

A12-49-51

TETLP OPEN PROJECT STREAM SUMMARY

1-16

STA 3672+00

OPEN Facility: 30" 36" MP: Compressor Station

Observers: J Gravel J Bolduc Date: 7/11/12

Town: Switzerland Township County: Monroe County

Crossing Name/ID: A12 49-51 Recent Rain Event (date/amount): Dry Spell

Flow Characteristics

Bank Full Width (average): 56" Flow Conditions: Flowing Subsurface Moist Channel Dry

<u>Flow Type</u>	<u>Flow Velocity</u>	<u>Comments:</u>
<input type="checkbox"/> Perennial <input checked="" type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential <input type="checkbox"/> Mod/Slow	
<input 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: 0.25"

Max Run Depth: NA

Riffle and Pool Width: Same Wider Pool Wider Riffle No flow r pool

Channel and Bank Characteristics

<u>Channel Substrate %:</u>	<u>Origin</u>	<u>Quality</u>	<u>Bank Height</u>
5 BLDR Slab ✓	<input checked="" type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	0.5 ft
___ Boulder	<input type="checkbox"/> Tills	<input type="checkbox"/> High	Bank Erosion Down stream
10 Bedrock ✓	<input type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	L R
30 Cobble ✓	<input type="checkbox"/> Hardpan	<input type="checkbox"/> Normal	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> None- Some
20 Gravel ✓	<input type="checkbox"/> Sandstone	<input checked="" type="checkbox"/> Free	<input type="checkbox"/> Moderate
10 Sand ✓	<input type="checkbox"/> Rip/Rap	<u>Embeddedness</u>	<input type="checkbox"/> High-Severe
30 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	
5 Woody/Leaf Debris			
___ Fine Detritus			

Embedded Riffle/Run: NA

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	<input type="checkbox"/> Extensive 25-75%	<input checked="" type="checkbox"/> 90-100% Closed
6 Overhanging Veg.	<input type="checkbox"/> High 25-75%	<input type="checkbox"/> 70-90%
6 Shallows (slow moving)	<input type="checkbox"/> Mod. 5-25%	<input type="checkbox"/> 45-70%
0 Rootmats	<input checked="" type="checkbox"/> Low <5%	<input type="checkbox"/> 10-45%
0 Rootwads		<input type="checkbox"/> 0-10% Open

Stream Morphology and Riparian Zone

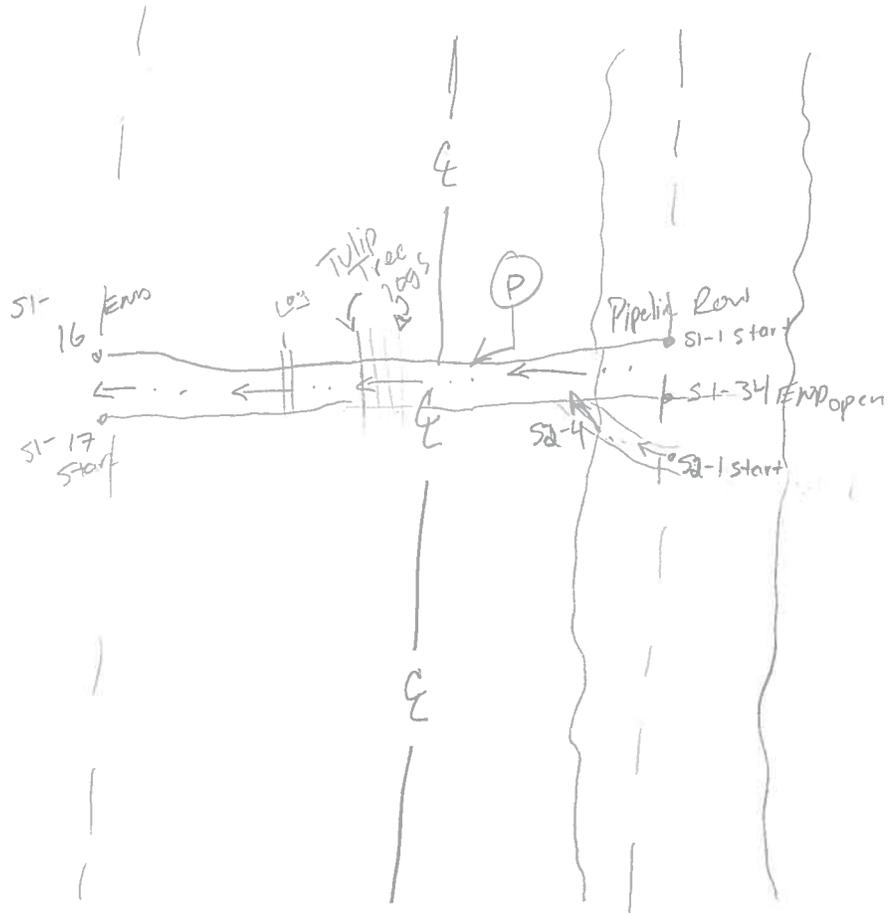
<u>Sinuosity</u>	<u>Gradient (estimate)</u>	<u>Riparian Zone (Right/Left)</u>	<u>Flood Plain Quality</u>
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Wide >50 m	<input checked="" type="checkbox"/> Forested
<input type="checkbox"/> Mod	<input type="checkbox"/> Mod Flat	<input type="checkbox"/> Mod 10-50 m	<input checked="" type="checkbox"/> Shrub or old field <i>Pipe line Row</i>
<input type="checkbox"/> Low	<input checked="" 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 0	<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 Dusky
2 Two lined Salamanders (1 Juvenile + 1 Adult)

STREAM SKETCH

STA: 3672+00



SI TOB
 (1-16)
 (17-34)
 SZ CL
 1-4



Checklist:

- Stream ID# = AR-49-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.

**TETLP OPEN PROJECT
STREAM SUMMARY**

A12-49-51
Extension

OPEN Facility: 30" 36" MP: Compressor Station
 Observers: LL KC Date: 7/20/13
 Town: Switzerland County: Belmont
 Crossing Name/ID: A12-49-51 EXT Recent Rain Event (date/amount): 7/19/13 < 1/2"

Flow Characteristics

Bank Full Width (average): 8' Flow Conditions: Flowing Subsurface Moist Channel Dry

<u>Flow Type</u>		<u>Flow Velocity</u>		<u>Comments:</u>
<input type="checkbox"/> Perennial	<input checked="" type="checkbox"/> Intermittent	<input type="checkbox"/> Torrential	<input checked="" type="checkbox"/> Mod/Slow	See original data form for rest of data
<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: 3"
 Max Run Depth: 2"
 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>	_____ ft
<input type="checkbox"/> Boulder	<input type="checkbox"/> Tills	<input type="checkbox"/> High	Bank Erosion
<input type="checkbox"/> Bedrock	<input type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	L R
<input type="checkbox"/> Cobble	<input type="checkbox"/> Hardpan	<input type="checkbox"/> Normal	<input type="checkbox"/> None- Some
<input type="checkbox"/> Gravel	<input type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input type="checkbox"/> Moderate
<input type="checkbox"/> Sand	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input type="checkbox"/> High-Severe
<input type="checkbox"/> Silt Mud	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<input type="checkbox"/> Clay Hardpan	<input type="checkbox"/> Shale	<input type="checkbox"/> Moderate	
<input type="checkbox"/> Peat-Muck	<input type="checkbox"/> Coal Fines	<input type="checkbox"/> Normal	
<input type="checkbox"/> Artificial		<input type="checkbox"/> None	
<input type="checkbox"/> Woody/Leaf Debris			
<input type="checkbox"/> Fine Detritus			

Embedded Riffle/Run: _____

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>
<input type="checkbox"/> Undercut Bank	<input type="checkbox"/> Boulders	<input type="checkbox"/> Extensive 75-100%
<input type="checkbox"/> Overhanging Veg.	<input type="checkbox"/> Backwater	<input type="checkbox"/> High 25-75%
<input type="checkbox"/> Shallows (slow moving)	<input type="checkbox"/> Aquatic Macrophytes	<input type="checkbox"/> Mod. 5-25%
<input type="checkbox"/> Rootmats	<input type="checkbox"/> Logs or Woody Debris	<input type="checkbox"/> Low <5%
<input type="checkbox"/> Rootwads		<input type="checkbox"/> 90-100% Closed
		<input type="checkbox"/> 70-90%
		<input type="checkbox"/> 45-70%
		<input type="checkbox"/> 10-45%
		<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 type="checkbox"/> Wide >50 m	<input 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 type="checkbox"/> Low	<input 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 _____	<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):

STREAM SKETCH

STA 3783+70

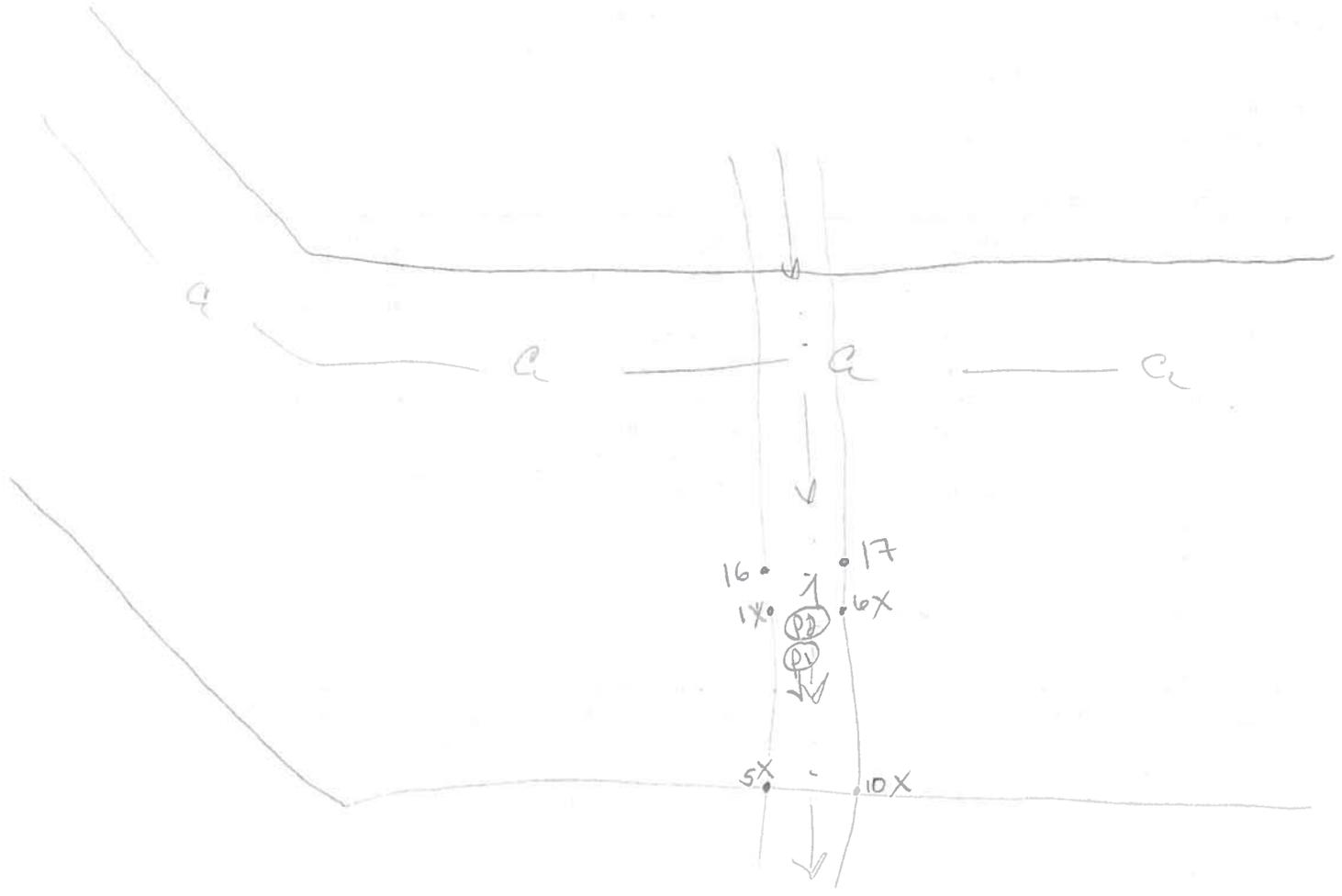
7/20/13



EXT

(1x 5XT0B)
(6x 10XT0B)

1 Join 16
6 Join 17



EXT

Checklist:



- Stream ID# = A12-49-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.

✓ JG 7/29/13



Primary Headwater Habitat Evaluation Form

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

46

SITE NAME/LOCATION TETLP's OPEN Project

SITE NUMBER A12-49-S1 RIVER BASIN Ohio River East DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 101 LAT. .39.83566 LONG. -80.86326 RIVER CODE _____ RIVER MILE _____

DATE 7/11/12 SCORER J. Gravel, J. Bolduc COMMENTS Existing pipeline ROW nearby to the north

NOTE: Complete All Items on This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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 type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	5	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	30
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	10	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> <input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	20	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> <input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	20	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	10	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 35

(A) 14

To substrates equal 20%, points were averaged

(B) 7

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

21

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 type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" 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):

0.6

Pool Depth Max = 30

5

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

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

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters)

1.8

Bankfull Width Max=30

20

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 type="checkbox"/>	<input type="checkbox"/>
(Per Bank)		(Most Predominant per Bank)	
Wide >10m		Mature Forest, Wetland	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None		Fenced Pasture	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
			Mining or Construction

COMMENTS _____

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

<input type="checkbox"/> Stream Flowing	<input checked="" 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 Intermittent stream

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: Powhatan Point, WV NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Monroe Township / City: Switzerland

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: N/A, dry spell Quantity: N/A

Photograph Information: See Photo Index

Elevated Turbidity? (Y/N): N Canopy (% open): 0-10

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 dusky salamander, two two-lined salamanders (one juvenile and one adult)

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

Intermittent stream with minimal erosion and no flow at time of survey in upland forest setting with trees that have fallen into the stream.

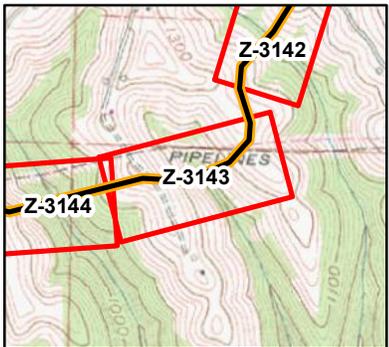
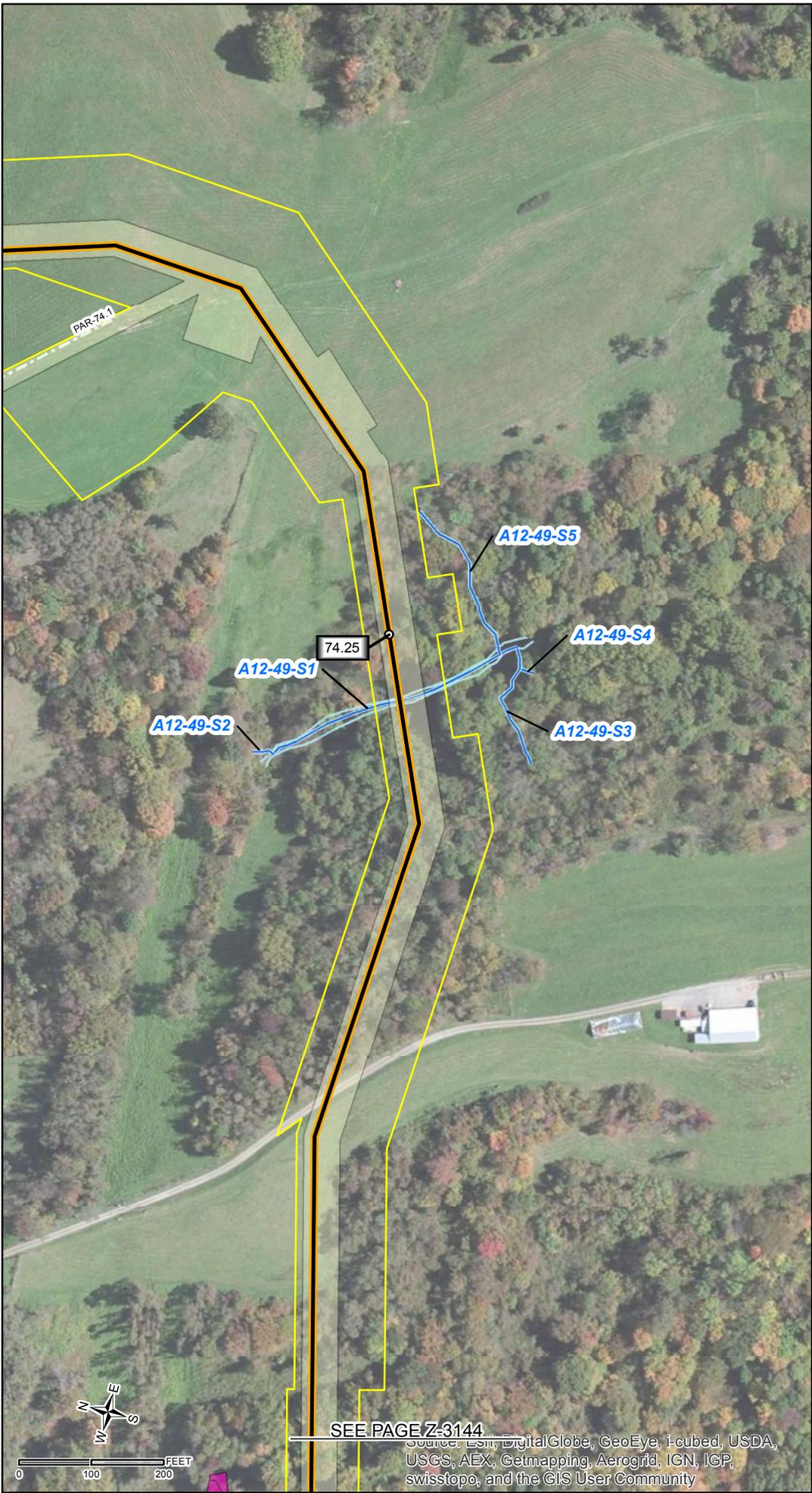
FLOW 

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

**Switzerland Township MP 74.26
A12-49-S1**

Photo 1	Photo 2
	
Photo 3	Photo 4
N/A	N/A

Photo 1: Intermittent stream 1, looking upstream to the NW
Photo 2: Intermittent 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
5409 Weatherford Court, Houston, TX 77056-6518 713.627.5400

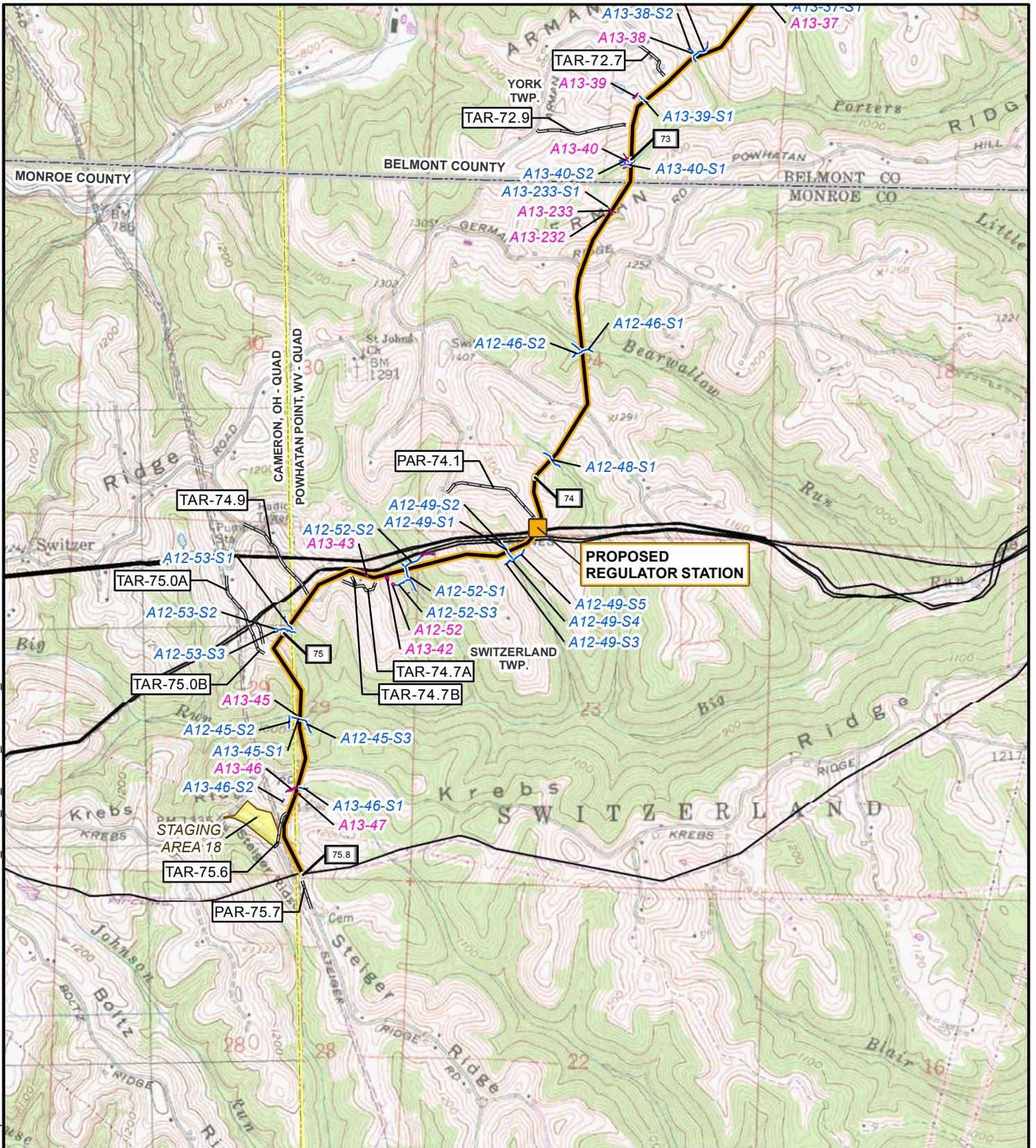
Spectra Natural Gas Pipeline
2015 OPEN Project
Proposed 30in. Line NO. 73

Natural Resource Maps
Map Z-3143

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.