Seven Hills Mine Mitigation Sites HGM Memorandum of Findings

To: Mr. Bryce West, Peabody Energy

From: Rick Larsen, Eco-Tech Consultants, Inc.

Subject: **Hydrogeomorphic Assessment of the Seven Hills Mine Mitigation Sites**
Warrick County, Indiana
Eco-Tech Consultants Project LV2017009

Date: April 21, 2017

Eco-Tech Consultants, Inc. (Eco-Tech) conducted an HGM assessment at seven potential mitigation sites and two completed mitigation sites on April 7th, 12th, and 13th, 2017. The purpose of the assessment at the potential mitigation sites was to derive a baseline wetland functional capacity for each site. Additionally, a six-year reclaimed mine mitigation site and an eight-year prior converted cropland mitigation six were evaluated to use as functional capacity reference sites.

As with the Seven Hills mine site wetlands, methods from the *Regional Guidebook for Assessing the Functions of Low Gradient, Riverine Wetlands in Western Kentucky* were applied to the mitigation sites. Measured and collected field data was then input into a Western Kentucky HGM specific Functional Capacity Index (FCI) calculator spreadsheet obtained from USACE ERDC. At the proposed mitigation sites, the HGM assessment locations were located in prior converted croplands underlain by hydric soils. All of the mitigation sites are agricultural fields located within the floodplain of a channelized stream which historically would have been the dominant source for overbank flow in the adjacent assessment areas.

The seven potential mitigation sites have FCI's that range from 0.36 to 0.46. The six-year reclaimed mine site had an FCI of 0.55, while the eight-year prior converted site had an FCI of 0.69. Functions contributing to low FCI values at the potential mitigation sites include: cycle nutrients, export organic carbon, maintain characteristic plant community, and provide habitat for wildlife. Several important variables such as the lack of a forested plant community providing nutrient inputs and reduced or eliminated surface water connections between the floodplains and the adjacent stream channels have significantly lowered several of the above functions. A summary of the FCI values for each of the mitigation site plots is attached (Table 1). The FCI values are used to calculate the mean wetland functional capacity.

Table 1. Functional Capacity Index scores for the Peabody Energy Mitigation Sites (April 2017)

FCI Functions	Squaw Creek	Spencer County	Ellison West	Francisco	Newmaster	Pike County	Patoka River	Ellison West 4D	Farmersburg
Temporarily Store Surface Water	0.86	0.85	0.85	0.65	0.88	0.83	0.87	0.92	0.94
Maintain Characteristic Subsurface Hydrology	0.50	0.92	0.92	0.83	0.94	0.92	0.90	1.00	0.43
Cycle Nutrients	0.06	0.12	0.02	0.11	0.14	0.10	0.17	0.39	0.32
Remove and Sequester Elements and Compounds	0.70	0.70	0.70	0.64	0.71	0.71	0.71	0.86	0.85
Retain Particulates	0.86	0.85	0.85	0.65	0.88	0.83	0.87	0.92	0.94
Export Organic Carbon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.69
Maintain Characteristic Plant Community	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.40	0.00
Provide Habitat for Wildlife	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.33	0.21
MEAN	**0.37**	**0.43**	**0.46**	**0.36**	**0.44**	**0.43**	**0.44**	**0.69**	**0.55**

Mean Prior Converted Baseline Mitigation Sites	0.42

Mean Prior Converted Mitigation Site Reference	0.69
Mean Mined Lands Mitigation Site Reference	0.55

Both the mined and prior converted mitigation sites could have higher wetland functional capacities if these things were incorporated into designs: macrotopographic features (>3' deep), woody debris, tree snags, larger trees (>3.9" DBH), fewer saplings, and vegetation concurrent with the HGM dominant species plant list.

If you have any questions or require additional information, please contact me at (502) 259-0470 or rlarsen@ecotechinc.com.

Attachments:

1. Mitigation Site HGM Variables and Indices
2. Location Maps
3. Photographs
4. Field Data Sheets

ATTACHMENT 1

Mitigation Site HGM Variables and Indices

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Squaw Creek Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	37	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	76	1.00
6. Vmacro	no units	0	0.10
7. Vfreq	years	1.5	0.95
8. Vrough	no units	0.035	0.53
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	4	1.00
12. Vwtslope	%	100	0.00
13. Vsoilperm	in/hr	1.3	1.00
14. Vpore	%	44.2	1.00
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	75	0.38
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.86
Maintain Characteristic Subsurface Hydrology	0.50
Cycle Nutrients	0.06
Remove and Sequester Elements and Compounds	0.70
Retain Particulates	0.86
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.37**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Spencer County Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. *Vtract*	ha	0	0.10
2. *Vcore*	%	0	0.00
3. *Vconnect*	%	3	0.15
4. *Vslope*	%	0.001	1.00
5. *Vstore*	%	162	1.00
6. *Vmacro*	no units	0	0.10
7. *Vfreq*	years	1.5	0.95
8. *Vrough*	no units	0.03	0.50
9. *Vsoilint*	%	0	1.00
10. *Vwtf*	p(1) / a(0)	1	1.00
11. *Vwtd*	inches	6	1.00
12. *Vwtslope*	%	30	0.70
13. *Vsoilperm*	in/hr	0.4	1.00
14. *Vpore*	%	43	1.00
15. *Vsurfcon*	%	100	0.00
16. *Vclay*	%	0	1.00
17. *Vredox*	p(1) / a(0)	1	1.00
18. *Vtba*	m2/ha	0	0.00
19. *Vtden*	stems/ha	0	0.00
20. *Vsnag*	stems/ha	0	0.00
21. *Vwd*	m3/ha	0	0.00
22. *Vlog*	m3/ha	0	0.00
23. *Vssd*	stems/ha	0	0.00
24. *Vgvc*	%	45	0.72
25. *Vohor*	%	0	0.00
26. *Vahor*	%	0	0.00
27. *Vcomp*	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.85
Maintain Characteristic Subsurface Hydrology	0.92
Cycle Nutrients	0.12
Remove and Sequester Elements and Compounds	0.70
Retain Particulates	0.85
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.43**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Ellison West Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	43	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	51	0.93
6. Vmacro	no units	0	0.10
7. Vfreq	years	1.5	0.95
8. Vrough	no units	0.035	0.53
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	6	1.00
12. Vwtslope	%	28	0.72
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	97	0.13
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	11	0.11

FCI Function	Index
Temporarily Store Surface Water	0.85
Maintain Characteristic Subsurface Hydrology	0.92
Cycle Nutrients	0.02
Remove and Sequester Elements and Compounds	0.70
Retain Particulates	0.85
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.23
Provide Habitat for Wildlife	0.10
MEAN	**0.46**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Francisco Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	20	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	17	0.30
6. Vmacro	no units	0	0.10
7. Vfreq	years	1.5	0.95
8. Vrough	no units	0.045	0.59
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	12	0.66
12. Vwtslope	%	56	0.44
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	51	0.65
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.65
Maintain Characteristic Subsurface Hydrology	0.83
Cycle Nutrients	0.11
Remove and Sequester Elements and Compounds	0.64
Retain Particulates	0.65
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.36**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Newmaster Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	100	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	85	1.00
6. Vmacro	no units	0	0.10
7. Vfreq	years	1	1.00
8. Vrough	no units	0.035	0.53
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	6	1.00
12. Vwtslope	%	17	0.83
13. Vsoilperm	in/hr	0.62	1.00
14. Vpore	%	37.5	0.94
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	32	0.87
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.88
Maintain Characteristic Subsurface Hydrology	0.94
Cycle Nutrients	0.14
Remove and Sequester Elements and Compounds	0.71
Retain Particulates	0.88
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.44**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Pike County Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	100	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	44	0.80
6. Vmacro	no units	12	1.00
7. Vfreq	years	1	1.00
8. Vrough	no units	0.04	0.56
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	6	1.00
12. Vwtslope	%	28	0.72
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	55	0.61
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.83
Maintain Characteristic Subsurface Hydrology	0.92
Cycle Nutrients	0.10
Remove and Sequester Elements and Compounds	0.71
Retain Particulates	0.83
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.43**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Patoka River Site **PC Ag Field**

Variables	Units	Measure	Subindex
1. Vtract	ha	0	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	74	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	127	1.00
6. Vmacro	no units	0	0.10
7. Vfreq	years	1	1.00
8. Vrough	no units	0.03	0.50
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	6	1.00
12. Vwtslope	%	35	0.65
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	100	0.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	0	0.00
24. Vgvc	%	2.5	1.00
25. Vohor	%	0	0.00
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.87
Maintain Characteristic Subsurface Hydrology	0.90
Cycle Nutrients	0.17
Remove and Sequester Elements and Compounds	0.71
Retain Particulates	0.87
Export Organic Carbon	0.00
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.00
MEAN	**0.44**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

Ellison West 4D Site **PC Mitigation**

Variables	Units	Measure	Subindex
1. Vtract	ha	63	0.30
2. Vcore	%	0	1.00
3. Vconnect	%	62	1.00
4. Vslope	%	0.001	1.00
5. Vstore	%	51	0.93
6. Vmacro	no units	0	0.10
7. Vfreq	years	1.5	0.95
8. Vrough	no units	0.082	0.83
9. Vsoilint	%	0	1.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	0.25	1.00
12. Vwtslope	%	0	1.00
13. Vsoilperm	in/hr	0.4	1.00
14. Vpore	%	43	1.00
15. Vsurfcon	%	0	1.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0.71	0.04
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	16250	0.50
24. Vgvc	%	40	0.78
25. Vohor	%	81	1.00
26. Vahor	%	0	0.00
27. Vcomp	%	33	0.33

FCI Function	Index
Temporarily Store Surface Water	0.92
Maintain Characteristic Subsurface Hydrology	1.00
Cycle Nutrients	0.39
Remove and Sequester Elements and Compounds	0.86
Retain Particulates	0.92
Export Organic Carbon	0.71
Maintain Characteristic Plant Community	0.40
Provide Habitat for Wildlife	0.33
MEAN	**0.69**

Functional Capacity Indices Low Gradient Riverine Wetlands in Western Kentucky

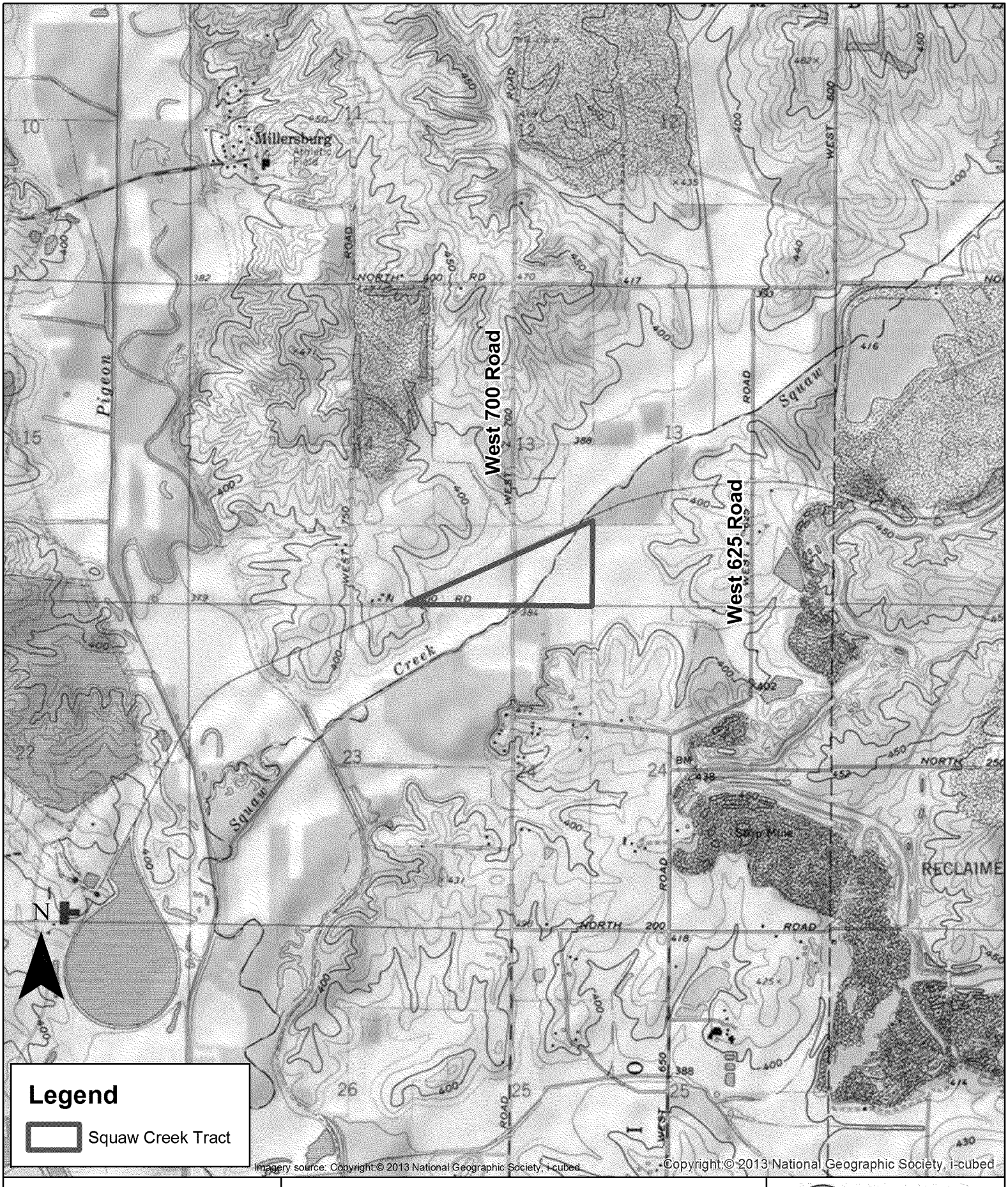
Farmersburg Site **Mined Mitigation**

Variables	Units	Measure	Subindex
1. Vtract	ha	10.3	0.10
2. Vcore	%	0	0.00
3. Vconnect	%	40	1.00
4. Vslope	%	0.008	1.00
5. Vstore	%	238	1.00
6. Vmacro	no units	0	0.10
7. Vfreq	years	1.5	0.95
8. Vrough	no units	0.082	0.83
9. Vsoilint	%	100	0.00
10. Vwtf	p(1) / a(0)	1	1.00
11. Vwtd	inches	0.05	1.00
12. Vwtslope	%	0	1.00
13. Vsoilperm	in/hr	S. M.	0.10
14. Vpore	%	S. M.	0.10
15. Vsurfcon	%	0	1.00
16. Vclay	%	0	1.00
17. Vredox	p(1) / a(0)	1	1.00
18. Vtba	m2/ha	0	0.00
19. Vtden	stems/ha	0	0.00
20. Vsnag	stems/ha	0	0.00
21. Vwd	m3/ha	0	0.00
22. Vlog	m3/ha	0	0.00
23. Vssd	stems/ha	750	0.50
24. Vgvc	%	71	0.43
25. Vohor	%	59	0.98
26. Vahor	%	0	0.00
27. Vcomp	%	0	0.00

FCI Function	Index
Temporarily Store Surface Water	0.94
Maintain Characteristic Subsurface Hydrology	0.43
Cycle Nutrients	0.32
Remove and Sequester Elements and Compounds	0.85
Retain Particulates	0.94
Export Organic Carbon	0.69
Maintain Characteristic Plant Community	0.00
Provide Habitat for Wildlife	0.21
MEAN	**0.55**

ATTACHMENT 2

Location Maps



Squaw Creek Potential Mitigation Site
Warrick County, Indiana

0 0.3 0.6 Miles

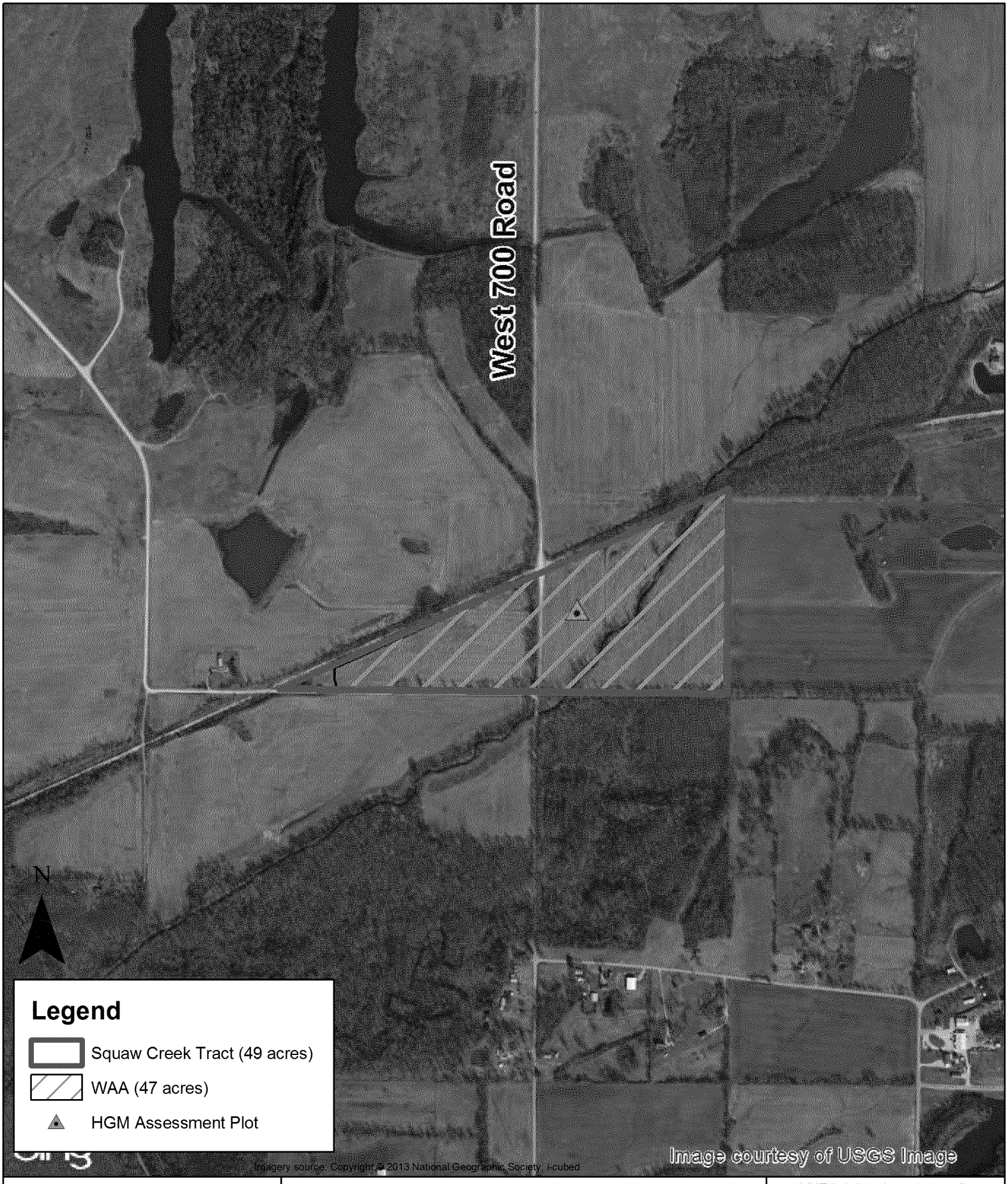
FIGURE 1.

Squaw Creek Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Squaw Creek Potential Mitigation Site
Warrick County, Indiana

0 650 1,300 Feet

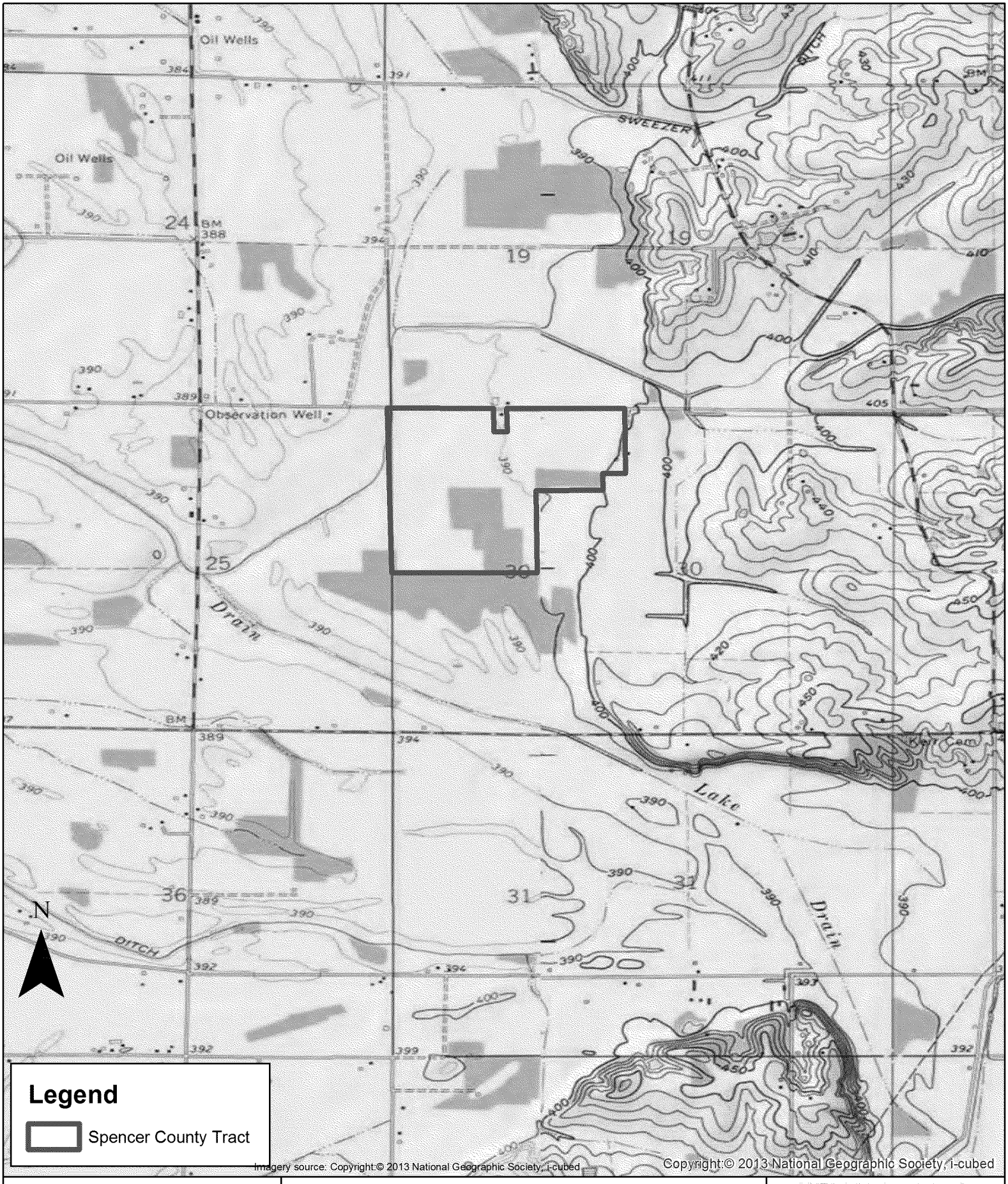
FIGURE 2.

Squaw Creek HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Spencer County Potential Mitigation Site
Spencer County, Indiana

0 0.3 0.6 Miles

FIGURE 1.

Spencer County Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009

Spencer County Potential Mitigation Site
Spencer County, Indiana

0 650 1,300 Feet

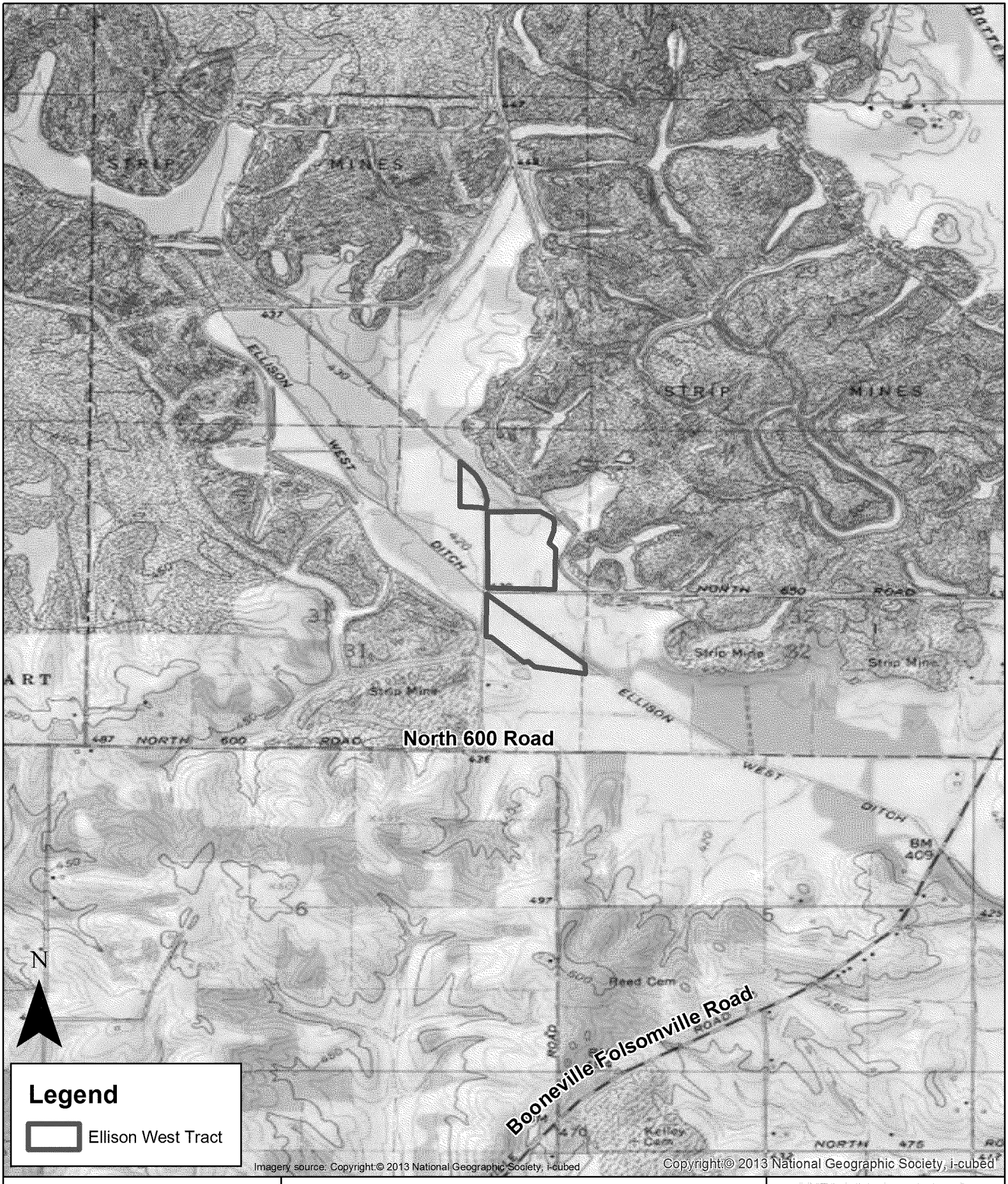
FIGURE 2.

Spencer County HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/19/2017

ETC File: LV2017009



Ellison West Potential Mitigation Site
Warrick County, Indiana

0 0.3 0.6 Miles

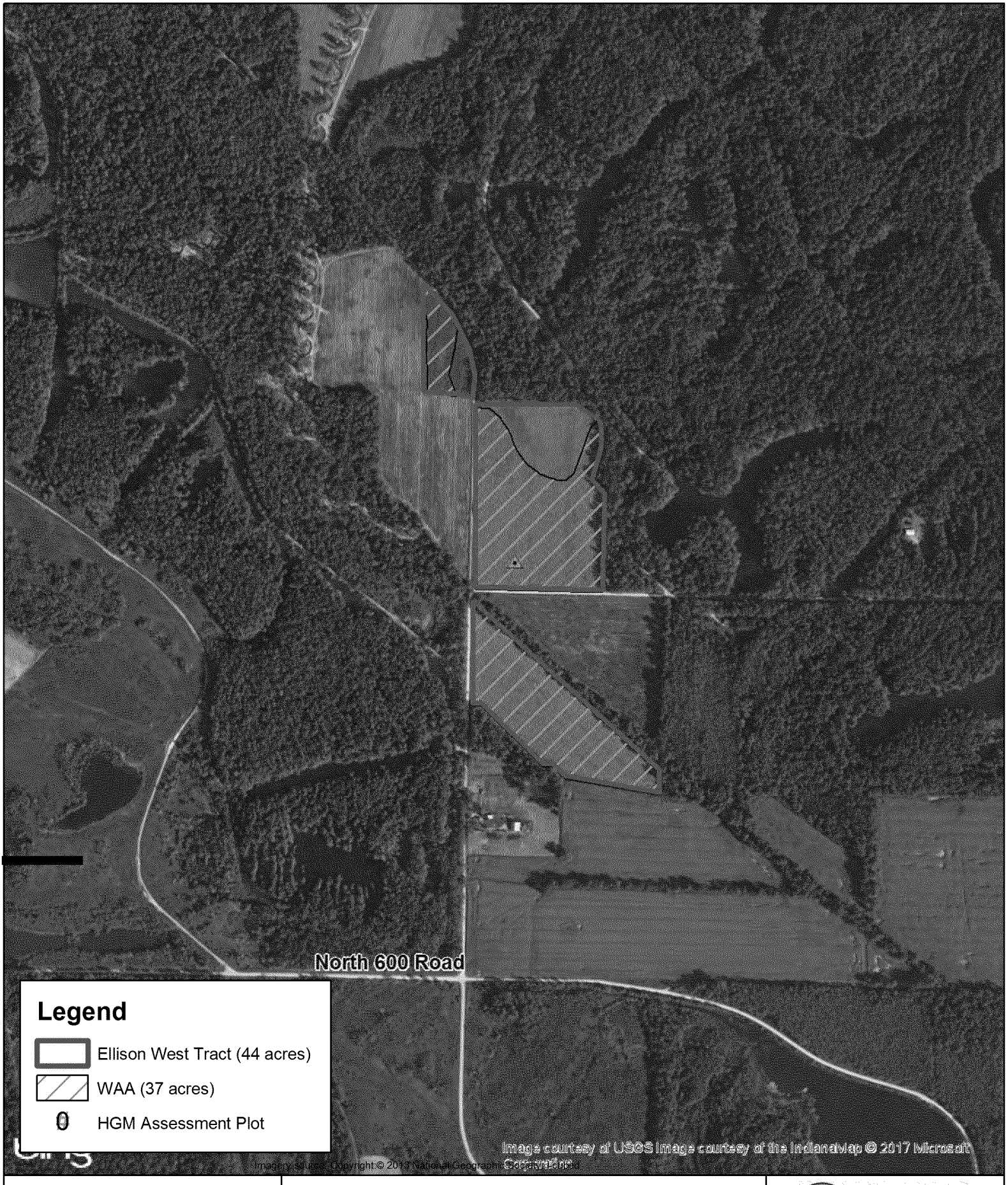
FIGURE 1.

Ellison West Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Ellison West Potential Mitigation Site
Warrick County, Indiana

0 650 1,300 Feet

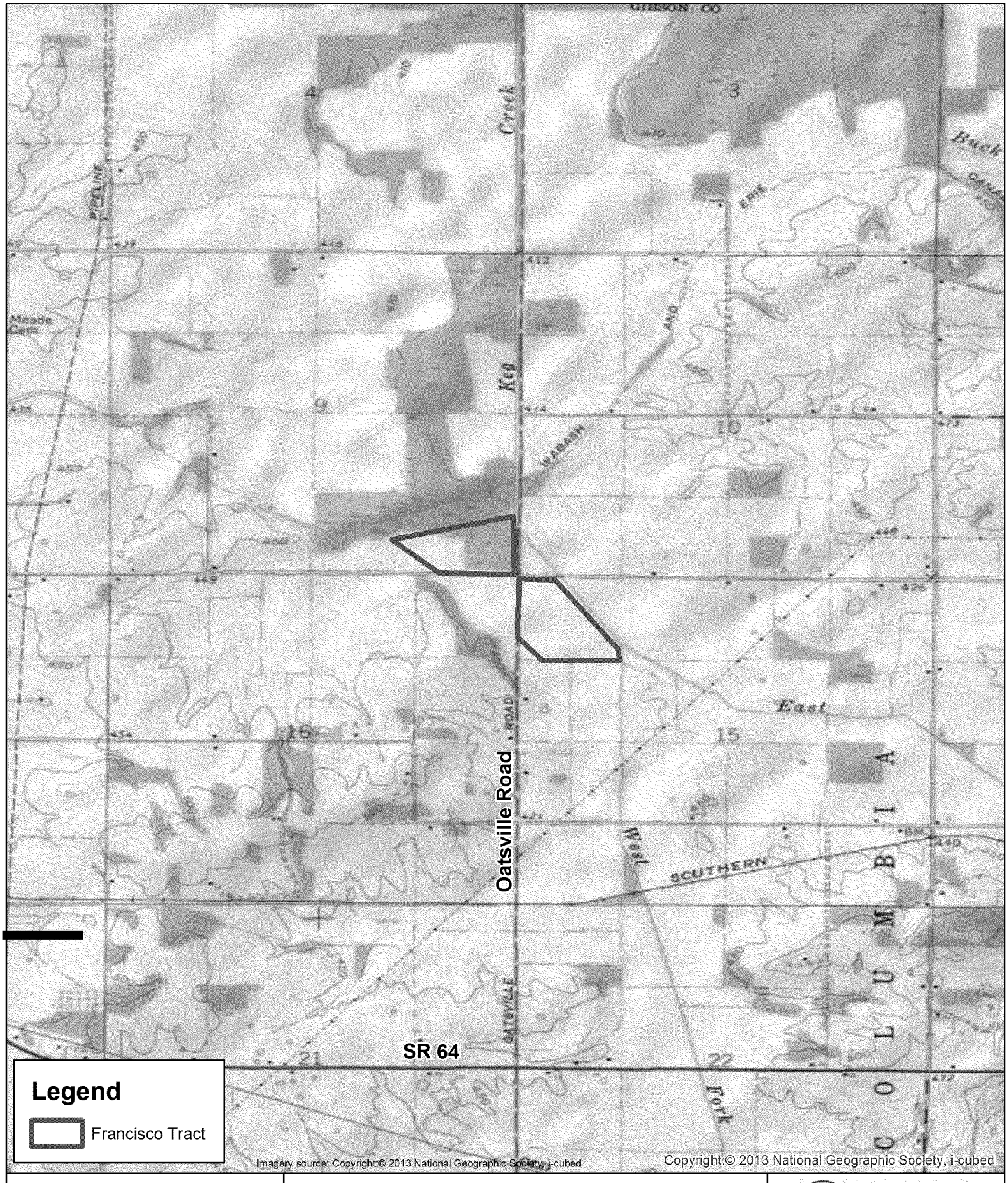
FIGURE 2.

Ellison West HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Francisco Potential Mitigation Site
Gibson County, Indiana

0 0.3 0.6 Miles

FIGURE 1.

Francisco Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009

Francisco Potential Mitigation Site
Gibson County, Indiana

0 650 1,300 Feet

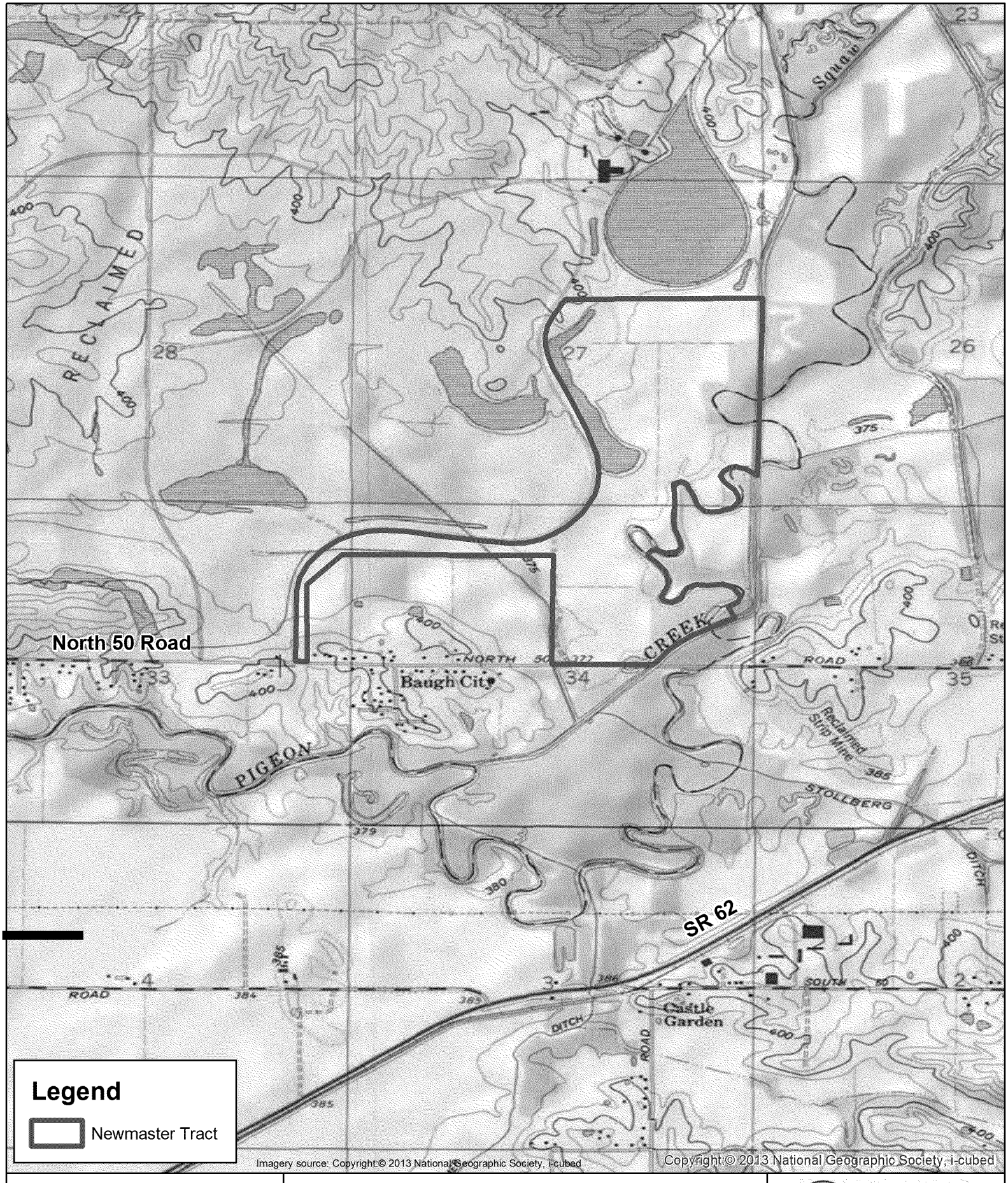
FIGURE 2.

Francisco HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Newmaster Potential Mitigation Site
Warrick County, Indiana

0 0.3 0.6 Miles

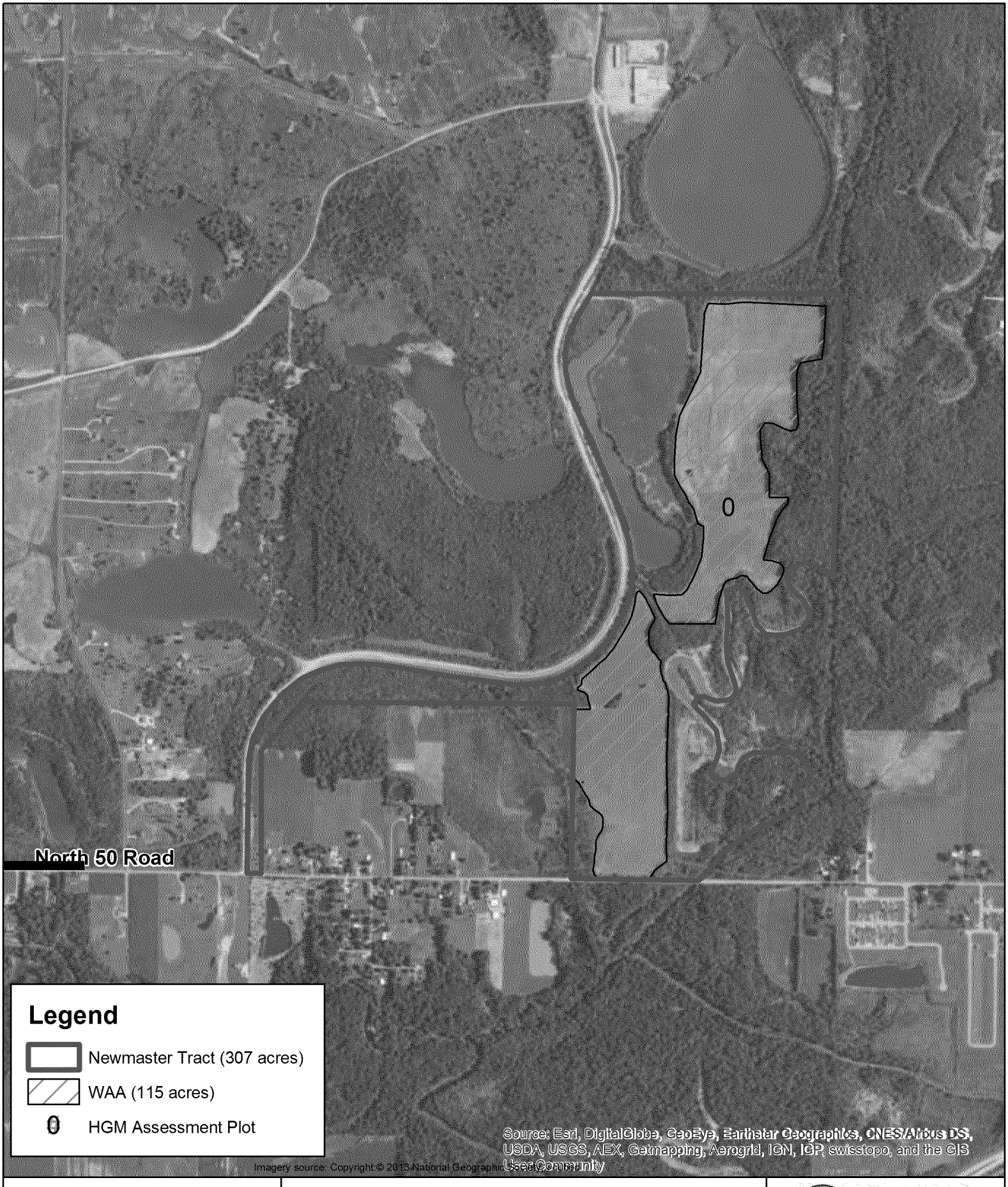
FIGURE 1.

Newmaster Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Newmaster Potential Mitigation Site
Warrick County, Indiana

0 1,050 2,100 Feet

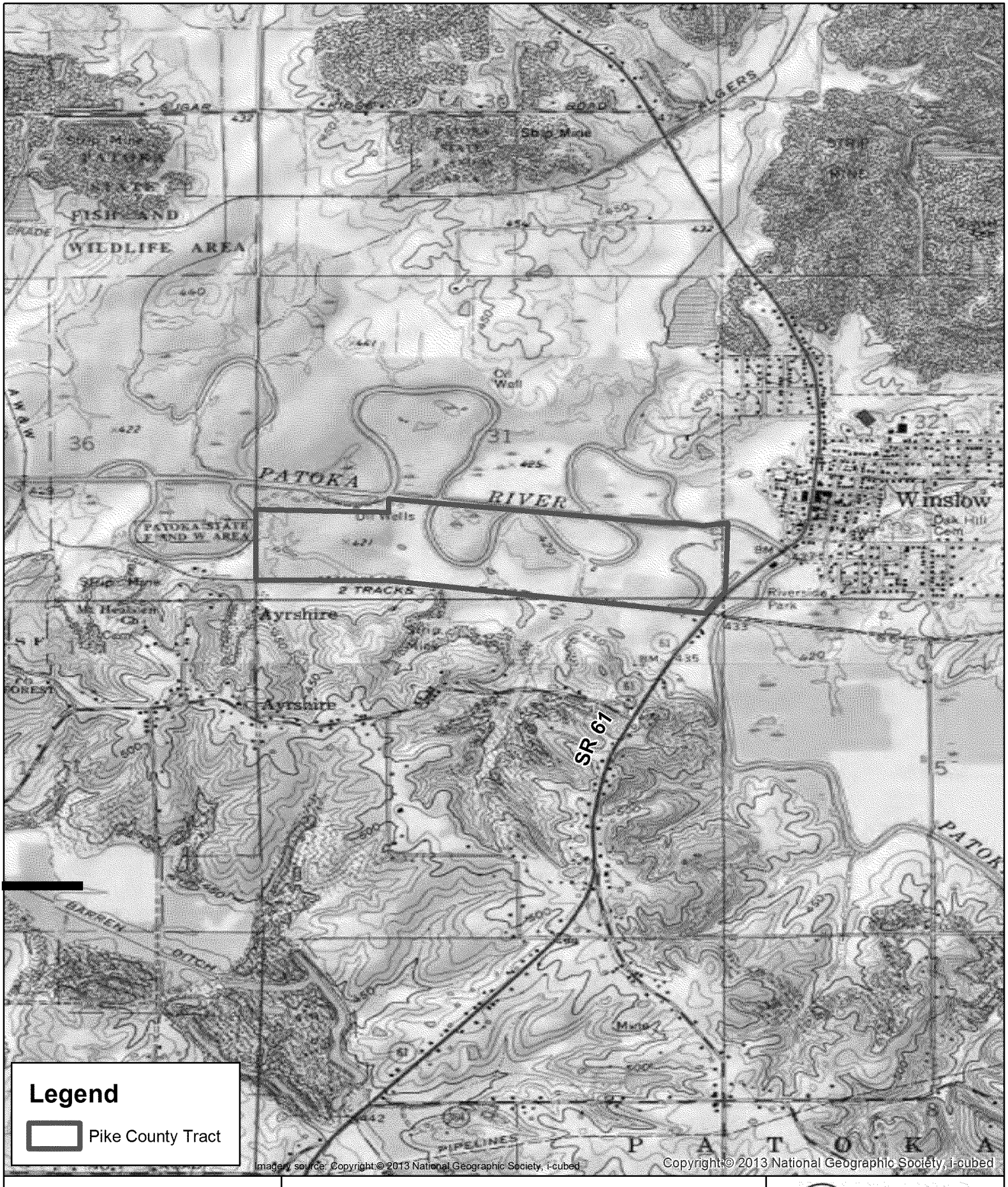
FIGURE 2.

Newmaster HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Pike County Potential Mitigation Site
Pike County, Indiana

0 0.3 0.6 Miles

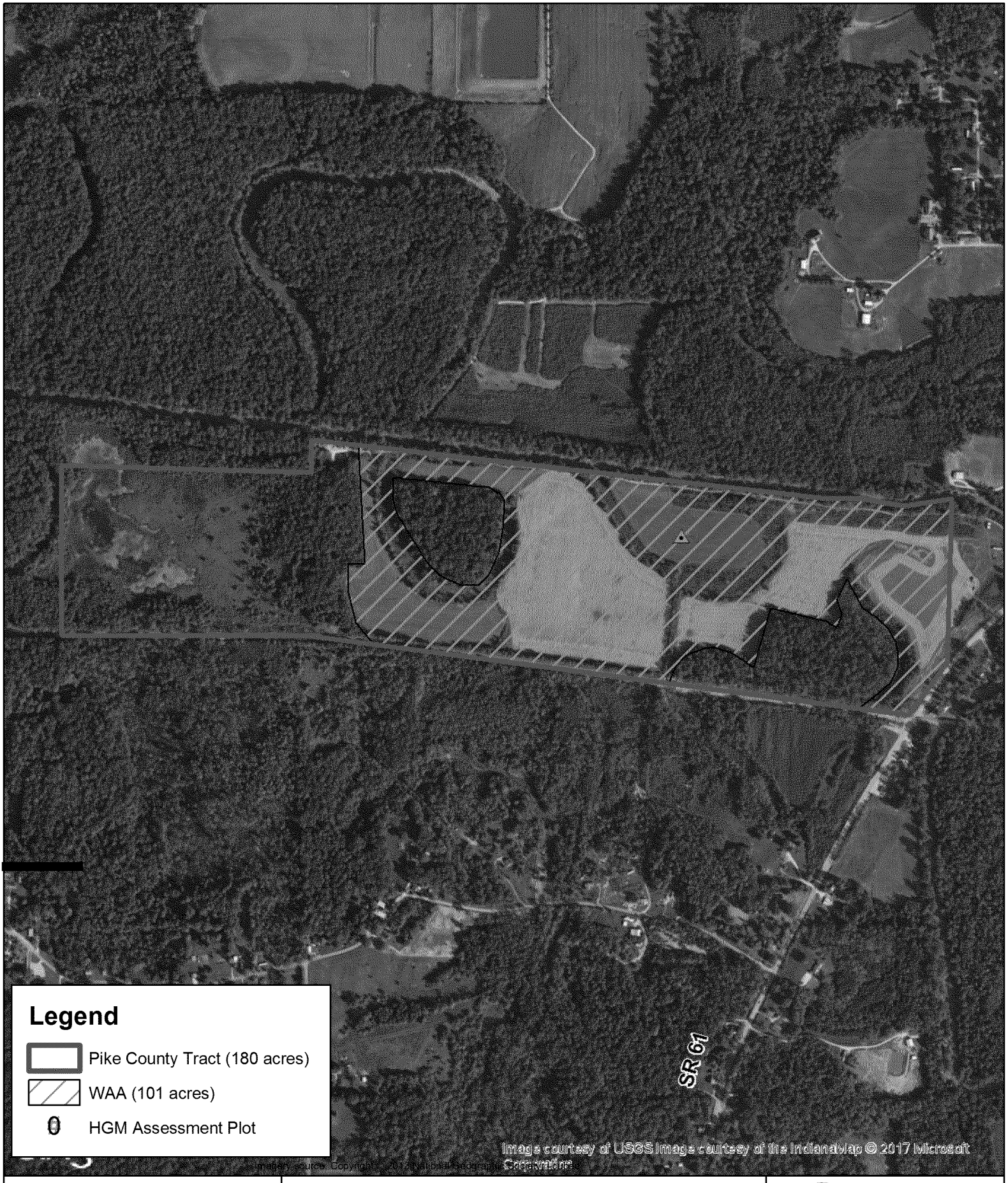
FIGURE 1.

Pike County Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Pike County Potential Mitigation Site
Pike County, Indiana

0 650 1,300 Feet

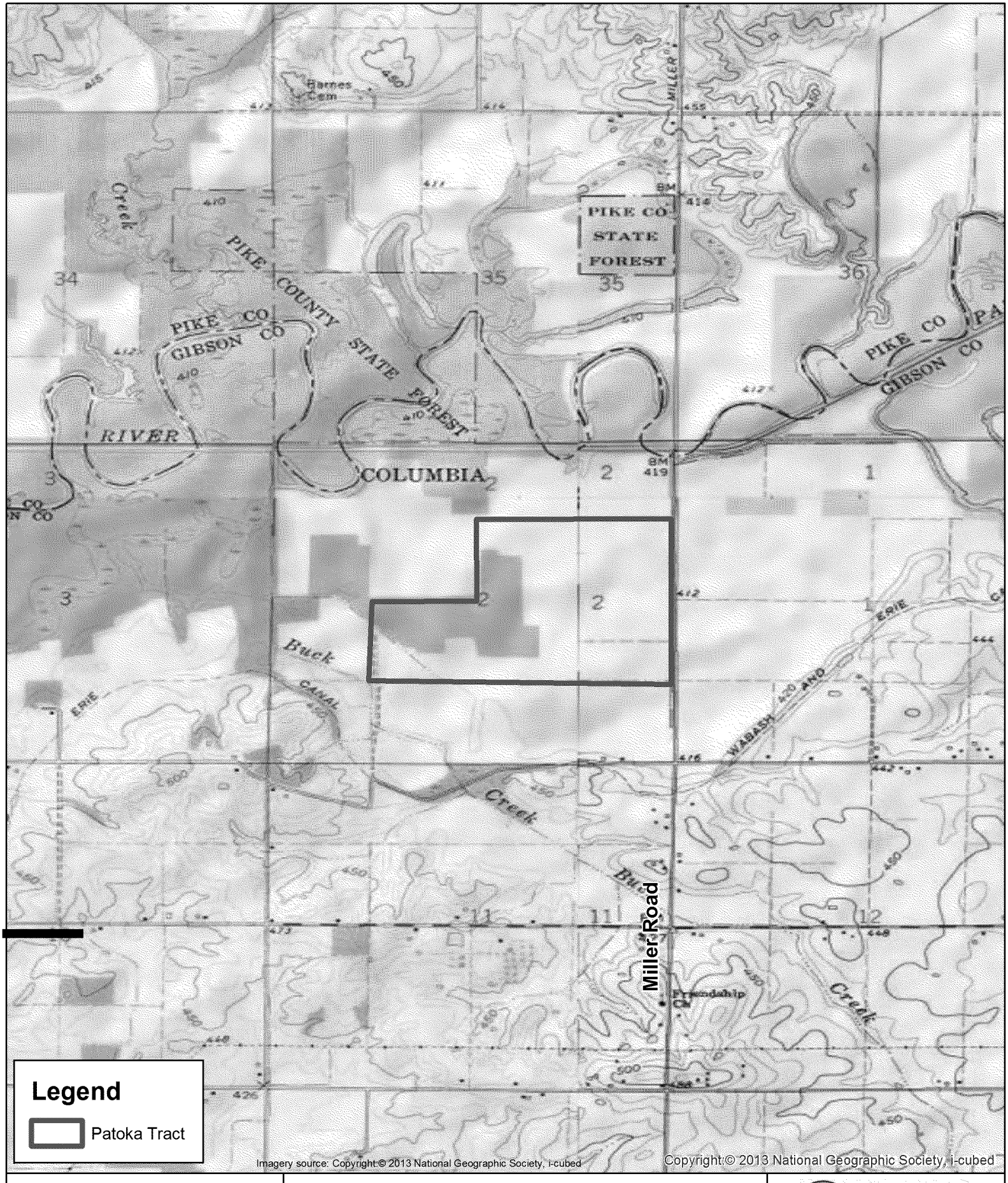
FIGURE 2.

Pike County HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Patoka Potential Mitigation Site
Gibson County, Indiana

0 0.3 0.6 Miles

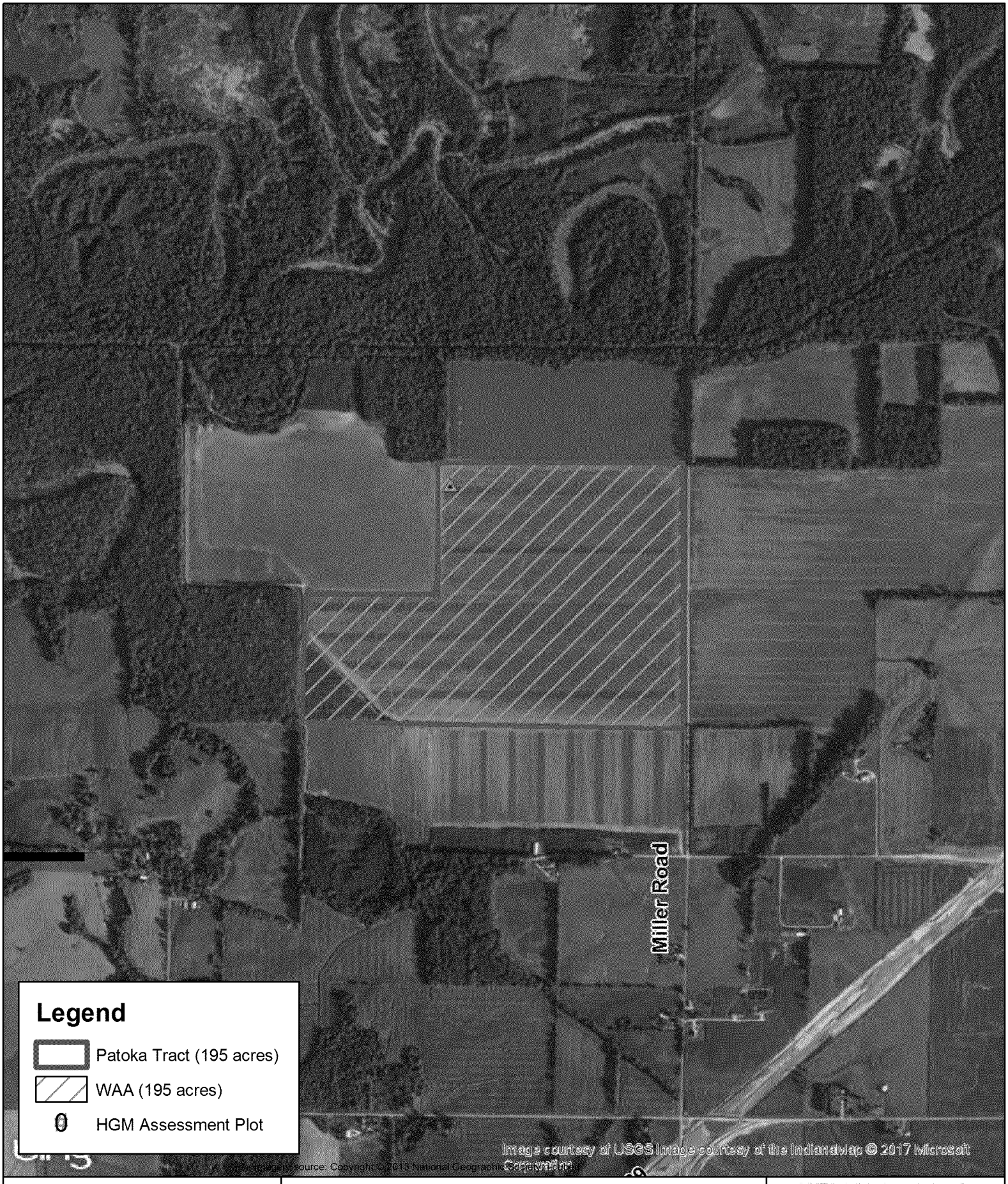
FIGURE 1.

Patoka Mitigation Site Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009



Patoka Potential Mitigation Site
Gibson County, Indiana

0 1,050 2,100 Feet

FIGURE 2.

Patoka HGM Location Map

Eco-Tech CONSULTANTS

Drawn by: SAS | Print date: 4/18/2017

ETC File: LV2017009

ATTACHMENT 3

Photographs

Photo 1. –Squaw Creek Site.

Photo 2. – Spencer County Site.

Photo 3. – Ellison West Site.

Photo 4. – Francisco Site.

Photo 5. – Newmaster Site.

Photo 6. – Pike County Site.

Photo 7. – Patoka River Site.

Photo 8. – Ellison West 4D Mitigation Site.

Photo 9. – Farmersburg Mitigation Site.

Photo 10. – Typical PC Ag Field Soil.

ATTACHMENT 4

Field Data Sheets

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: SQUAW CREEK **Date :** 4-7-2014

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

NWI 1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass (824 HECTARES) ..... 0 ha

GIS 2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

GIS 3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 37 %

TOPO 4. V_{SLOPE} Percent floodplain slope (20'/17363') ..... 0.001 %

TOPO 5. V_{STORE} Floodplain width to channel width ratio (1894'/25') 76

TOPO/SITEVISIT 6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + 0.0 (n_{TOPO}) + 0.0 (n_{OBS}) + .005 (n_{VEG}) = ... 0.035

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is (REDOX IN TOP 4") ..... 4 inches
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 100 %

13. $V_{SOILPERM}$ Soil permeability ..... 1.3 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 44.2 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile .... CLAY LOAM ... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

SQUAW CREEK

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 75 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : SQUAW CREEK **Plot Number :** _____ **Date :** 4-7-2017

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)

18. V_{TBA} Sum of values from shaded columns above = _____ (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = _____ (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= _____ (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = 0

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... _____ tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = 0

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... _____ tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

SQUAW CREEK

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 ..... 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 80 % 2 80 % 3 80 % 4 60 % ..... Average 75 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % ..... Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % ..... Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % .... Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: SPENCER Co. **Date :** 4-7-2017

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 0 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 3 %

4. V_{SLOPE} Percent floodplain slope ...10'/7836..... 1001 %

5. V_{STORE} Floodplain width to channel width ratio ..... 3583/22' 162

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
Check data source: gage data __, local knowledge __, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + 0.0 (n_{TOPO}) + 0.0 (n_{OBS}) + 0.0 (n_{VEG}) = ... 0.03

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... 6 inches
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 30 %

13. $V_{SOILPERM}$ Soil permeability ..... 0.4 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 43 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile .....CLAY LOAM..... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

Spencer Co.

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . ____ stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 45 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : SPENCER Co. **Plot Number :** _____ **Date :** 4-7-2017

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

Spencer Co.

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 ..... 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 30 % 2 75 % 3 35 % 4 40 % ..... Average 45 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % ..... Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % ..... Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % .... Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

CHICKWEED
YELLOW ROCKET

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: ELLISON WEST **Date :** 4-7-2016

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 0 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 43 %

4. V_{SLOPE} Percent floodplain slope ..... 0.001 %

5. V_{STORE} Floodplain width to channel width ratio 51

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .

8. V_{ROUGH} Roughness Coefficient 0.03 (n_{BASE}) + 0.0 (n_{TOPO}) + 0.0 (n_{OBS}) + .005 (n_{VEG}) = ... 0.035

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... 6 inches
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey ✓.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 28 %

13. $V_{SOILPERM}$ Soil permeability ..... 0.4 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 43 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile ... CLAY LOAM ... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

ELLISON WEST

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 97 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 11 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : ELLISON WEST **Plot Number :** _____ **Date :** 4-7-2016

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter ^{2}		_____

Total diameter^2 of stems from both transects = 0

Ellison W.

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 100 % 2 100 % 3 100 % 4 90 % . . . . . Average 97 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 33 % . . . . Average 11 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp. ✓
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

PANICUM DICH. - 20%
BROOMSEDGE - 50%
FLEABANE - 30%

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location: FRANCISCO **Date :** 4-12-17

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 6 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 20 %

4. V_{SLOPE} Percent floodplain slope ..... .001 %

5. V_{STORE} Floodplain width to channel width ratio ..... 17 (676 / 40')

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
   Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____.

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + .010 (FLAT) (n_{TOPO}) + .010 (NONE) (n_{OBS}) + .015 (n_{VEG}) = ... 0.045

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
    Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... 12 inches
    Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey ✓.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 56 %

13. $V_{SOILPERM}$ Soil permeability ..... 0.4 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 43 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile ..... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

Francisco

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 51 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : FRANCISCO **Plot Number :** _____ **Date :** 4-12-17

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)
NONE							

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

Francisco

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 75 % 2 25 % 3 30 % 4 75 % . . . . . Average 51 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % . . . . Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Sauraurus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

PACKERA GL. 5%
GRASS SP. 70%

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: NEWMASTER **Date :** 4-12-17

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 0 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 100 %

4. V_{SLOPE} Percent floodplain slope ..... 0.001 %

5. V_{STORE} Floodplain width to channel width ratio 4246 / 50 85

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1 years
Check data source: gage data ✓, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____.

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + 0.0 (n_{TOPO}) + 0.0 (n_{OBS}) + .005 (n_{VEG}) = ... 0.035

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... 6 inches
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey ✓.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 17 %

13. $V_{SOILPERM}$ Soil permeability ..... 0.62 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 37.5 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile ..... CLAY LOAM ..... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

Newminster

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 32 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : NEWMASTER **Plot Number :** _____ **Date :** 4-12-17

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)
NONE							

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	$diameter^2$	Transect 2	diameter	$diameter^2$
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total $diameter^2$		_____	Total $diameter^2$		_____

Total $diameter^2$ of stems from both transects = 0

Newmaster

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . _____ tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... _____ tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... _____ cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . _____ cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 20 % 2 50 % 3 25 % 4 35 % . . . . . Average 32 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % . . . . Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

PACKERA GLABELLUS 10%
GRASS SP. 10%

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: PIKE COUNTY **Date :** 4-12-17

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass (101 AC.) ..... 0 ha
2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %
3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 100 %
4. V_{SLOPE} Percent floodplain slope ..... .001 %
5. V_{STORE} Floodplain width to channel width ratio 3530'/80' 44
6. V_{MACRO} Percent of WAA covered with macrotopographic features MEANDER SCROLLS ..... 12 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.0 years
   Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .
8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + .005 (n_{TOPO}) + 0 (n_{OBS}) + .005 (n_{VEG}) = ... 0.04
9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.
10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
    Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.
11. V_{WTD} Water table depth is ..... 6 inches
    Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey ✓.
12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 28 %
13. $V_{SOILPERM}$ Soil permeability ..... 0.4 (in./hr)
14. V_{PORE} Percent effective soil porosity ..... 43 %
15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %
16. V_{CLAY} Percent of WAA with altered clay content in soil profile ..... 0 %
17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

Pike Co.

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 55 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : PIKE COUNTY **Plot Number :** _____ **Date :** 4-12-17

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)
NONE							

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

Pike Co.

Size Class 3 tons / acre = 0.0687 × *Total diameter*^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . _____ cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 50 % 2 30 % 3 60 % 4 80 % . . . . . Average 55 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % . . . . Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

PACKERA GLABELLUS 20%
OXALIS STRICTA 2%
GRASS SP. 25%
PLANTAGO SP. 3%

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : A- TEAM
Project Name/Location: PATOKA **Date :** 4-12-17

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 0 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 74 %

4. V_{SLOPE} Percent floodplain slope ..... 0.00 %
10,044 / 79'

5. V_{STORE} Floodplain width to channel width ratio 127

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1 years
Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + 0.0 (n_{TOPO}) FLAT + 0.0 (n_{OBS}) NONE + 0.0 (n_{VEG}) = ... .03

9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... 6 inches
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..... 35 %

13. $V_{SOILPERM}$ Soil permeability ..... 0.4 (in./hr)

14. V_{PORE} Percent effective soil porosity ..... 43 %

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 100 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile ..... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

Patoka

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 2.5 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : PATOKA **Plot Number :** _____ **Date :** 4-12-17

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)
NONE							

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} /V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = _____

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = _____

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

Pontoka

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 _____ Subplot 2 _____ Average ____ × 250 = . 0 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 0 % 2 0 % 3 3 % 4 7 % . . . . . Average 2.5 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % . . . . Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp.
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Saururus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

GRASS SP. 3%

8 YR. RESTORATION

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location: ELLISON WEST 4D **Date :** 4-7-2017

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 63 ha
2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %
3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 62 %
4. V_{SLOPE} Percent floodplain slope ..... 20' / 11,655' ..... 0.001 %
5. V_{STORE} Floodplain width to channel width ratio ..... 1030 / 20' 51
6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
   Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .
8. V_{ROUGH} Roughness Coefficient 0.03 (n_{BASE}) + 0.10 (n_{TOPO}) + 0.002 (n_{OBS}) + 0.05 (n_{VEG}) = ... 0.082
9. $V_{SOILINT}$ Percent of WAA with altered soils ..... 0 %.
10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent ____
    Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.
11. V_{WTD} Water table depth is ..... 0.25 inches
    Check data source: groundwater well, ✓ redoximorphic features, __ County Soil Survey __.
12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope .. RESTORED STREAM 0 %
13. $V_{SOILPERM}$ Soil permeability .... BONNIE ..... 0.4 (in./hr)
14. V_{PORE} Percent effective soil porosity ..... 43 %
15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 0 %
16. V_{CLAY} Percent of WAA with altered clay content in soil profile . CLAY LOAM ..... 0 %
17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent ____

ELLISON WEST 4D

Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0.71 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 16,250 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 40 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 81 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 33 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : ELLISON WEST **Plot Number :** 4D **Date :** 4-7-2017

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 _____ Transect 2 _____ *Total number of stems* = 1

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... 0.187 tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = 0

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... 0 tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

ELLISON WEST 4D

Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0.187 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 10.33 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 ..... 0.71 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
Subplot 1 ~~||||~~ ~~||||~~ ~~||||~~ Subplot 2 ~~||||~~ ~~||||~~ ~~||||~~ Average 65 × 250 = . 16,250 stems/ha
~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ||| ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ||| 68/63

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 25 % 2 30 % 3 77 % 4 30 % ..... Average 40 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 80 % 2 85 % 3 60 % 4 100 % ..... Average 81 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % ..... Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 100 % Ground Vegetation = 0 % .... Average 33 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	131 Shrub/Sapling	Ground Vegetation
Acer rubrum	√*Acer rubrum* ☒ ☒ ☒ ☒ ☒ ☒ ☒	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp. √
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica* ∴	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Sauraurus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis ☒ ⁚	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

BROOMSEDGE - 40%
ASTER SP - 2%
JUNCUS TENUIS - 35%

ACER RUBRUM - ☒ ☒ ☒

A. RUBRUM 101 77%
PLATANUS 16 12%

Field Data Sheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____
Project Name/Location: FARMERSBURG W-2 **Date :** 4-13-2017

Sample variables 1-6 using aerial photos, topographic maps, scenic overlooks, local informants, etc.

1. V_{TRACT} Area of wetland that is contiguous with the WAA *and* of the same subclass ..... 10.3 ha

2. V_{CORE} Percent of wetland tract that is >300 m from unsuitable habitat ..... 0 %

3. $V_{CONNECT}$ Percent of wetland tract perimeter that is "connected" to suitable habitat .. 40 %

4. V_{SLOPE} Percent floodplain slope ..... 20' / 2364 ..... 0.008 %

5. V_{STORE} Floodplain width to channel width ratio ..... 950' / 4' 238

6. V_{MACRO} Percent of WAA covered with macrotopographic features ..... 0 %

Sample variables 7-17 based on a walking reconnaissance of the WAA

7. V_{FREQ} Overbank flood recurrence interval ..... 1.5 years
Check data source: gage data __, local knowledge ✓, flood frequency curves __, regional dimensionless curve __, hydrologic modeling __, other _____ .

8. V_{ROUGH} Roughness Coefficient .03 (n_{BASE}) + 0 (n_{TOPO}) + .002 (n_{OBS}) + .05 (n_{VEG}) = ... 0.082

9. $V_{SOILINT}$ Percent of WAA with altered soils ..SURFACE MINING..... 100 %.

10. V_{WTF} Water table fluctuation is (check one): ..... present ✓ absent _____
Check data source: groundwater well, __ redoximorphic features, ✓ County Soil Survey __.

11. V_{WTD} Water table depth is ..... .05 inches
Check data source: groundwater well, ✓ redoximorphic features, __ County Soil Survey __.

12. $V_{WTSLOPE}$ Percent of WAA with an altered water table slope ..restored stream..... 0 %

13. $V_{SOILPERM}$ Soil permeability .....S.MINE..... 0.1 ~~(in./hr)~~

14. V_{PORE} Percent effective soil porosity ..S.MINE..... 0.1 ~~%~~

15. $V_{SURFCON}$ Percent of adjacent stream reach with altered surface connections ..... 0 %

16. V_{CLAY} Percent of WAA with altered clay content in soil profile ...CLAY LOAM..... 0 %

17. V_{REDOX} Redoximorphic features are (check one): ..... present ✓ absent _____

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Sample variables 18-20 from a representative number of locations in the WAA using a 0.04 ha circular plot (11.3 m (37 ft) radius)

18. V_{TBA} Tree basal area (average of 0.04 ha plot values on next line) . . . . . 0 m^2/ha
0.04 ha plots: 1 ____ m^2/ha 2 ____ m^2/ha 3 ____ m^2/ha 4 ____ m^2/ha

19. V_{TDEN} Number of tree stems (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

20. V_{SNAG} Number of snags (average of 0.04 ha plot values on next line) . . . . . 0 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stems/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 21-22 on two (2) 15 m transects partially within the 0.04 ha plot

21. V_{WD} Volume of woody debris (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

22. V_{LOG} Volume of logs (average of transect values on next line) . . . . . 0 m^3/ha
Transect: 1 ____ m^3/ha 2 ____ m^3/ha 3 ____ m^3/ha 4 ____ m^3/ha

Sample variable 23 in two (2) 0.004 ha circular subplots (3.6 m (11.8 ft) radius) placed in representative locations of the 0.04 ha plot

23. V_{SSD} Number of woody understory stems (average of 0.04 ha plot values on next line)
. . . . . 750 stems / ha
0.04 ha plots: 1 ____ stems/ha 2 ____ stem/ha 3 ____ stems/ha 4 ____ stems/ha

Sample variables 24-26 in four (4) m^2 subplots placed in representative locations of each quadrant of the 0.04 ha plot

24. V_{GVC} Average cover of ground vegetation (average of 0.04 ha plot values on next line) . . 71 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

25. V_{OHOR} Average cover of "O" Horizon (average of 0.04 ha plot values on next line) . . . . . 59 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

26. V_{AHOR} Average cover of "A" Horizon (average of 0.04 ha plot values on next line) . . . . . 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

27. V_{COMP} Concurrence with all strata dominants (average of 0.04 ha plot values on next line) 0 %
Average of 0.04 ha plots sampled: 1 ____ % 2 ____ % 3 ____ % 4 ____ %

Plot Worksheet: Low Gradient Riverine Wetlands in Western Kentucky

Assessment Team : _____

Project Name/Location : FARMERSBURG **Plot Number :** W-2 **Date :** 4-13-2017

Record dbh (cm) of trees by species below, square dbh values (cm^2), multiply result by 0.000079 (m^2), and sum resulting values in shaded columns (m^2/0.04 ha). Record in 18. V_{TBA}, multiply by 25 (m^2/ha).

Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)	Species	dbh (cm)	dbh^2 (cm^2)	× 0.00079 (m^2/0.04 ha)

18. V_{TBA} Sum of values from shaded columns above = 0 (m^2/0.04 ha) × 25 = 0 m^2/ha

19. V_{TDEN} Total number of tree stems from above = 0 (stems/0.04 ha) × 25 = 0 stems/ha

20. V_{SNAG} Total number of snag stems from above= 0 (stems/0.04 ha) × 25 = 0 stems/ha

21/22. V_{WD} / V_{LOG}

Record number of stems in Size Class 1 (0.6-2.5 cm / 0.25-1 in) along a 6 ft section of Transect 1 and 2

Transect 1 0 Transect 2 0 *Total number of stems* = 0

Size Class 1 tons /acre = 0.187 × *total number of stems* = ... _____ tons/acre

Record number of stems in Size Class 2 (2.5 - 7.6 cm / 1-3 in) along 12 ft section of Transect 1 and 2

Transect 1_____ Transect 2 _____ *Total number of stems* = 0

Size Class 2 tons / acre = 0.892 × *total number of stems* = ... _____ tons/acre

Record diameter of stems in Size Class 3 (> 7.6 cm / >3 in) along 50 ft section of Transect 1 and 2

Transect 1	diameter	diameter^2	Transect 2	diameter	diameter^2
Stem 1 =	_____	_____	Stem 1 =	_____	_____
Stem 2 =	_____	_____	Stem 2 =	_____	_____
Stem 3 =	_____	_____	Stem 3 =	_____	_____
Stem 4 =	_____	_____	Stem 4 =	_____	_____
Total diameter^2		_____	Total diameter^2		_____

Total diameter^2 of stems from both transects = 0

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Size Class 3 tons / acre = 0.0687 × *Total diameter* ^{2} *of stems from both transects* = . 0 tons/acre
Total tons / acre (sum of Size Classes 1-3 from above) = ... 0 tons/acre
Cubic feet / acre = (32.05 × *total tons / acre*) / 0.58 = ... 0 cubic feet/acre
Cubic meters / ha = *cubic feet / acre* × 0.069 . . . . . 0 cubic meters/ha

23. V_{SSD} Tally woody understory stems two 0.004 ha subplots then average and multiply by 250:
~~Subplot 1~~ ~~IIII IIII IIII~~ ~~IIII IIII IIII~~ ~~Subplot 2~~ _____ Average 30 × 250 = . 750 stems/ha

24. V_{GVC} Estimate percent cover of ground vegetation in four m^2 subplots then average:
1 75 % 2 60 % 3 60 % 4 90 % . . . . . Average 71 %

25. V_{OHOR} Estimate percent cover of "O" Horizon in four m^2 subplots then average:
1 50 % 2 60 % 3 50 % 4 75 % . . . . . Average 59 %

26. V_{AHOR} Estimate percent cover of "A" Horizon in four m^2 subplots then average:
1 0 % 2 0 % 3 0 % 4 0 % . . . . . Average 0 %

27. V_{COMP} Determine percent concurrence with each strata using the table below
Tree = 0 % Shrub/Sapling = 0 % Ground Vegetation = 0 % . . . . Average 0 %

Dominant Species by Strata in Western Kentucky Low Gradient Riverine Wetlands		
Tree	Shrub/Sapling	Ground Vegetation
Acer rubrum	*Acer rubrum*	*Arundinaria gigantea*
Betula nigra	*Betula nigra*	*Aster* sp. ✓
Carya laciniosa	*Carya laciniosa*	*Boehmaria cylindrica*
Celtis laevigata	*Carpinus caroliniana*	*Campsis radicans*
Fraxinus pennsylvanica	*Celtis laevigata*	*Carex squarosa*
Liquidambar styraciflua	*Celtis occidentalis*	*Eragrostis alba*
Quercus pagodifolia	*Fraxinus pennsylvanica*	*Glyceria striata*
Quercus phellos	*Ilex decidua*	*Hypericum* sp.
Quercus lyrata	*Liquidambar styraciflua*	*Impatiens capensis*
Quercus imbricaria	*Nyssa sylvatica*	*Panicum* sp.
Quercus michauxii	*Quercus imbricaria*	*Parthenocissus quinquefolia*
Quercus stellata	*Quercus lyrata*	*Pilea pumila*
Quercus palustris	*Quercus phellos*	*Quercus phellos*
Salix nigra	*Quercus palustris*	*Salix nigra*
	Quercus pagodifolia	*Sauraurus cernuus*
	Quercus stellata	*Smilacina racemosa*
	Platanus occidentalis	*Smilax rotundifolia*
	Salix nigra	*Sparganium* sp.
	Ulmus americana	*Toxicodendron radicans*

SCIRPUS SP. - 5%
VIRGINIA WILD RYE - 60%
CAREX SP. - 10%