TETLP OPEN PROJECT
STREAM SUMMARY

OPEN Facility: ☑ 30" ☐ 36" MP: ☐ Compressor Station

Observers: N. GRAUCH J. MULFORD w/ TRC Date: 05/02/2013

Town: SALEM County: JEFFERSON

Crossing Name/ID: BB-67-S1 Recent Rain Event (date/amount): 04/28/2013 @ 0.5"

Flow Characteristics

Bank Full Width (average): 5 Flow Conditions: ☑ Flowing ☐ Subsurface ☐ Moist Channel ☐ Dry

Flow Type		Flow Velocity		Comments:
☐ Perennial	☐ Intermittent	☐ Torrential	☑ Mod/Slow	
☑ Interstitial	☐ Ephemeral	☐ Fast	☐ Eddies	

Max Pool Depth: ☐ > 40 cm/15.8 in ☑ < 40 cm/15.8 in Max Pool Depth: 12"

Max Run Depth: 2"

Riffle and Pool Width: ☐ Same ☑ Wider Pool ☐ Wider Riffle

Channel and Bank Characteristics

Channel Substrate %:	Origin	Quality	Bank Height
___ BLDR Slab	☐ Limestone	*Silted Stream Channel*	2 ft
___ Boulder	☐ Tills	☐ High	**Bank Erosion**
___ Bedrock	☑ Wetlands	☐ Moderate	**L R**
20 Cobble	☐ Hardpan	☑ Normal	☑ ☑ None- Some
30 Gravel	☐ Sandstone	☐ Free	☐ ☐ Moderate
___ Sand	☐ Rip/Rap	*Embeddedness*	☐ ☐ High-Severe
30 Silt Mud	☐ Lacustrine	☐ Extensive	
___ Clay Hardpan	☑ Shale	☐ Moderate	
___ Peat-Muck	☐ Coal Fines	☑ Normal	
___ Artificial		☐ None	
20 Woody/Leaf Debris			
___ Fine Detritus	Embedded Riffle/Run: NA		

Stream Cover

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

Stream Morphology and Riparian Zone

Sinuosity	Gradient (estimate)	Riparian Zone (Left/Right)	Flood Plain Quality
☐ High	☐ Flat (0.5/100 ft)	**L R**	☐ Forested
☐ Med	☐ Mod Flat	☐ ☐ Wide >50 m	☐ Shrub or old field
☑ Low	☑ Mod (2/100 ft)	☐ ☐ Mod 10-50 m	☐ Hay field
☐ None	☐ Mod Severe	☐ ☐ Narrow 5-10 m	☐ Active Pasture
	☐ Severe (10/100 ft)	☐ ☐ Very Narrow <5	☐ Row crops
# of Bends 3.5			☐ Development

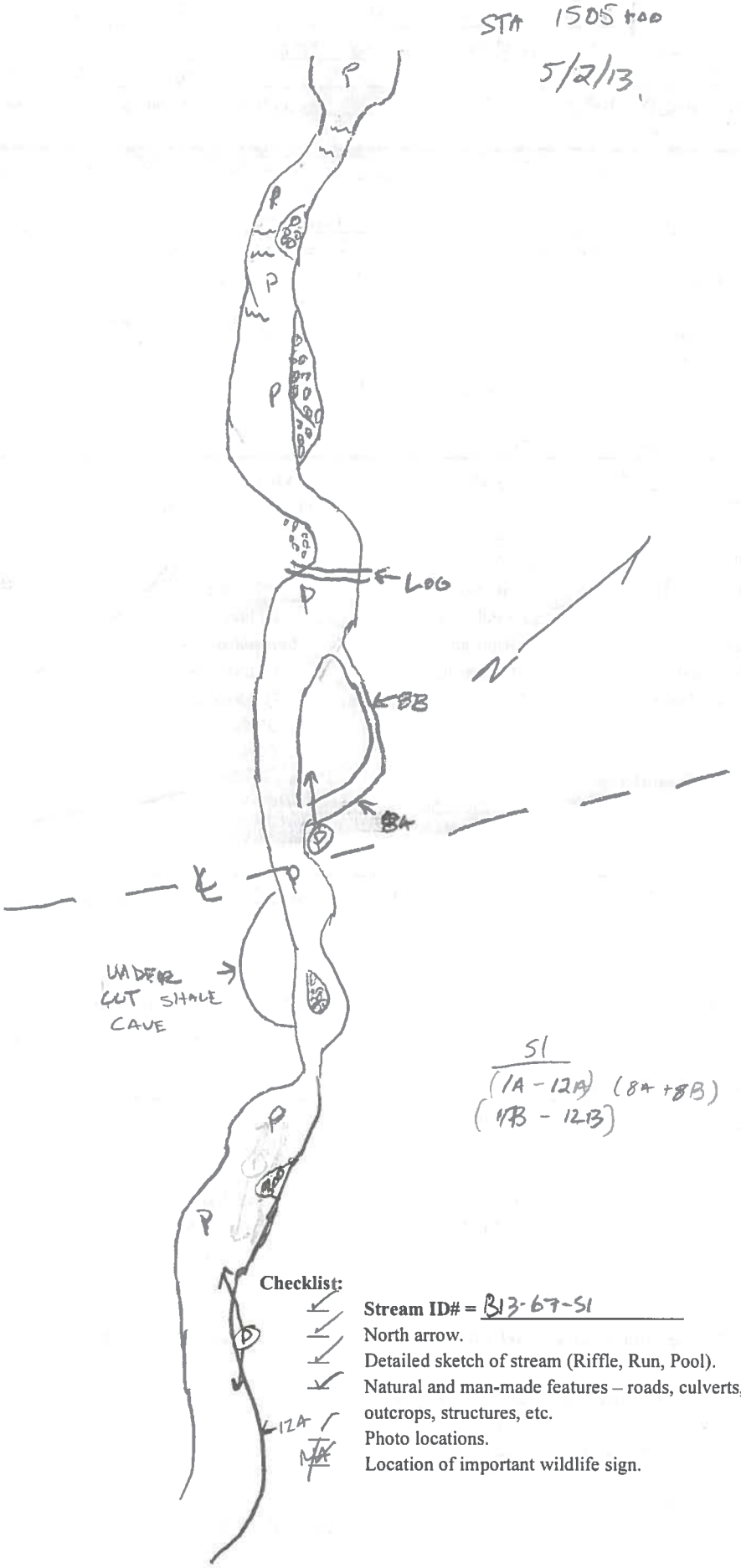
Stream Ecology and Associated Wildlife Comments (i.e. marcos, salamanders, fish):

NO SIGNS OF EROSION W/IN STUDY AREA HOWEVER BANK EROSION IS EVIDENT Both UP + DOWNSTREAM OF STUDY AREA.

SOME LOGS IN STREAM CREATING POOLS & PROVIDING INSTREAM COVER

BENDS ar

STREAM SKETCH



TETLP OPEN PROJECT
STREAM SUMMARY

Stn. 1503+00

OPEN Facility: ☒ 30" ☐ 36" MP: ☐ Compressor Station

Observers: JG LB-B Date: 11-20-13

Town: Salem County: Jefferson

Crossing Name/ID: B13-67-51 Extension Recent Rain Event (date/amount): .75" 11/17/13

Flow Characteristics

Bank Full Width (average): 5' Flow Conditions: ☒ Flowing ☒ Subsurface ☐ Moist Channel ☐ Dry

Flow Type		Flow Velocity		Comments:
☐ Perennial	☐ Intermittent	☐ Torrential	☒ Mod/Slow	
☒ Interstitial	☐ Ephemeral	☐ Fast	☐ Eddies	

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

Max Run Depth: 1

Riffle and Pool Width: ☐ Same ☐ Wider Pool ☐ Wider Riffle

Channel and Bank Characteristics

Channel Substrate %:	Origin	Quality	Bank Height
5 BLDR Slab	☐ Limestone	*Silted Stream Channel*	2 ft Average
___ Boulder	☐ Tills	☐ High	**Bank Erosion**
5 Bedrock	☐ Wetlands	☐ Moderate	**L R**
10 Cobble	☐ Hardpan	☒ Normal	☒ ☒ None- Some
30 Gravel	☒ Sandstone	☐ Free	☐ ☐ Moderate
10 Sand	☐ Rip/Rap	***Embeddedness***	☐ ☐ High-Severe
10 Silt Mud	☐ Lacustrine	☐ Extensive	
___ Clay Hardpan	☐ Shale	☐ Moderate	
___ Peat-Muck	☐ Coal Fines	☒ Normal	
___ Artificial		☐ None	
30 Woody/Leaf Debris			
___ Fine Detritus			

Embedded Riffle/Run: Yes (Few locations Natural type embeddedness)

Stream Cover

Instream Cover (presence 0-3 [ranges 0, 1-33%, 33-66%, 66-100%])		Instream Total Cover	Canopy Cover	
0 Undercut Bank	1 Boulders	☐ Extensive 75-100%	☐ 90-100%	Closed
0 Overhanging Veg.	0 Backwater	☒ High 25-75%	☐ 70-90%	
0 Shallows (slow moving)	0 Aquatic Macrophytes	☐ Mod. 5-25%	☐ 45-70%	
0 Rootmats	2 Logs or Woody Debris	☐ Low <5%	☐ 10-45%	
1 Rootwads			☐ 0-10%	Open

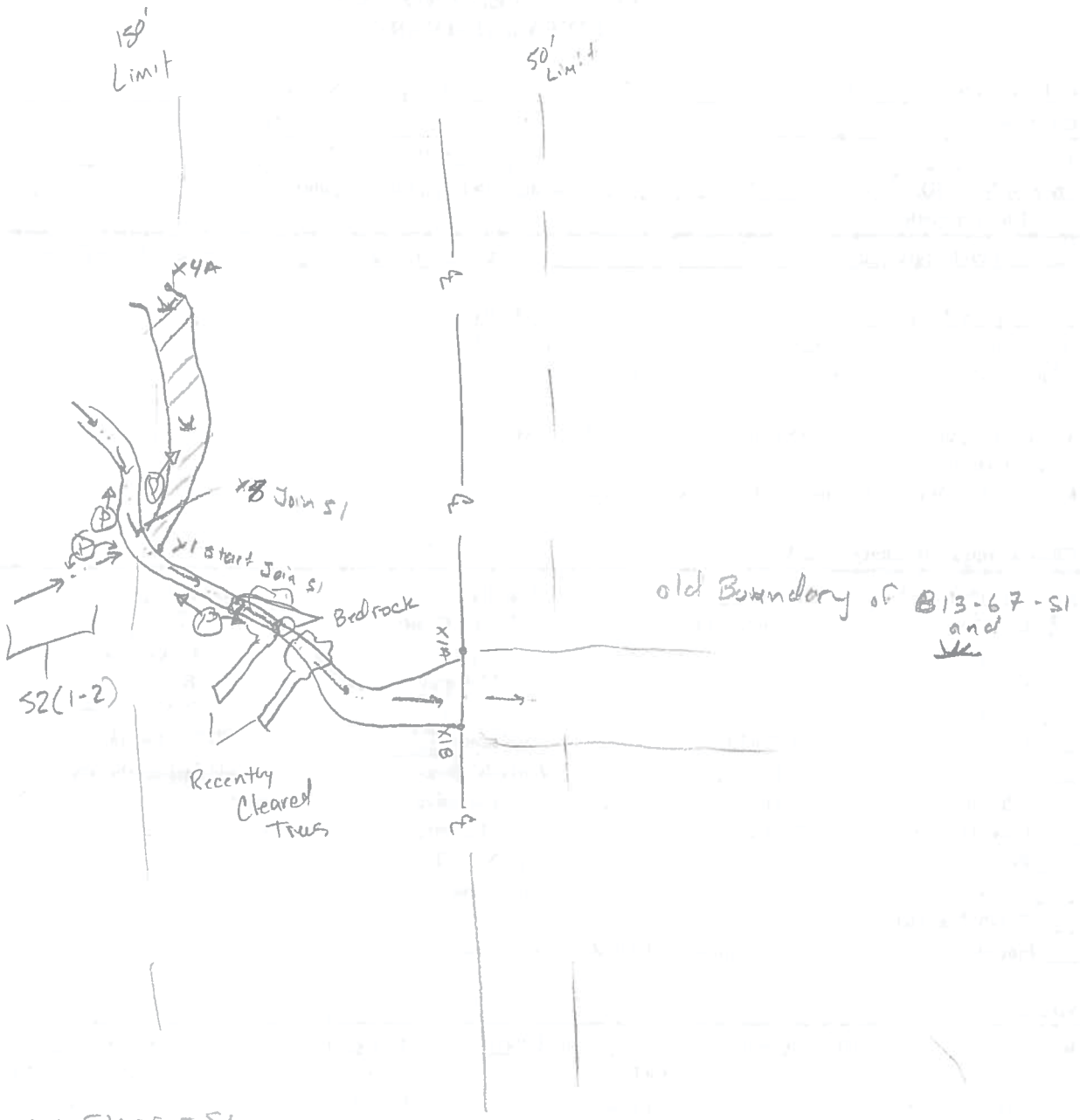
Stream Morphology and Riparian Zone

Sinuosity	Gradient (estimate)	Riparian Zone (Left/Right)	Flood Plain Quality
☐ High	☐ Flat (0.5/100 ft)	☒ ☒ Wide >50 m	☒ Forested
☐ Mod	☐ Mod Flat	☐ ☐ Mod 10-50 m	☐ Shrub or old field
☒ Low	☒ Mod (2/100 ft)	☐ ☐ Narrow 5-10 m	☐ Hay field
☐ None	☐ Mod Severe	☐ ☐ Very Narrow <5	☐ Active Pasture
# of Bends 1.5	☐ Severe (10/100 ft)		☐ Row crops
			☐ Development

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

Nom Obs.

STREAM SKETCH



STREAM Flags - S1

X1A - X14A (Join S1 - 1A [old Line])

(Join S1-1B) X1B - X14B

Ext

Checklist:

Stream ID# = B13-67-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.

A13-67-S1 Unnamed Trib to Grassy Run

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 58

SITE NAME/LOCATION TETLP's OPEN Project

SITE NUMBER A13-67-S1 RIVER BASIN Ohio River East DRAINAGE AREA (mi^2) 0.12

LENGTH OF STREAM REACH (ft) 115 LAT. 40.3950 LONG. -80.8098 RIVER CODE _____ RIVER MILE _____

DATE 5/2/13 SCORER J. Gravel, J. Mulford COMMENTS surveyed 289' total, 115' within proposed ROW

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

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

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
☐☐	BLDR SLABS **[16 pts]**		☑☐	SILT **[3 pt]**	30
☐☐	BOULDER (>256 mm) **[16 pts]**		☐☑	LEAF PACK/WOODY DEBRIS **[3 pts]**	20
☐☐	BEDROCK **[16 pt]**		☐☐	FINE DETRITUS **[3 pts]**	
☐☑	COBBLE (65-256 mm) **[12 pts]**	20	☐☐	CLAY or HARDPAN **[0 pt]**	
☑☐	GRAVEL (2-64 mm) **[9 pts]**	30	☐☐	MUCK **[0 pts]**	
☐☐	SAND (<2 mm) **[6 pts]**		☐☐	ARTIFICIAL **[3 pts]**	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20 **(A)** 14 Substrates with same percentage points were averaged + **(B)** 4

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

HHEI Metric Points

Substrate Max = 40

18

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):

☑	> 30 centimeters **[20 pts]**	☐	> 5 cm - 10 cm **[15 pts]**
☐	> 22.5 - 30 cm **[30 pts]**	☐	< 5 cm **[5 pts]**
☐	> 10 - 22.5 cm **[25 pts]**	☐	NO WATER OR MOIST CHANNEL **[0 pts]**

30 +

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):**

Pool Depth Max = 30

20

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

☐	> 4.0 meters (> 13') **[30 pts]**	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") **[15 pts]**
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') **[25 pts]**	☐	≤ 1.0 m (≤ 3' 3") **[5 pts]**
☑	> 1.5 m - 3.0 m (> 4' 8" - 9' 7") **[20 pts]**		

1.5 +

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)**

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 L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☑	☑	Wide >10m	☑	☑	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS upland forest

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

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS interstitial stream

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

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☑	>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 Grassy 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: Richmond, OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Jefferson Township / City: Salem

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 4/29/13 Quantity: <0.25"

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) 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

Interstitial stream flowing to the south with wetland pockets on the right stream bank and upland forest on each stream bank.

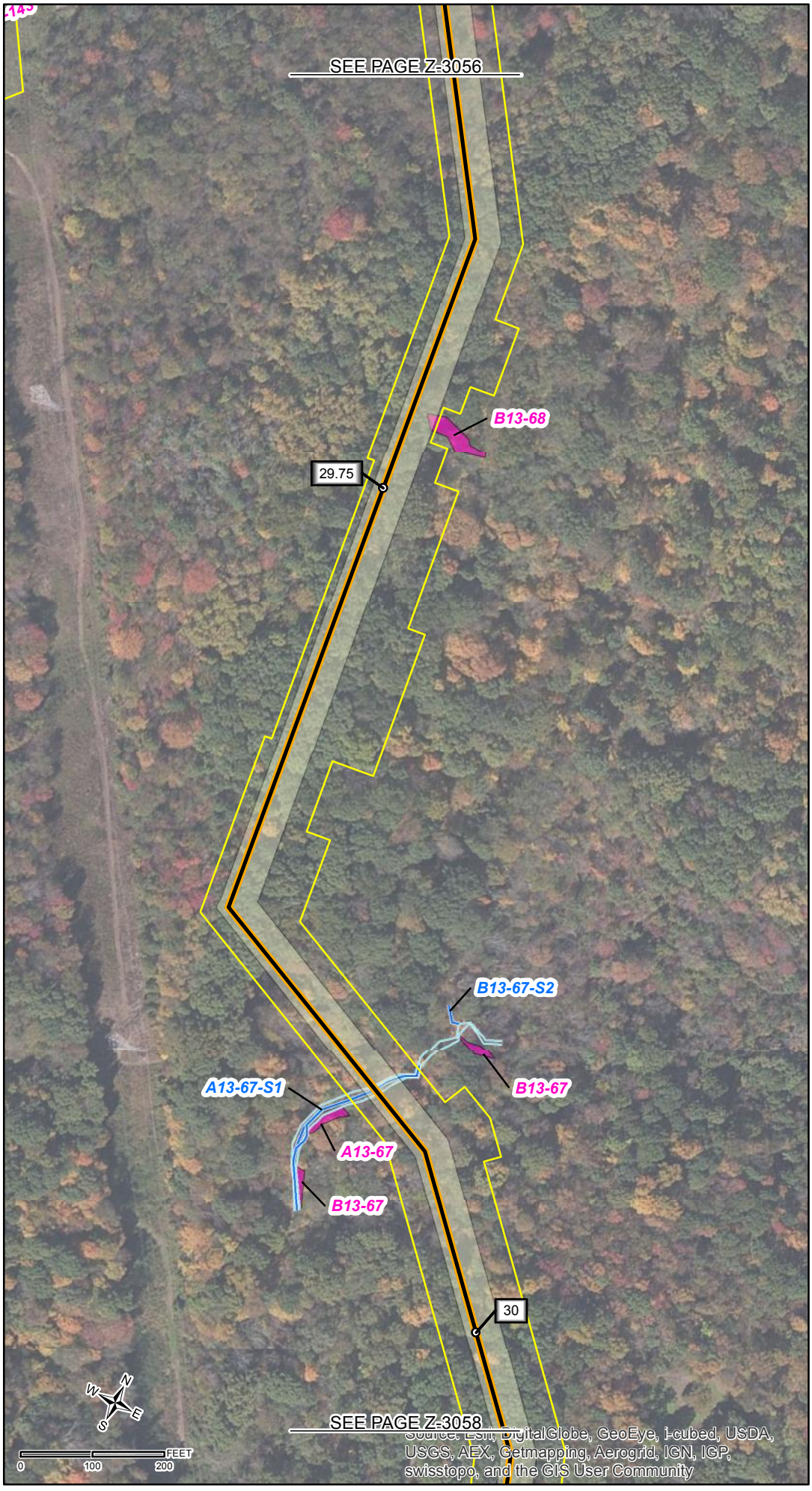
FLOW ➔

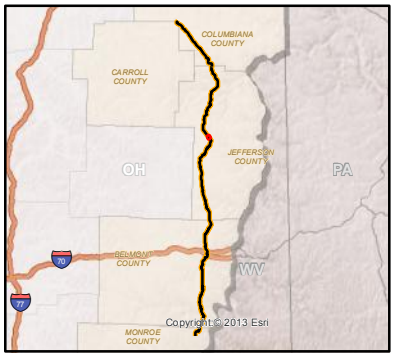
OPEN 30” Mainline Waterbody Photographs
Jefferson County, Ohio

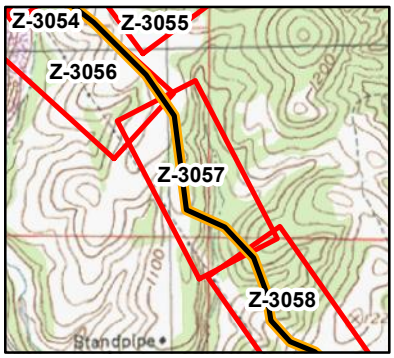
Salem Township MP 29.94
B13-67-S1

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

Photo 1: Interstitial stream, looking upstream to north
Photo 2: Interstitial stream, looking downstream to south







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

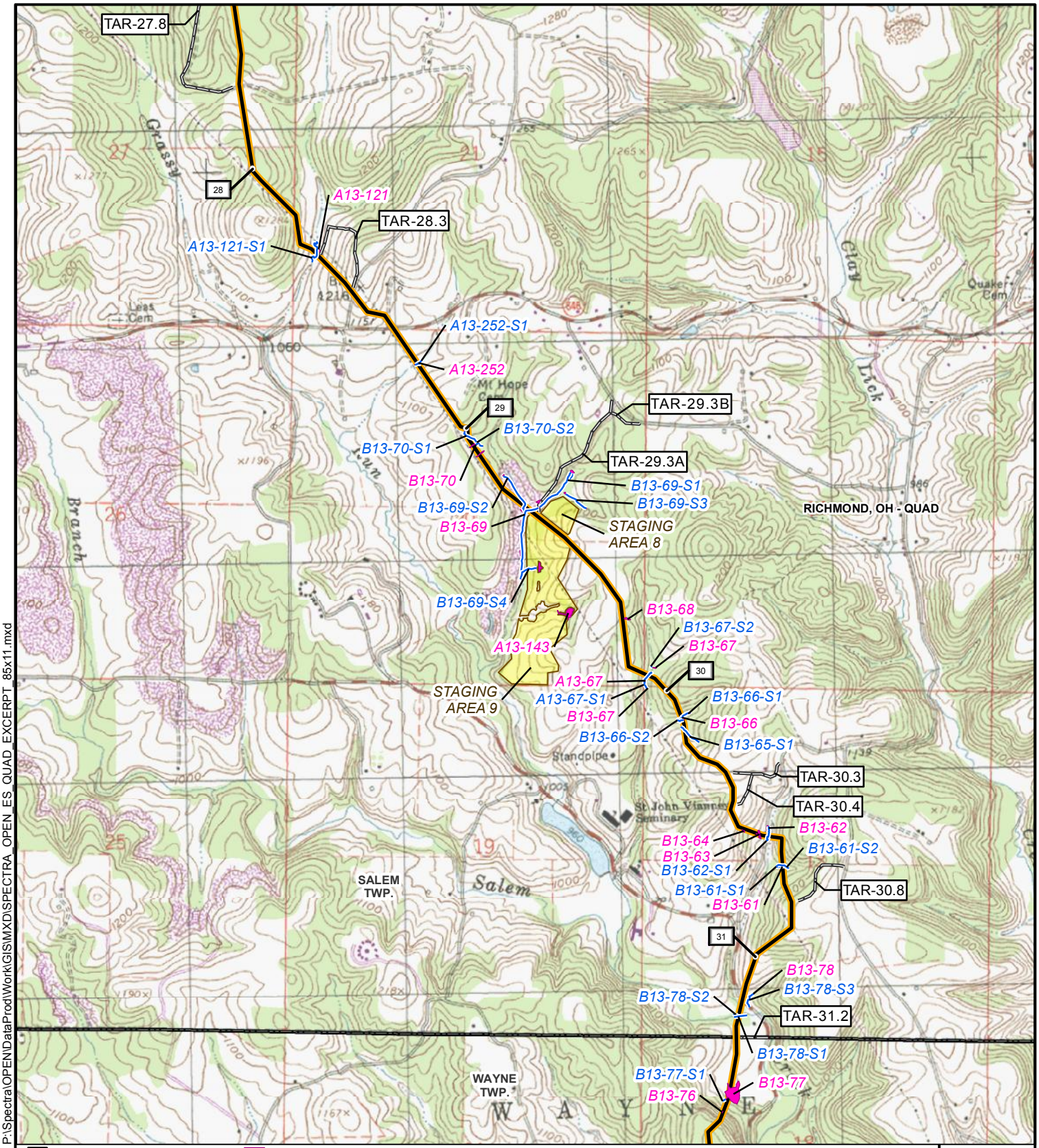
Spectra Natural Gas Pipeline
2015 OPEN Project
Proposed 30in. Line NO. 73

Natural Resource Maps

Map Z-3057

Hatch Mott MacDonald

Created:
02/19/2014



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

N
W E
S

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-2009		

I.G.

Spectra Energy Partners

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