	<input checked="" type="checkbox"/> Normal	<input checked="" type="checkbox"/> None- Some
<u>56</u> Gravel <input checked="" type="checkbox"/>	<input type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input type="checkbox"/> <input checked="" type="checkbox"/> Moderate
<input type="checkbox"/> Sand	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input type="checkbox"/> <input type="checkbox"/> High-Severe
<u>5</u> Silt Mud <input checked="" type="checkbox"/>	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<input type="checkbox"/> Clay Hardpan	<input checked="" type="checkbox"/> Shale	<input type="checkbox"/> Moderate	
<input type="checkbox"/> Peat-Muck	<input type="checkbox"/> Coal Fines	<input checked="" type="checkbox"/> Normal	
<input type="checkbox"/> Artificial		<input type="checkbox"/> None	
<u>20</u> Woody/Leaf Debris <input checked="" type="checkbox"/>			
<u>2</u> Fine Detritus <input checked="" type="checkbox"/>			

Embedded Riffle/Run: yes

**Stream Cover**

<u>Instream Cover</u> (presence 0-3 [ranges 0, 1-33%, 33-66%, 66-100%])	<u>Instream Total Cover</u>	<u>Canopy Cover</u>
<u>1</u> Undercut Bank	<input type="checkbox"/> Extensive 25-75%	<input type="checkbox"/> 90-100%    Closed
<input type="checkbox"/> Overhanging Veg.	<input type="checkbox"/> High 25-75%	<input checked="" type="checkbox"/> 70-90%
<input type="checkbox"/> Shallows (slow moving)	<input checked="" type="checkbox"/> Mod. 5-25%	<input type="checkbox"/> 45-70%
<input type="checkbox"/> Rootmats	<input type="checkbox"/> Low <5%	<input type="checkbox"/> 10-45%
<input type="checkbox"/> Rootwads		<input type="checkbox"/> 0-10%    Open
<u>1</u> Boulders		
<input type="checkbox"/> Backwater		
<input type="checkbox"/> Aquatic Macrophytes		
<u>1</u> Logs or Woody Debris		

**Stream Morphology and Riparian Zone**

<u>Sinuosity</u>	<u>Gradient (estimate)</u>	<u>Riparian Zone (Left/Right)</u>	<u>Flood Plain Quality</u>
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	<b>L R</b>	<input checked="" type="checkbox"/> Forested
<input type="checkbox"/> Mod	<input checked="" type="checkbox"/> Mod Flat	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Wide >50 m	<input type="checkbox"/> Shrub or old field
<input type="checkbox"/> Low	<input type="checkbox"/> Mod (2/100 ft)	<input type="checkbox"/> Mod 10-50 m	<input type="checkbox"/> Hay field
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mod Severe	<input type="checkbox"/> Narrow 5-10 m	<input type="checkbox"/> Active Pasture
	<input type="checkbox"/> Severe (10/100 ft)	<input type="checkbox"/> Very Narrow <5	<input type="checkbox"/> Row crops
# of Bends <u>0</u>			<input type="checkbox"/> Development

**Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):**

water striders, limpet

STREAM SKETCH

Sta 3800 +00 4/16/13



S1

18A-18H  
1A-1H

Photo - limpet

Checklist:

- Stream ID# = A12-52-S1 Extension
- North arrow.
- Detailed sketch of stream (Riffle, Run, Pool).
- Natural and man-made features - roads, culverts, outcrops, structures, etc.
- Photo locations.
- Location of important wildlife sign.

**TETLP OPEN PROJECT  
STREAM SUMMARY**

STAB 800+00

OPEN Facility:  30"  36" MP:  Compressor Station  
 Observers: JG Date: 6/26/13  
 Town: Switzerland County: Monroe  
 Crossing Name/ID: A112-52-51 extension Recent Rain Event (date/amount): ~1" 6/26/13

**Flow Characteristics**

Bank Full Width (average): 15' Flow Conditions:  Flowing  Subsurface  Moist Channel  Dry

<u>Flow Type</u>		<u>Flow Velocity</u>		<u>Comments:</u>
<input checked="" type="checkbox"/> Perennial	<input type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential	<input checked="" type="checkbox"/> Mod/Slow	
<input type="checkbox"/> Interstitial	<input type="checkbox"/> Ephemeral	<input type="checkbox"/> Fast	<input type="checkbox"/> Eddies	

Max Pool Depth:  > 40 cm/15.8 in  < 40 cm/15.8 in Max Pool Depth: 80"  
 Max Run Depth: 2"  
 Riffle and Pool Width:  Same  Wider Pool  Wider Riffle

**Channel and Bank Characteristics**

<u>5</u> BLDR Slab <input checked="" type="checkbox"/>	<input type="checkbox"/> Limestone	<u>Silted Stream Channel</u>	<u>3</u> ft
<input type="checkbox"/> Boulder	<input type="checkbox"/> Tills	<input type="checkbox"/> High	<b>Bank Erosion</b>
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	<b>L R</b>
<u>15</u> Cobble	<input type="checkbox"/> Hardpan	<input checked="" type="checkbox"/> Normal	<input checked="" type="checkbox"/> None- Some
<u>60</u> Gravel <input checked="" type="checkbox"/>	<input type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input type="checkbox"/> Moderate
<u>10</u> Sand <input checked="" type="checkbox"/>	<input type="checkbox"/> Rip/Rap	<b>Embeddedness</b>	<input type="checkbox"/> High-Severe
<u>5</u> Silt Mud <input checked="" type="checkbox"/>	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<input type="checkbox"/> Clay Hardpan	<input checked="" type="checkbox"/> Shale	<input type="checkbox"/> Moderate	
<input type="checkbox"/> Peat-Muck	<input type="checkbox"/> Coal Fines	<input checked="" type="checkbox"/> Normal	
<input type="checkbox"/> Artificial		<input type="checkbox"/> None	
<u>5</u> Woody/Leaf Debris <input checked="" type="checkbox"/>			
<input type="checkbox"/> Fine Detritus			

Embedded Riffle/Run: Normal

**Stream Cover**

<u>0</u> Undercut Bank	<u>1</u> Boulders	<input type="checkbox"/> Extensive 75-100%	<input type="checkbox"/> 90-100% Closed
<u>0</u> Overhanging Veg.	<u>0</u> Backwater	<input type="checkbox"/> High 25-75%	<input type="checkbox"/> 70-90%
<u>0</u> Shallows (slow moving)	<u>0</u> Aquatic Macrophytes	<input type="checkbox"/> Mod. 5-25%	<input checked="" type="checkbox"/> 45-70%
<u>0</u> Rootmats	<u>1</u> Logs or Woody Debris	<input checked="" type="checkbox"/> Low <5%	<input type="checkbox"/> 10-45%
<u>0</u> Rootwads			<input type="checkbox"/> 0-10% Open

**Stream Morphology and Riparian Zone**

<u>Sinuosity</u>	<u>Gradient (estimate)</u>	<u>Riparian Zone (Left/Right)</u>	<u>Flood Plain Quality</u>
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	<input checked="" type="checkbox"/> Wide >50 m	<input checked="" type="checkbox"/> Forested
<input type="checkbox"/> Mod	<input checked="" type="checkbox"/> Mod Flat	<input type="checkbox"/> Mod 10-50 m	<input type="checkbox"/> Shrub or old field
<input type="checkbox"/> Low	<input type="checkbox"/> Mod (2/100 ft)	<input type="checkbox"/> Narrow 5-10 m	<input type="checkbox"/> Hay field
<input checked="" type="checkbox"/> None	<input type="checkbox"/> Mod Severe	<input type="checkbox"/> Very Narrow <5	<input type="checkbox"/> Active Pasture
# of Bends <u>0</u>	<input type="checkbox"/> Severe (10/100 ft)		<input type="checkbox"/> Row crops
			<input type="checkbox"/> Development

**Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):**

1.5" two line sal. stream flowing slightly turbid due to rain storm.  
Water Striders  
Stone Cadd. Flies.  
Cray Fish





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

87

SITE NAME/LOCATION TETLP's OPEN Project

SITE NUMBER A12-52-S1 RIVER BASIN Ohio River East DRAINAGE AREA (mi<sup>2</sup>) 0.38

LENGTH OF STREAM REACH (ft) 103 LAT. .39.8345 LONG. -80.8687 RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_

DATE 7/12/12 SCORER J. Gravel COMMENTS Extended by J. Gravel on 4/16/13. Surveyed 502' total, 103' within proposed ROW

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL  NONE / NATURAL CHANNEL  RECOVERED  RECOVERING  RECENT OR NO RECOVERY  
 MODIFICATIONS:

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input checked="" type="checkbox"/> BLDR SLABS [16 pts]	20	<input type="checkbox"/> SILT [3 pt]	
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	2
<input type="checkbox"/> BEDROCK [16 pt]	15	<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	38	<input type="checkbox"/> MUCK [0 pts]	
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	20	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 45 (A) 21 Two substrates equal 20%, points were averaged (B) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

27

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters): 25.4

Pool Depth Max = 30

30

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input checked="" type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters): 4.5

Bankfull Width Max=30

30

This information must also be completed

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wide >10m		Mature Forest, Wetland	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS Perennial stream flowing with about 5.08cm of water

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

Flat (0.5 ft/100 ft)  Flat to Moderate  Moderate (2 ft/100 ft)  Moderate to Severe  Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

QHEI PERFORMED? -  Yes  No QHEI Score N/A (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

- WWH Name: Trib to Big Run Distance from Evaluated Stream \_\_\_\_\_  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Cameron, OH NRCS Soil Map Page: \_\_\_\_\_ NRCS Soil Map Stream Order \_\_\_\_\_  
County: Monroe Township / City: Switzerland

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6/26/13 Quantity: -1.0"

Photograph Information: See Photo Index

Elevated Turbidity? (Y/N): N Canopy (% open): 30-55

Were samples collected for water chemistry? (Y/N): N/A (Note lab sample no. or id. and attach results) Lab Number: N/A

Field Measures: Temp (°C) N/A Dissolved Oxygen (mg/l) N/A pH (S.U.) N/A Conductivity (µmhos/cm) N/A

Is the sampling reach representative of the stream (Y/N) N/A If not, please explain: N/A

Additional comments/description of pollution impacts: \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) Y Voucher? (Y/N) N  
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: One adult two-lined salamanders, water striders, stone caddisflies, and crayfish

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

Perennial stream, flowing to the east in upland forest setting with old field/shrub about 75 m from the right stream bank.

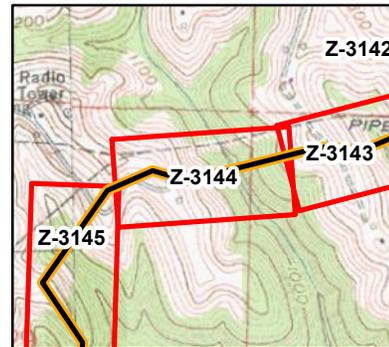
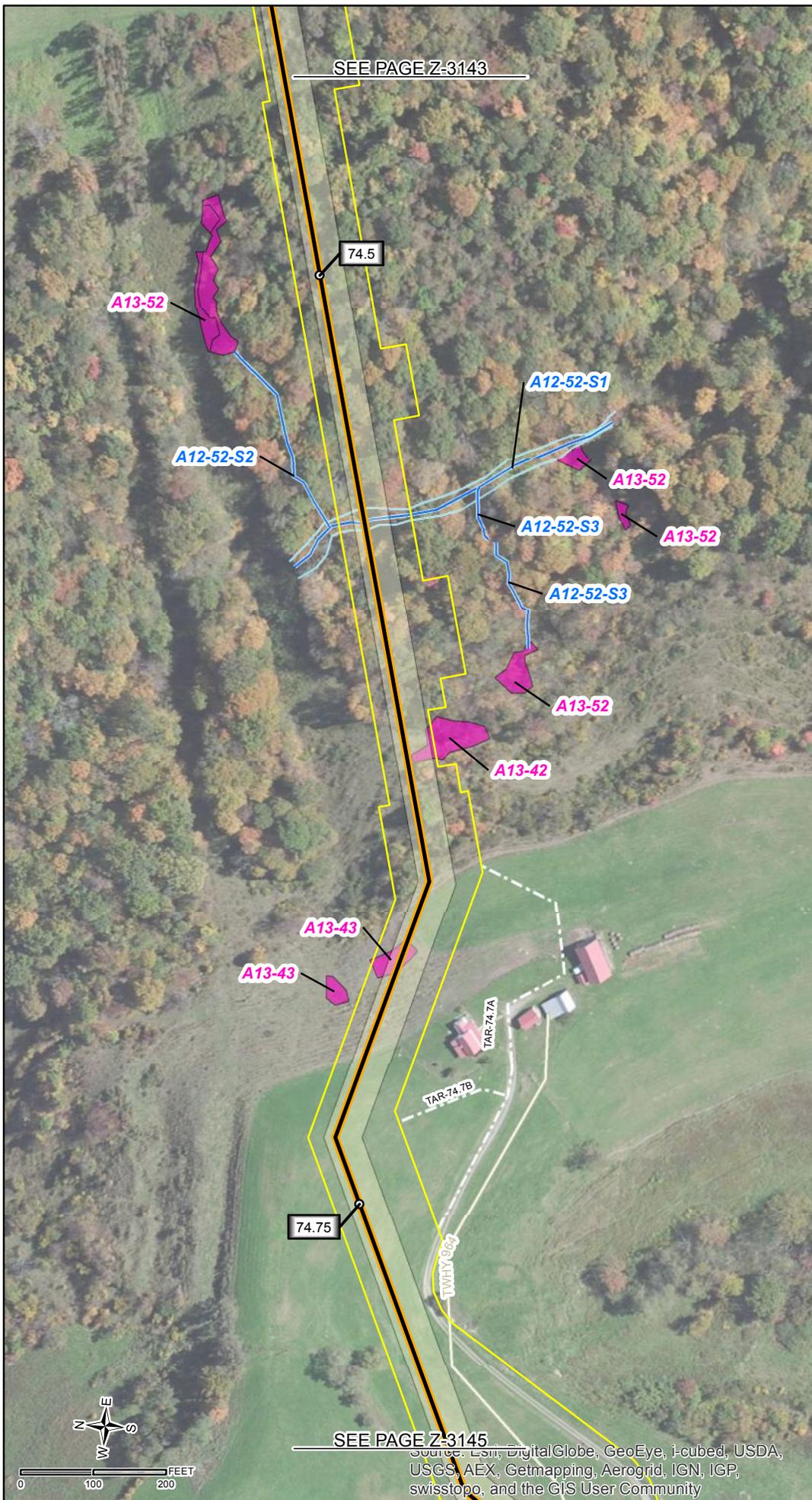
FLOW 

**OPEN 30" Mainline Waterbody Photographs  
Monroe County, Ohio**

**Switzerland Township MP 74.57  
A12-52-S1**

<b>Photo 1</b>	<b>Photo 2</b>
	
<b>Photo 3</b>	<b>Photo 4</b>
N/A	N/A

Photo 1: Perennial stream 1, looking upstream to the NW  
Photo 2: Perennial stream 1, looking downstream to the SE



**LEGEND**

- MILE POST
- PROPOSED PIPELINE
- PROPOSED ACCESS ROAD
- DELINEATED STREAM
- DELINEATED WATERBODY EDGE
- EXISTING ROAD CENTERLINE
- DELINEATED WATERBODY
- DELINEATED WETLAND
- PROPOSED PERMANENT EASEMENT
- PROPOSED CONSTRUCTION WORKSPACE
- MUNICIPALITY BOUNDARY

Data Sources: ESRI, Spectra, TRC, Hatch Mott MacDonald

Projection: NAD83, StatePlane  
Ohio NorthFIPS 3401  
US Survey Feet

**Spectra Energy Partners**  
Texas Eastern Transmission, LP  
5408 Wadhwaer Court, Houston, TX 77056-0518 713.827.5000

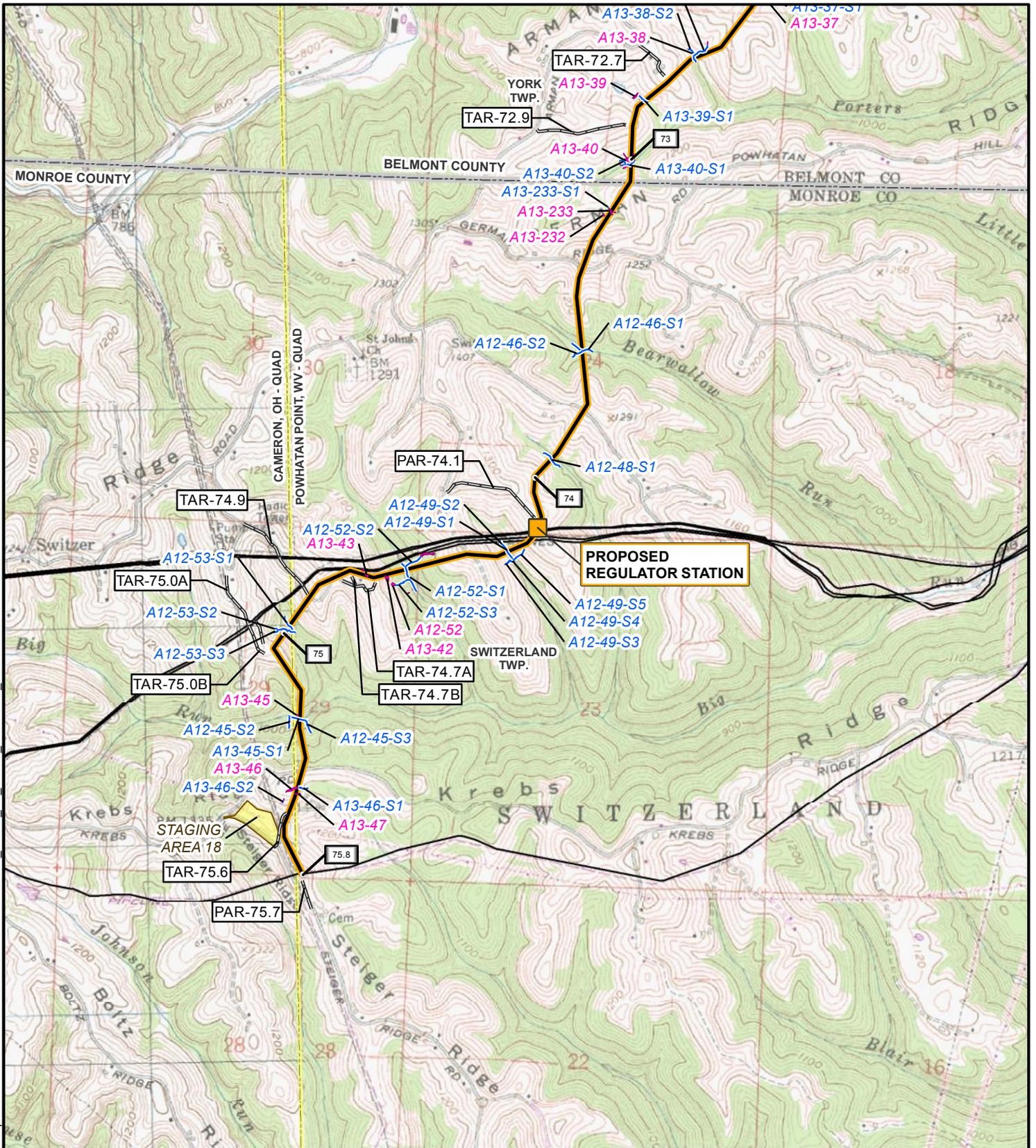
Spectra Natural Gas Pipeline  
2015 OPEN Project  
Proposed 30in. Line NO. 73

Natural Resource Maps  
Map Z-3144

**Hatch Mott MacDonald**  
Created: 02/19/2014

Source: ESRI, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

P:\Spectra\OPEN\data\Prod\Work\GIS\W\XD\SPECTRA\_OPEN\_ES\_QUAD\_EXCERPT\_85x11.mxd



- |                                 |                         |                            |                             |
|---------------------------------|-------------------------|----------------------------|-----------------------------|
| MILE POST                       | DELINEATED WETLAND      | PROPOSED M&R STATION       | PROPOSED COMPRESSOR STATION |
| PROPOSED PIPELINE               | DELINEATED WATERBODY    | PROPOSED REGULATOR STATION | MUNICIPALITY BOUNDARY       |
| PROPOSED ACCESS ROAD            | PROPOSED STAGING AREA   | PROPOSED TAP VALVE         | COUNTY BOUNDARY             |
| EXISTING TEXAS EASTERN PIPELINE | PROPOSED MAINLINE VALVE | USGS QUADRANGLE BOUNDARY   |                             |
| DELINEATED STREAM CENTERLINE    |                         |                            |                             |



**TITLE: OPEN PROJECT  
DELINEATED STREAMS & WETLANDS - USGS QUAD MAP**

LOC.: BELMONT & MONROE COUNTIES, OHIO      REV. 0

CKD. BY: HMMHOL    ENG.    DATE: 02/2014    W.O.

DRN. BY: HMMHOL    SCALE: 1" = 2000'    DWG. NO.    Z-2023



Texas Eastern Transmission, LP  
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

I.G.