

**TETLP OPEN PROJECT
STREAM SUMMARY**

SHA: 1764+00

OPEN Facility: 30" 36" MP: Compressor Station
 Observers: JG, JM Date: 4/29/13
 Town: WAYNE County: Jefferson
 Crossing Name/ID: B13-48-51 Recent Rain Event (date/amount): 4/28-4/29 ~0.5"
Flow Characteristics

Bank Full Width (average): 5-6 Flow Conditions: Flowing Subsurface Moist Channel Dry

Flow Type	Flow Velocity	Comments:
<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: 12" (1 pool)
 Max Run Depth: 4"
 Riffle and Pool Width: Same Wider Pool Wider Riffle

Channel and Bank Characteristics

Channel Substrate %:	Origin	Quality	Bank Height
<input type="checkbox"/> BLDR Slab	<input type="checkbox"/> Limestone	<i>Silted Stream Channel</i>	<u>3</u> ft
<input type="checkbox"/> Boulder	<input type="checkbox"/> Tills	<input checked="" type="checkbox"/> High	Bank Erosion
<input type="checkbox"/> Bedrock	<input checked="" type="checkbox"/> Wetlands	<input type="checkbox"/> Moderate	L R
<u>10</u> Cobble ✓	<input type="checkbox"/> Hardpan	<input type="checkbox"/> Normal	<input type="checkbox"/> None- Some
<u>30</u> Gravel ✓	<input type="checkbox"/> Sandstone	<input type="checkbox"/> Free	<input checked="" type="checkbox"/> Moderate
<input type="checkbox"/> Sand	<input type="checkbox"/> Rip/Rap	<i>Embeddedness</i>	<input type="checkbox"/> High-Severe
<u>50</u> Silt Mud ✓	<input type="checkbox"/> Lacustrine	<input type="checkbox"/> Extensive	
<input type="checkbox"/> Clay Hardpan	<input type="checkbox"/> Shale	<input checked="" 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	
<u>10</u> Woody/Leaf Debris ✓			
<input type="checkbox"/> Fine Detritus			

Embedded Riffle/Run: Yes.

Stream Cover

Instream Cover (presence 0-3 [ranges 0, 1-33%, 33-66%, 66-100%])	Instream Total Cover	Canopy Cover
<input type="checkbox"/> 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 type="checkbox"/> 70-90%
<input type="checkbox"/> Shallows (slow moving)	<input type="checkbox"/> Mod. 5-25%	<input type="checkbox"/> 45-70%
<input type="checkbox"/> Rootmats	<input checked="" type="checkbox"/> Low <5%	<input type="checkbox"/> 10-45%
<input type="checkbox"/> Rootwads		<input type="checkbox"/> 0-10% Open

Stream Morphology and Riparian Zone

Sinuosity	Gradient (estimate)	Riparian Zone (Left/Right)	Flood Plain Quality
<input type="checkbox"/> High	<input type="checkbox"/> Flat (0.5/100 ft)	L R	<input checked="" type="checkbox"/> Forested
<input type="checkbox"/> Mod	<input type="checkbox"/> Mod Flat	<input type="checkbox"/> Wide >50 m	<input type="checkbox"/> Shrub or old field
<input checked="" type="checkbox"/> Low	<input type="checkbox"/> Mod (2/100 ft)	<input checked="" type="checkbox"/> Mod 10-50 m	<input checked="" type="checkbox"/> Hay field
<input type="checkbox"/> None	<input checked="" 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

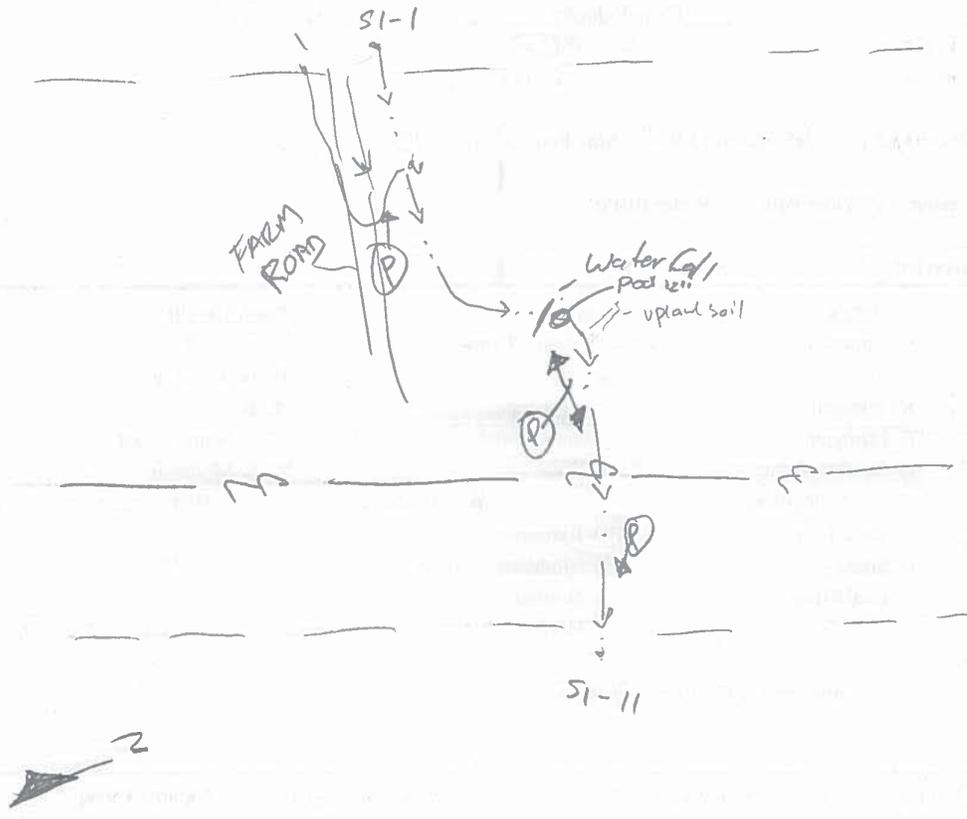
of Bends 2 Development RT 200/39.

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

STREAM SKETCH

STA: 1764+00

4/29/13



SI
(1-11)

Checklist:

- Stream ID# = B13-48
- 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.



Primary Headwater Habitat Evaluation Form

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

56

SITE NAME/LOCATION TETLP's OPEN Project
 SITE NUMBER B13-48-S1 RIVER BASIN Ohio River East DRAINAGE AREA (mi²) 0.27
 LENGTH OF STREAM REACH (ft) 107 LAT. 40.3412 LONG. -80.8384 RIVER CODE _____ RIVER MILE _____
 DATE 4/29/13 SCORER J. Gravel, J. Mulford COMMENTS surveyed 252' total, 107' 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 type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	_____
<input type="checkbox"/> <input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	30	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10 (A) 12 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: _____ TOTAL NUMBER OF SUBSTRATE TYPES: _____

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 checked="" 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 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): 30

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 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): 1.6

HHEI Metric Points

Substrate Max = 40

16

A + B

Pool Depth Max = 30

20

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

COMMENTS CR 39 to north of stream channel

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

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

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" 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 Woods 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: Smithfield, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
County: Jefferson Township / City: Wayne

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 4/28/13 Quantity: <0.5"

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) N 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: None observed

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 west with immature forest surrounding and Township Highway 200/CR 39 nearby to the north.

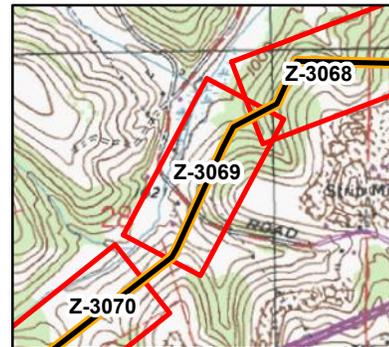
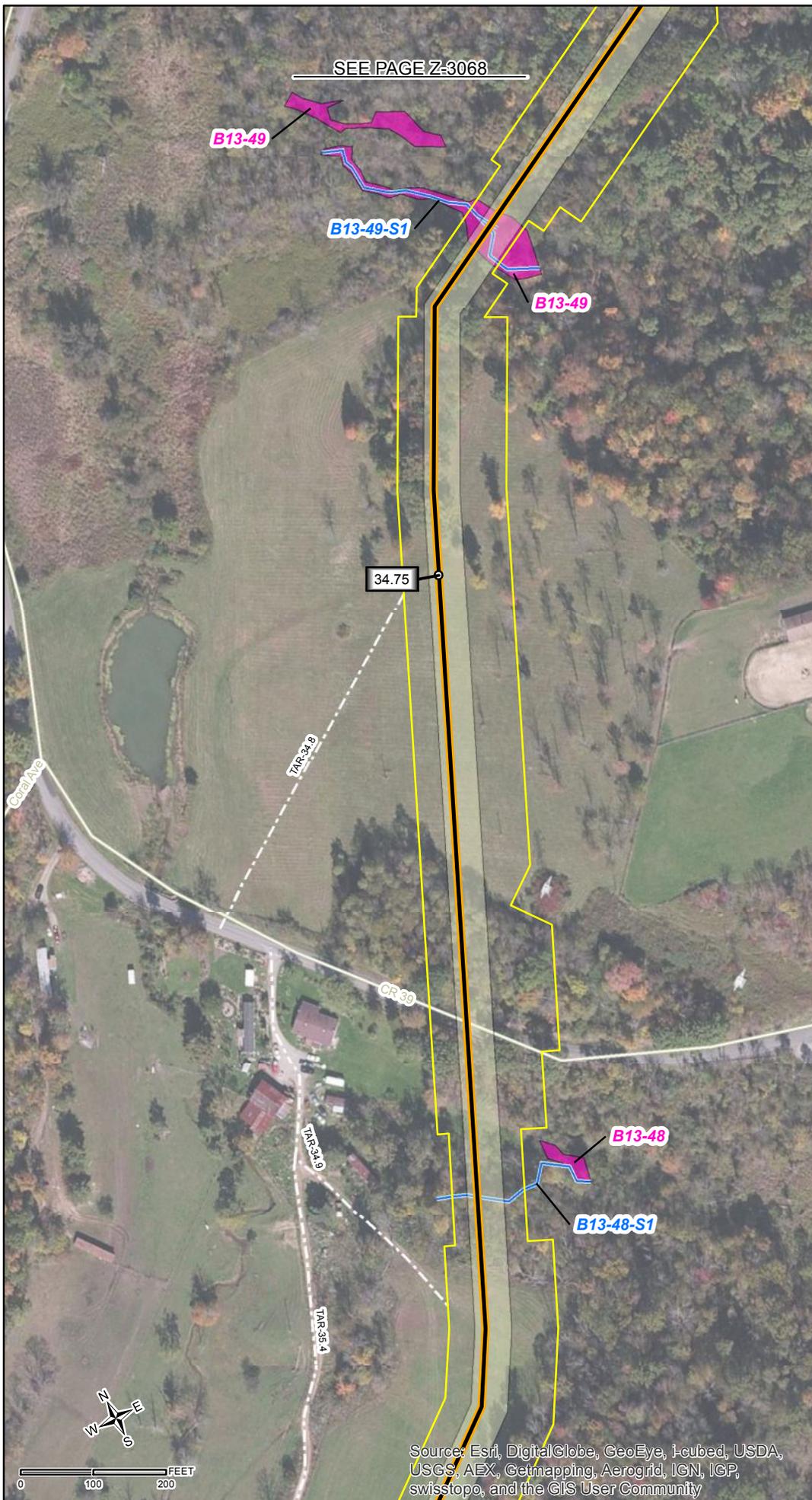
FLOW 

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

**Wayne Township MP 34.92
B13-48-S1**

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

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



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 Westheimer Court, Houston, TX 77056-6518 713.827.5400

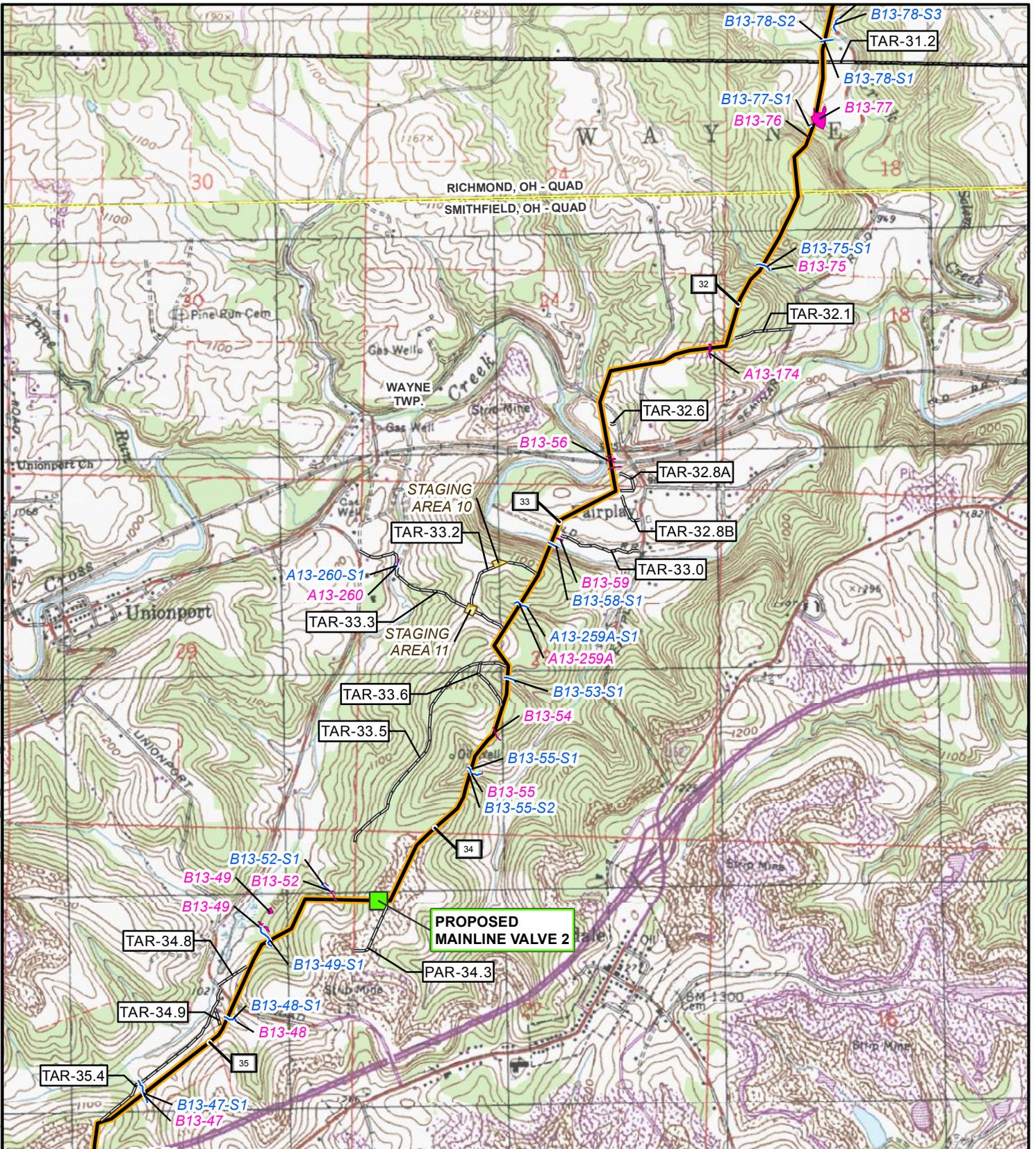
Spectra Natural Gas Pipeline
2015 OPEN Project
Proposed 30in. Line NO. 73

Natural Resource Maps
Map Z-3069

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

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- | | | | |
|---------------------------------|-------------------------|----------------------------|-----------------------------|
| 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.: JEFFERSON COUNTY, OHIO REV. 0

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

DRN. BY: HMMHOL SCALE: 1" = 2000' DWG. NO. Z-2010



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

I.G.